RECREATIONAL DEVELOPMENT ON THE CHIPPEWA LAKE AND ITS ADJACENT LANDS

Problem Report for the Degree of M. L. A.

MICHIGAN STATE UNIVERSITY

DAVID W. FOSTER

1969

RECREATIONAL DEVELOPMENT ON THE CHIPPEWA LAKE AND ITS ADJACENT LANDS

By

David W. Foster

A COMPREHENSIVE PROBLEM REPORT

Submitted to the College of Social Science
School of Urban Planning and Landscape Architecture
in partial fulfillment of the requirements
for the degree of

MASTER IN LANDSCAPE ARCHITECTURE

1969

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ABSTRACT

RECREATIONAL DEVELOPMENT ON THE CHIPPEWA LAKE AND ITS ADJACENT LANDS

by David W. Foster

Today, with our country's ever swelling population, its devastating urban sprawl, and its industrial revoluation, the countryside in which man found environmental values and a way of life, is being consumed by the very forces he creates. Though we are a maturing nation, it is very difficult to foresee or to predict the recreational needs or trends which will effect our future generations. However, because of these various forces mentioned, outdoor recreational facilities, be it natural or man made, are in greater demand now than ever before. As we have grown thru progress, we have misused and destroyed many valuable acres of our nation's natural resources. As a result of these factors it is becoming more and more difficult to be able to utilize, to locate, or set aside sizeable areas which have high quality recreational values. In the statement, "Environment like freedom must be protected and achieved anew each generation", Laurence Rockerfeller relates the spirit and concern which Americans have for their country's landscape. The necessity

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for immediate action cannot be over emphasized. It was for these reasons that the Chippewa Lake and the adjacent lands were selected for an evaluation of its recreational potential.

On August 8, 1971, this tract of land will be due for Federal recapture (returning to government ownership) under the provisions of Section 14 of the Act of Congress of June 10, 1920 as amended August 26, 1935. At this time it is not definite how the Federal Government will act toward this option.

When research is done on a project such as the Chippewa Lake project, it is necessary to determine the recreational needs of the region as well as the complex itself. Various inventories, charts, and maps have to be made on the landscape resources. Influencing factors such as proximity to the urban centers, highways conditions, mode of travel, and many more must be studied. For it is not until all posibilities have been exhausted, that a planner can be assued that his proposal will contain the values of a total environmental development. Anything short of this leaves a posibility for a haphazard result in which a camp site here and a scenic overlook there is produced.

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A proposal of this type provides for (1) a supplement of recreational facilities at a standard of high quality, and (2) to insure future generations of a place where they may have educational, social, physical, and other outdoor recreational experiences.

The entire project has approximately 28,000 acres and a land ownership pattern which is rather complex. The Northern States Power Co. is the major land owner with some 14,000 acres. The Lac Courte Oreilles, a band of Chippewa Indians, has their land divided into three type of ownership, they are: tribal lands, allotted lands, and U.S. Title land under Government control. The remaining land is owned by the U.S. Forest Service and private individuals who own resorts, summer homes and permanent dwellings.

When determining guidelines for the master plan, it can be shown thru zoning that certain parcels of land should be controlled by other than present methods. The suggested control for these pertinent parcels are: (1) complete acquisition by purchasing, trading or by gifts, (2) or negotiating the rights of less than full ownership, such as leases, rights of way, easements, or leasebacks. The handling

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A purpose of this type zoning for (1) a [illegible] of [illegible] facilities of a standard of high quality, and (2) to assure future generations of a place where they may have educational, social, physical, and other outdoor recreational experiences.

The entire project has approximately 28,000 acres and a land ownership pattern which is rather complex. The Northern States Power Co. is the major land owner with some 11,000 acres. The Lac Courte Oreilles, a band of Chippewa Indians, has their land divided into three type of ownership, they are: tribal lands, allotted lands, and U.S. Title land under Government control. The remaining land is owned by the U.S. Forest Service and private individuals who own resorts, summer homes and permanent dwellings.

When determining guidelines for the master plan, it can be shown then easily that certain parcels of land should be controlled by other than present methods. The suggested control for these pertinent parcels are: (1) complete acquisition by purchasing, trading, or by gifts, (2) or negotiating for rights of less than full ownership, such as leases, rights of way, easements, or restrictions. The remaining

of these areas in such a manner will improve the esthetic value for future outdoor recreation facilities, such as camp grounds, picnic areas, boat landings, trails, and many others. It does not suggest the use of any condemnation action.

Finally, the purpose of this comprehensive problem report is to clarify, illustrate and justify the development of outdoor recreation facilities on the Chippewa Lake and its adjacent lands.

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ACKNOWLEDGMENTS

This author wishes to express his thanks to all those who have contributed to the completion of this Comprehensive Problem Report.

To Professor Carl S. Gerlach, my Advisor, who helped and encouraged me to complete my graduate program. Since the majority of this project was completed off campus, it was necessary for him to make changes in his busy schedule to coincide with mine.

To the Chequamegon National Forest, who made available, the necessary information and background material. The Forest personnel enlightened me on various aspects of the problem.

To Mrs. William Kresen, who helped me by typing this Comprehensive Problem.

And finally, to my wife Susan, who gave much of her time and energy to help me complete this portion of my Masters Degree.

Acknowledgment

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INTRODUCTION

Throughout the history of mankind on this earth, man has sought many ways which he could use as outlets for self-expression and personal development. These expressions have taken many forms yet a striking similarity remains. We have called these variety of forms recreation. Recreation can be defined in many ways. It is a fundamental need. It is a common heritage to all people. It is refreshment to the body and mind. For the following study, recreation is defined as:

> refreshment of strength and spirits and satisfying diversion in the outdoors....in many different ways... through the contemplation of inspiring natural scenery; through insight into the geological and biological forces of nature; through visiting sites and seeing structures and objects associated with significant events in history and with cultures of prehistoric peoples; through activities such as picnicking, boating, skiing, and other outdoor sports; and through enjoyable community activities.[1]

Americans are continually turning to the outdoors for recreation, relaxation, and the utilization of their leisure time as never before.

> The outdoor recreation activities which Americans choose and enjoy during their leisure time takes many forms....hiking and swimming, fishing and playing outdoor games, bicycling, sightseeing, picnicking, attend-

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[1]Phillip H. Lewis, Jr.: "A Study of Recreation and Open Space in Illinois"; Division of Landscape Architecture and the Bureau of Community Planning, University of Illinois: p. 9.

INTRODUCTION

Throughout the history of mankind on this earth, man has sought many ways which he could use as outlets for self-expression and personal development. These expressions have taken many forms yet a striking similarity remains. We have called these a variety of leisure activities. Recreation can be defined in many ways. It is a fundamental need. It is a common heritage to all people. It is refreshment to the body and mind. For the following study, recreation is defined as:

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Americans are continually turning to the outdoors for recreation, relaxation, and the utilization of their leisure time as never before.

> The outdoor recreation activities which Americans choose and enjoy during their leisure time take many forms....hiking and camping, fishing and playing outdoor games, bicycling, sightseeing, picnicking, eques-

[1]Phillip H. Lewis, Jr.: "A Study of Recreation and Open Space in Illinois"; Division of Landscape Architecture and the Bureau of Community Planning, University of Illinois: p. 9.

> ing outdoor concert and play performances, camping and diverse others. Out steadily increasing participation in these activities has amazed observers for the past twenty five years and never more so than now. Our outdoor recreation demands have become imperative. We will need more recreation opportunities and services, private and public, rural and urban. Facts show that by 1965 we had already enjoyed 51% more outdoor recreation experiences in the major activities than we did in 1960. By the year 2000 our participation in summertime recreation will be 4 times greater than it was in 1960.[2]

Adequate recreation facilities, ranging from local neighborhood playgrounds to regional parks and open spaces, are necessary for the health and well-being of all citizens. Providing such facilities requires a careful appraisal of existing recreation opportunities and the preparation of a long-range recreational development plan.

The Chippewa Lake, a 17,000 acre impoundment in Sawyer County, Wisconsin, has the potential of being developed into an outstanding recreational opportunity for Wisconsin and the Nation. Most of the shoreline is presently owned by the Northern States Power Company of Wisconsin. This area is largely undeveloped and provides a wilderness aspect unique in many recreational development programs. The Chippewa Lake offers many possibilities for recreational development.

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[2]"Outdoor Recreation Trends"; Department of Interior; Bureau of Outdoor Recreation; U.S. Government Printing Office; April 1967. pp 3, 5, and 7.

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> Recreation opportunity, both present and potential, should be considered throughout the planning of water resource programs and be evaluated fully in all decisions to construct water resource projects. In densely populated areas and in regions where natural water recreation opportunities are limited, recreation use may be a controlling factor in water recources programs.[3]

There is little evidence of specific recreational land use and facilities for the preindustrial periods, primarily because it was an unrecognizable ingredient of the environment. While most Americans lived in rural areas, their recreation needs were easily satisfied by the woods, streams and open spaces. Their day began at sunrise and ended at sunset. However, the advent of the industrial age produced a need for recreation, because of less exercise and monotony of the job. With each reduction in the work week, the opportunity and need for additional recreational land increases. Table I shows what the leading authorities believe the expectations of leisure time to be in the United States by 1976 and 1980.

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[3]The Report of the President's Water Resources Policy Commission; " A Water Policy for the American People"; Washington, D.C.; 1950; p. 256.

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TABLE I

United States Leisure Projections

Item	Unit	CLAWSON 1956-1980		ORRRC 1960-1976	
Leisure					
Avg.work week	Hrs/Employee	40	32	38.5	35.4
Discrety.leisure...	Hrs/Week	30	38	N.A.	N.A.
Paid vacation	Wks/Employee	1	2.5	2.0	2.8
Paid holidays	Days/Employee	N.A.	N.A.	6.3	8.5

Source: Reserach Report 42: Natural Resources: Milstein, David N.; "Michigan's Outdoor Recreation and Tourism" Project '80 - Rural Michigan Now and In 1980; Dept. of Resource Development, Michigan State University, 1964; p. 15.

Since World War II there has been a great awakening to the need for recreation, and a tremendous increase in the provision of recreational facilities.

> The appearance of a demand for recreation is evidence of the loss of environmental integrity. When residences become mass dwelling machines and factories become poisoned prisons, the "natural life" becomes an ideal. The ugliness of the places we pass through during daily life stimulates a yearning for purified beauty during a period of rest. "Natural" and "beautiful" become notions attaching to a part-time recreational existence.[4]

Sawyer County has 136 named lakes (a total of 54,877 acres) with 61 public access points. Approximately 27 per cent of the lakeshore in the county is part of the Chippewa Lake. Only 8 per cent of which has been developed.[5]

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[4]William L. Thomas,Jr. editor; Man's Role in Changing The Face of the Earth; (Chicago: University of Chicago Press, 1956; p. 897.

[5]U.S.Department of Agriculture; "Lake Chippewa Flowage Report": 1967; p.

The Department of Resource Development states that Sawyer County will require 51 additional public campsites and 180 picnic sites to satisfy projected demands for these activities in the year 1980. This plan also calls for additional hiking trails and beach acreage to meet the 1980 demands.[6]

There are many social and economic forces which are affecting the demand for more recreation facilities. They include:

> Increased Family Income: Medium U.S. family income has approximately doubled since 1950, from $3,320 in 1950 to $6,570 in 1964. After adjustment in terms of 1957-1959 dollars, these incomes become $3,960 and $6,080 - an increase in purchasing power of 54 per cent. Present trends show purchasing power per capita to about double each generation.
>
> Not only is the dollar volume expended for recreation growing rapidly, but it is increasing as a proportion of the personal consumption expenditures.
>
> Approximately sixty billion dollars were spent in the United States for recreation-tourism in 1964. A statistical series maintained by the United States Department of Commerce estimated total spending for selected recreational items at eleven point three billion dollars in 1950; this was 5.8 per cent of the United States personal consumption expenditures. By 1964 it had increased to twenty-four and one-half billion dollars and 6.2 per cent of the personal consumption expenditures.[7]

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[6]Wisconsin Department of Natural Resources; "Public Recreation on the Big Chip"; 1968; p. 8

[7]Blank, Gunn, and Johnson, Johnson, and Roy Inc.; "Guidelined for Tourism-Recreation in Michigan's Upper Peninsula"; November 1966; p. 18.

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Various studies have shown that as this average income has risen an increasing proportion of it has been spent on leisure activities. Changes in income bring about recreation activity, diversitifcation, and modification. Total participation in outdoor recreational activity also moves up at a greater rate than does income as the economic level rises. Some of these income changes are shown in Table 2.

TABLE 2

Actual and estimated per cent of consumer units in each income class, 1947, 1957, 1976, and 2000.

Income (1959 dollars)	Per cent of Consumer Units 1947	1957	1976	2000
Below 2,000	15.6	13.8	7.5	4.2
2,000 to 3,999	27.2	20.8	10.6	7.8
4,000 to 5,999	26.3	23.8	13.2	7.6
6,000 to 7,499	11.4	14.5	11.3	6.8
7,500 to 9,999	9.9	13.3	17.8	13.1
10,000 to 14,999	6.1	8.8	22.9	25.5
15,000 to 19,999	1.6	2.6	8.2	15.9
20,000 to 24,999	0.8	1.0	3.8	8.0
25,000 and over	1.1	1.4	4.7	11.1

Source: "Economic Projections for the Years 1976 and 2000", Part III, Table II, "Income Size Distribution, "National Planning Association, included in Projections to the Years 1976 and 2000, ORRRC Study Report.

Population Growth: From 1950 to 1960 the population in the United States increased about 19 per cent to almost 180 million and has a projection of 350 million for the year

various studies have shown that as this [illegible] rises an increasing proportion of it [illegible] leisure activities. Groups in these [illegible] show [illegible]ion activity, diversification, and [illegible]. Youth participation in outdoor recreational activity also [illegible] up at a greater rate than [illegible] as the [illegible] level rises. Some of these trends [illegible] are shown in Table 2.

TABLE 2

Actual and estimated per cent of consumer units in each income class, 1947, 1957, 1970, and 2000.

Income (1957 dollars)	Per cent of consumer units: 1947	1957	1970	2000
Below 2,000	[illegible]	[illegible]	[illegible]	[illegible]
2,000 to 3,999	[illegible]	[illegible]	[illegible]	[illegible]
4,000 to 5,999	[illegible]	[illegible]	[illegible]	[illegible]
6,000 to 7,499	[illegible]	[illegible]	[illegible]	[illegible]
7,500 to 9,999	[illegible]	[illegible]	[illegible]	[illegible]
10,000 to 14,999	[illegible]	[illegible]	[illegible]	[illegible]
15,000 to 19,999	[illegible]	[illegible]	[illegible]	[illegible]
20,000 to 24,999	[illegible]	[illegible]	[illegible]	[illegible]
25,000 and over	[illegible]	[illegible]	[illegible]	[illegible]

Source: "Economic Projections for the Years 1976 and 2000," Part III, Table 11, "Income Size Distribution," National Planning Association, included in Projections to the Years 1976 and 2000, ORRRC Study Report.

Population Growth: From 1950 to 1960 the population in the United States increased about [illegible] per cent to about 180 million and has a projection of 350 million for the year

2000. During this time the population of Wisconsin had a growth rate of 15.1 per cent which represents an increase of approximately 517,200 people.[8] The population of Sawyer County in 1960 was 9,475 people, a decrease of 8.2 per cent since 1950.[9] The population density decreased from 9.3 to 8.1 persons per square mile.[10]

Judgment projections of the North Central portion of the United States (1976-2000) are shown in Table 3.

TABLE 3

Population Projections of U.S. (1976-2000) (Includes Armed Forces stationed therein, but not abroad.)

In Thousands	Actual	Projected	
	1960	1976	2000
United States	179,323	230,019	350,477
Ohio	9,706	12,902	20,108
Indiana	4,662	6,214	9,596
Illinois	10,081	12,894	19,322
Michigan	7,823	11,615	18,745
Wisconsin	3,952	5,131	7,644
Minnesota	3,414	4,297	6,293

Sources: United States Census of Population: 1960. Number of Inhabitants, op. cit., ORRRC projections.

[8]Robert W. Finley; Geography of Wisconsin; p. 83.

[9]U.S. Department of Agriculture, "Lake Chippewa Flowage Report", 1967. p.

[10]Robert W. Finley, Geography of Wisconsin; p. 88

[illegible] during [illegible] the population of [illegible] at rate of 1.1 per cent [illegible] an increase of approximately 117,700 people.[8] The population of [illegible] County in 1960 was 9,473 people, a decrease of 6.2 per cent since 1950.[9] The population density decreased from [illegible] to 5.1 persons per square mile.[10]

Tentative projections of the seven central states of the United States (1970-2000) are shown in Table 2.

TABLE 2

Population Projections of U.S. (1970-2000) (Includes [illegible] Forces stationed overseas, but not abroad.)

(In Thousands)	Actual 1960	Projected [illegible]	[illegible]
United States	17[illegible]	[illegible]	[illegible]
Ohio	9,706	[illegible]	[illegible]
Indiana	4,662	[illegible]	[illegible]
Illinois	10,081	[illegible]	[illegible]
Michigan	7,8[illegible]	[illegible]	[illegible]
Wisconsin	3,95[illegible]	[illegible]	[illegible]
Minnesota	3,4[illegible]	[illegible]	[illegible]

Source: United States Bureau of the Census, 1970. Number of Inhabitants, [illegible].

[8] Robert M. Finley; [illegible], p. 63.

[9] U.S. Department of Agriculture, [illegible] Report, [illegible].

[10] Robert M. Finley, [illegible], p. [illegible]

Not only is our population increasing, but the average age is being lowered. This will have an affect on the type of recreational activities required since the younger participants will want an active recreation reather than a passive one. Table 4 shows the age distribution of the population.

TABLE 4

Age Distribution of the Population

Age Groups	1959	1976	2000
Under 14	29.4	30.3	11.0
14 to 19	8.9	10.7	28.6
20 to 24	6.3	8.2	7.9
25 to 34	13.0	13.5	13.2
35 to 44	13.4	9.7	11.8
45 to 54	11.6	9.8	10.3
55 to 64	8.7	8.5	6.8
65 and over	8.7	9.3	10.4

Source: Projections to the Yrs. 1976 and 2000: Economic Growth, Population, and Leisure and Transportation, ORRRC Study Report #23; p. 179.

The situation today remains one of high growth and high growth potential. Birth rates in the United States have fallen slightly in the last 2 years, but most demographers are cautious in taking this as any indication of a downturn in the trend. Nearly all projections of future United States population take for granted a continued growth. The only question is how much and at what rate.[11]

[11] Projections to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation, ORRRC Report No. 23; Washington, D.C.: United States Government Printing Office; 1962; p. 9.

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TABLE [illegible]

Age Distribution of the Population

Age Groups	19[illegible]	1970	2000
Under 14	[illegible]	[illegible]	[illegible]
14 to 19	[illegible]	[illegible]	[illegible]
20 to 24	[illegible]	[illegible]	[illegible]
25 to 34	[illegible]	[illegible]	[illegible]
35 to 44	[illegible]	[illegible]	[illegible]
45 to 54	[illegible]	[illegible]	[illegible]
55 to 64	[illegible]	[illegible]	[illegible]
65 and over	[illegible]	[illegible]	[illegible]

Source: Projections to the Year 1976 and 2000: Economic Growth, Population, and Labor [illegible] and Transportation, [illegible] Study Report [illegible]; p. 174.

The situation today is one of high growth and high growth potential. Birth rates in the United States have fallen slightly in the last 5 years, but most demographers are cautious in taking this as any indication of a downturn in the trend. Nearly all projections of future United States population [illegible] a continued growth. The only question is how much and at what rate.[11]

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[11] Projections to the Year 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation, [illegible] Study Report No. 23; [illegible] Outdoor Recreation Resources Review Commission; 1962, p. 7.

Greater mobility: The rise in mobility of the American population has made many new forms of recreation and many isolated locations available to the average citizen. The short period of time required to travel from crowded cities through the hinterland to the open countryside, has been compressed by the automobile, airplane, and railways. A greater portion of land area is available for the use of our growing population.

> Our capability to travel is growing twice as fast as our population. From 1949 to 1965, passenger car mileage jumped 74 per cent, while population increased 32 per cent. Mileage is expected to double by 1980. Better roads and cars mean more and longer trips to seek recreation.[12]

In 1962 Wisconsin ranked 7th in mileage of surfaced roads (92 per cent surfaced), 10th in percentage of paved road mileage, and 14th in rural road mileage in the nation. In 1963 there were 1,712,000 motor vehicles. If these were distributed evenly over the roads at the same time there would be 17 vehicles along each mile. Roads are thinly spaced in the north, however, in terms of road mileage per capita, the figure is greater in the north.[13]

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[12]Michigan Dept. of Conservation; "Michigan's Recreation Future"; September, 1966; p. 13.

[13]Robert W. Finley; Geography of Wisconsin; p. 191

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More Leisure Time: Technological and other development in business and industry have resulted in a decrease in the average hours worked per week.

> The future prospect is for shorter working days and weeks, and for longer and more widespread paid vacations. A reasonable estimate for the year 2000 may be an average work week of about 28 hours.[14]

This, together with the many time and labor saving devices now used in the home, has made leisure time available for recreation.

With more time available plus the increased mobility, Americans are taking to the road in greater numbers every year. They are visiting and using present recreation facilities at a rapidly increasing rate. Table 5 shows

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[14]Marion Clawson; Land and Water for Recreation - Opportunities, Problems, and Policies; Rand McNally and Co., Chicago, 1963; p. 5.

estimated visits to various Federal properties.

TABLE 5

Estimated Recreation Visits to Selected Federal Properties

United States Agency	1950	1960
National Park Service	32,780,000	72,288,000
U.S. Forest Service	27,368,000	92,595,000
Bureau of Reclamation	6,594,000	24,300,000
Corps of Engineers	16,000,000	106,300,000
T. V. A.	16,645,000	42,349,000

Source: Research Report 42: Natural Resources: Milstein, David N.: "Michigan's Outdoor Recreation and Tourism" Project '80 - Rural Michigan Now and In 1980: Dept. of Resource Development, Michigan State University; 1964; p. 6.

One of the greatest challenges facing recreation planners will be to define recreational needs and to provide recreation facilities near to or with easy access from areas of high population concentration.

The ORRRC Report has listed a series of facts regarding recreation demand and supply:

1. Demand for outdoor recreation is growing and the demand for the future is becoming greater.

2. The type of recreation people desire in most cases is relatively easy to supply. This includes a path to walk along, a picnic area, and an attractive drive.

3. We have been failing to use land effectively. The physical supply of land and water for recreation

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> is plentiful; yet due to the ownership, management, or location, it is unavailable.[15]

It is obvious that recreation needs vary with the individual. Recreation gives one the opportunities to experience a release of tension, to play, to develop imagination, or to experience the gamit of emotions.

Recreational lands are needed to provide our population with contact with our natural environment. Joseph Wood Krutch has emphasized the need for such recreational lands:

> We need some contact with the thing we sprang from. We need Nature at least as a part of the context of our lives. Without Nature,...., we are compelled to renounce an important part of our heritage.
>
> On some summer vacation or some country weekend we realize that what we are experiencing is more than merely a relief from the pressures of city life; that we have not merely escaped from something but also into something; that we have joined the greatest of all communities; which is not that of men alone, but of everything which shares with us the great adventure of being alive.[16]

It is difficult for the planners of the future to know how much recreation land will be needed by our rapidly expanding population. The following is offered by The National Park

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[15] ORRRC; "Outdoor Recreation for America"; January, 1962; p. 81.

[16] State of Wisconsin: Dept. of Resource Development; A Plan for Wisconsin; p. 70.

[illegible]

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Service as guidelines to determine the needs of the public:

> On the basis of population, it should be possible to determine the minimum amount of land and facilities required for physical activities. But it is impossible to set a figure on the amount of land that should be set aside for educational, spiritual, and esthetic values. From the esthetic point of view, the limit of an area is the horizon...[17]

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[17]National Park Service; "Guidelines for Determination of Needs"; October; 1959.

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CHAPTER I

HISTORY

The original pine forests of the Lake Chippewa Flowage area were Indian hunting grounds and the scenes of many conflicts between the Sioux and Chippewa tribes. The Lac Court Oreilles (Coo'-de-ray), which in French means "Lake of Short Ears", band of the Chippewa Tribe gained supremacy of the land by the mid 1700's after driving the Santee Sioux from the Upper Chippewa River Basin.

Yanke and Canuck loggers appeared in the 1840's with axes on their shoulders and the cutting began.

> Back east the slashings were getting bigger, the smoke of forest fires thicker, and the green chunks whittled smaller. Looking up through the long shadows to the green crowns, they calculated that there was enough cork pine in Wisconsin to patch hella mile, to last forever. And when they got to the Chippewa Valley and saw the majestic sheen stretching over sylvan hills, even these case-hardened timber beasts paused and removed their battered head-gear in respect for the accomplishments of the Almighty.[1]

In 1842 the Federal Government tried to force the Lac Court Oreilles to migrate west. However, very few Indians moved because of the fear of their old western enemies, the Sioux.

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[1]Swift, Ernest; "The Chippewa - Flambeau Rivers"; The Natural Resources of Northern Wisconsin; p. 29.

CHAPTER I

HISTORY

The original land holders of the upper Chippewa River area were Indian hunting grounds and the scene of many conflicts between the Sioux and Chippewa tribes. The Lac Court Oreilles (Coo'-ta-ray), which in French means "Lake of Short Ears", band of the Chippewa Tribe gained supremacy of the land by the mid 1700's after driving the Sioux from the Upper Chippewa River Basin.

Yanks and Canuck loggers appeared in the 1840's with axes on their shoulders and the cutting began.

> Each year the clearings were getting bigger, the acres of forest lands thinner, and the green crowns whittled a mile. Looking up through the long shadows to the green crowns, they calculated that there was enough cork pine in Wisconsin to patch hell's mile, to last forever. And when they got to the Chippewa Valley and saw the majestic stands stretching over sylvan hills, even these case-hardened timber beasts paused and removed their battered hats in respect for the accomplishments of the Almighty.[1]

In 1852 the Federal Government tried to force the Lac Court Oreilles to migrate west. However, very few Indians moved because of the fear of their old western enemies, the Sioux.

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[1] Wills, Ernest; "The Chippewa - Flambeau Rivers"; The Journal of American Historical; p. 29.

Although the influx of settlers and loggers put the Government under pressure to move the Indians, there was enough opposition to this action that a 70,000 acre Lac Court Oreilles Reservation was created in 1854. The northwest boundary of the reservation follows the West Fork of the Chippewa River and bisects the basin of the present reservoir.

During the 1850's the Chippewa watershed was the proving grounds for new methods of logging river driving, and milling machinery. It was an area of bold enterprise, and the economic, social, and geographic atmosphere was rapidly taking on new dimensions. The pine era lasted about 50 years, but the lumbering continued with hardwoods and hemlock for a growing paper industry.

> The onslaught was ruthless and wasteful beyond reason because timber was thought inexhaustable...with little regard for humal, social, or legal niceties. Theft of government timber was common... . Timber inspectors received no local support... . Labor was cheap and equipment and transportation expensive... .[2]

The era from timber to tinder to trees brought overhwhelming problems and difficult adjustments in Northern Wisconsin. By the late 1800's, logging was in full swing and records for board feet sawed were being set by local sawmills. In 1887, due to laws passed by Congress, individual members of

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[2]Ibed; p. 30

[illegible] of [illegible] and [illegible] the [illegible]-

[illegible] to [illegible] the [illegible], [illegible]

opposition to this action until [illegible] the [illegible]

million [illegible] reservation [illegible] created in 18[illegible]. The [illegible]

boundary of the reservation follows the [illegible] of the

Chippewa River and Flambeau lands of the present reservation.

During the 1850's the [illegible] and the [illegible],

grounds for the [illegible] of logging, river driving, and

milling machinery. It was [illegible] of [illegible] lumbering, and

the economic, social, and political [illegible] in the majority

[illegible] on the reservations. The [illegible] land [illegible]

years, but the [illegible] continued with [illegible] and

marked [illegible] a growing major industry.

> The [illegible] was [illegible] as an [illegible] because there was [illegible] intermittent.... [illegible] regard for health, social, or [illegible] needs. [illegible] of government [illegible]... . [illegible] derived no local support... . Labor was cheap and equipment and transportation expensive... ."

The era from timber to brush brought overwhelming problems and difficult adjustments in northern Wisconsin. By the late 1800's, logging was in full swing and contracts for [illegible] were being [illegible] by local [illegible]. In 18[illegible], due to laws passed by Congress, [illegible] of

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[illegible], p. 30

the Lac Court Oreilles owned allotments of land and were free to sell this land. Loggers bought their way into the reservation and completed the cut. Fires followed.

> Each year there were more miles of slashing, each year fewer green crown of majestic pines to grace the denuded hills. Each year the primeval wilderness retreated like a wounded animal, and fires seemed to forever flare and languish or explode into a holocaust, until smoke hung on the air from spring thaw to fall snow.[3]

> We the people let fires destroy more of our timber resources than loggers ever destroyed. This era was black on the landscape and black in spirit. It was complicated by depression and drought.[4]

By early 1900's the pine forests were gone with only isolated patches remaining. Most of the areas that have been burned over produced lush thickets of aspen and birch.

Creation of the Reservoir

The Chippewa and Flambeau Improvement Company was organized in 1911 by the owners of the water power sites, both developed and undeveloped on the Chippewa and Flambeau Rivers. This company was given charter power to create and operate a system of storage reservoirs on the headwaters of the two rivers for the purpose of regulating the flow of

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[3]Ibid; p. 31

[4]Sorden, L.G.; "The Northern Wisconsin Settler relocation Project, 1934 - 1940", The Natural Resources of Northern Wisconsin; p. 135.

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water for downstream power production. Soon after organization, the Improvement Company made preliminary surveys of a number of reservoir basins on the Chippewa River and selected the site where Lake Chippewa Flowage is now located. It was intended that the owners of the power sites were to join in financing the construction. This was found to be impracticable and an agreement was reached which permitted the Wisconsin-Minnesota Light and Power Company (now the Northern States Power Company) to proceed with the development, and lease it to the Improvement Company. This plan had the approval of the Wisconsin Railroad Commission.

Project lands were purchased from the C. E. Wise Land Company (this land had been purchased from the Indians and individual owners), the Dells Paper and Pulp Company, the Superintendent of Hayward Indian School, and from private persons.[5]

> On August 8, 1921, under an act of Congress dated June 10, 1920 and designated as the Federal Water Power Act, the Federal Power Commission issued a 50 year license for Wisconsin Project #108. This was the beginning of the Lake Chippewa Flowage.[6]

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[5]U.S. Department of Agriculture; "Lake Chippewa Flowage Report"; 1967; p. 3.

[6]Ibid; p. 4.

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The lake is controlled by the Winter Dam. It is a 45 foot high, 995 foot earth fill structure with concrete sluiceway section containing three Taintor Gates (20 feet wide by 26 feet high) and is designed to raise the water level a maximum of 35 feet. The lessee took possession of the project on March 15, 1923. The gates were closed and the spring runoff filled the reservoir.[7]

On June 27, 1939, the Federal Power Commission issued a ruling establishing the original cost of the project to the company. They determined that as of December 31, 1927, the Northern States Power Company should establish and maintain control accounts beginning with an entry of $910,270.28 which was determined to be the actual, legitimate, and original cost of the project.[8] Of this amount, $239,765.12 was determined to be the purchase price of the land, the remainder being construction costs and other expenses necessary to satisfy terms of the license. These costs included the erection of the a new village site, replacement of impounded homes, rental of tribal lands. The Indians were to be allowed the free use of the impoundment to hunt, fish and gather wilde rice.[9]

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[7]Ibid; p. 4.

[8]Ibid; p. 4 .

[9]Ibid; p. 3

the land is controlled by the Indians. [illegible] Miles, [illegible] feet high structure was [illegible] section containing three hundred [illegible] (350) feet [illegible] feet high) and is designed to raise the water level a maximum of [illegible] feet. The [illegible] construction of the project on March 15, 1935. The project was [illegible] filled the reservoir.[7]

On June 27, 1935, the [illegible] Board [illegible] making [illegible], the original cost of the project to the company. They determined that as of December 31, 1937, the Northern States Power Company should establish and maintain control accounts beginning with an amount of $[illegible] which was determined to be the actual, legitimate, and original cost of the project.[8] Of this amount, $[illegible] was calculated to be the purchase price of the land, the remainder being construction costs and other expenses necessary to [illegible] of the Indians. These costs included the [illegible] of the [illegible] village sites, [illegible] of [illegible]. The Indians [illegible] to be allowed the free use of the [illegible] to [illegible], fish and gather wild rice.[9]

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[7] Ibid; p. 3.

[8] Ibid; p. 4.

[9] Ibid; p. 5

Since the original land purchase was initiated for Wisconsin Project #108, ownership has remainde relatively stable. Within the project boundries there are some 27,260 acres. Of this Northern States Power Company (N.S.P.C.) owns approximately 25,300 acres and the remaining 1,960 acres being distributed between the Lac Court Oreilles Band, private individuals, and the Chequamegon National Forest. Land within the boundary which is upland or non-flooded areas is approximately 12,000 acres. N.S.P.S. owns 75% of the 181 miles of exterior shoreline and 90% of the shoreline on the 120 islands in the Flowage.[10]

The Power Company has 34 leases outstanding on their property. They are presently attempting to redefine the boundaries and acreage covered in the leases. Lease charges are nominal. The Company received $430.00 per year from all its lessees. No new areas have been leased for further developments for more than five years. In the past, the Company restricted its leases to private individuals. Several of the existing leases originated as trespasses; people built facilities without owning the land.[11]

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[10]Wisconsin Dept. of Natural Resources; "Public Recreation on the Big Chip"; 1968; p. 3.

[11]Ibid; p. 3.

[illegible] [illegible] the [illegible] [illegible] [illegible] [illegible]

[illegible] 1963, [illegible] [illegible] [illegible] [illegible].

Within the project [illegible] 77,000 [illegible] of this [illegible] [illegible] (U.S.F.S.) [illegible] approximately 13,300 acres [illegible], 1,900 acres being distributed between the [illegible] [illegible], private individuals, and the [illegible] National Forest. Land within the boundary which is [illegible] of non-[illegible] acres is approximately 11,000 acres. [illegible] of the 155 miles of [illegible] shoreline and 40% of the shore-line on the 120 islands in the [illegible].[10]

The [illegible] [illegible] [illegible] leases outstanding on their property. They are [illegible] [illegible] [illegible] [illegible] boundaries and acreage covered in the leases. [illegible] are nominal. The company received $550.00 per year from all its leases. No new areas have been leased for further development for more than five years. In the past, the company restricted its leases to private individuals. Several of the [illegible], leases [illegible] [illegible] people built facilities without owning the land.[11]

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[10] [illegible] Dept. of Natural Resources; [illegible] [illegible] on the Big [illegible]; [illegible]; p. 2.

[11] Ibid; p. 2.

Present procedures are to renew leases annually, but to require and enforce higher standards. In one case, a lease was cancelled because the leases failed to comply to a company standard. The Company favors some development, however, not in areas which are now wild or semi-wild. They would like development to be restricted to areas already partially developed. These should be carried out by the Township, County, or State under terms of a lease from the Company.[12]

Future Status of Chippewa Lake

The Northern States Power Company, a Wisconsin corporation (NSP-Wis.) is the licensee of Project #108 issued August 8, 1921 under the Federal Water Power Act....The project structures are operated by the Chippewa and Flambeau Improvement Company (C & FI Co) under lease from NSP-Wis. and under the authority which C & FI Co. has to operate and maintain headwaters improvements under the laws of Wisconsin (Ch.640, Laws of 1911, as amended.)[13]

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[12]Ibid; p. 13

[13]United States of America Federal Power Commission; Project No. 108; Northern States Power Company; September 25, 1967.

[illegible] procedures [illegible] to [illegible] annually, and to [illegible]-
quire [illegible] of [illegible]dards. [illegible]
cannot [illegible] lessen [illegible] by [illegible]
standard. The [illegible] have [illegible], [illegible], and in
cases which are now [illegible]. They would [illegible]-
[illegible] to be [illegible] already partially [illegible].
These should be carried out by the [illegible], [illegible],
[illegible] under [illegible] of a [illegible] than the [illegible].[12]

__Nature [illegible]__

The Northern [illegible] Company, a Wisconsin corporation
([illegible]) is the licensee of Project [illegible],
[illegible] under the Federal Power Act.... The project [illegible]
are operated by the [illegible] and [illegible] company
([illegible]) under [illegible] and under the [illegible]
which [illegible] Co. [illegible] to operate [illegible]
provements under the laws of Wisconsin ([illegible], as
amended.)[13]

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[12] [illegible], p. 13

[13] United States of America Federal Power Commission, Project No. [illegible]

CHAPTER 640

AS AMENDED

AN ACT to authorize the Chippewa and Flambeau Improvement Company to construct, acquire, maintain and operate a system of water reservoirs located on the headwaters of the Chippewa and Flambeau Rivers and their tributaries, as described herein, for the purpose of producing a uniform flow of water in the Chippewa and Flambeau River and their said tributaries, and thereby improving the navigation and other use of said streams and diminishing the injury to property both public and private.

The Chippewa Reservoir Project #108 is located in Northwestern Wisconsin, entirely within Sawyer County.

On August 7, 1971, the license for Project #108, located on the Chippewa River in Wisconsin, is terminated. Upon termination of the license period, the project can be relicensed or recaptured according to the Federal Power Act.

A Map showing the present ownership of the land surrounding the Chippewa Flowage is located on the following page.

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[14]Ibid; Appendix "A".

[illegible]

[illegible]

[illegible]

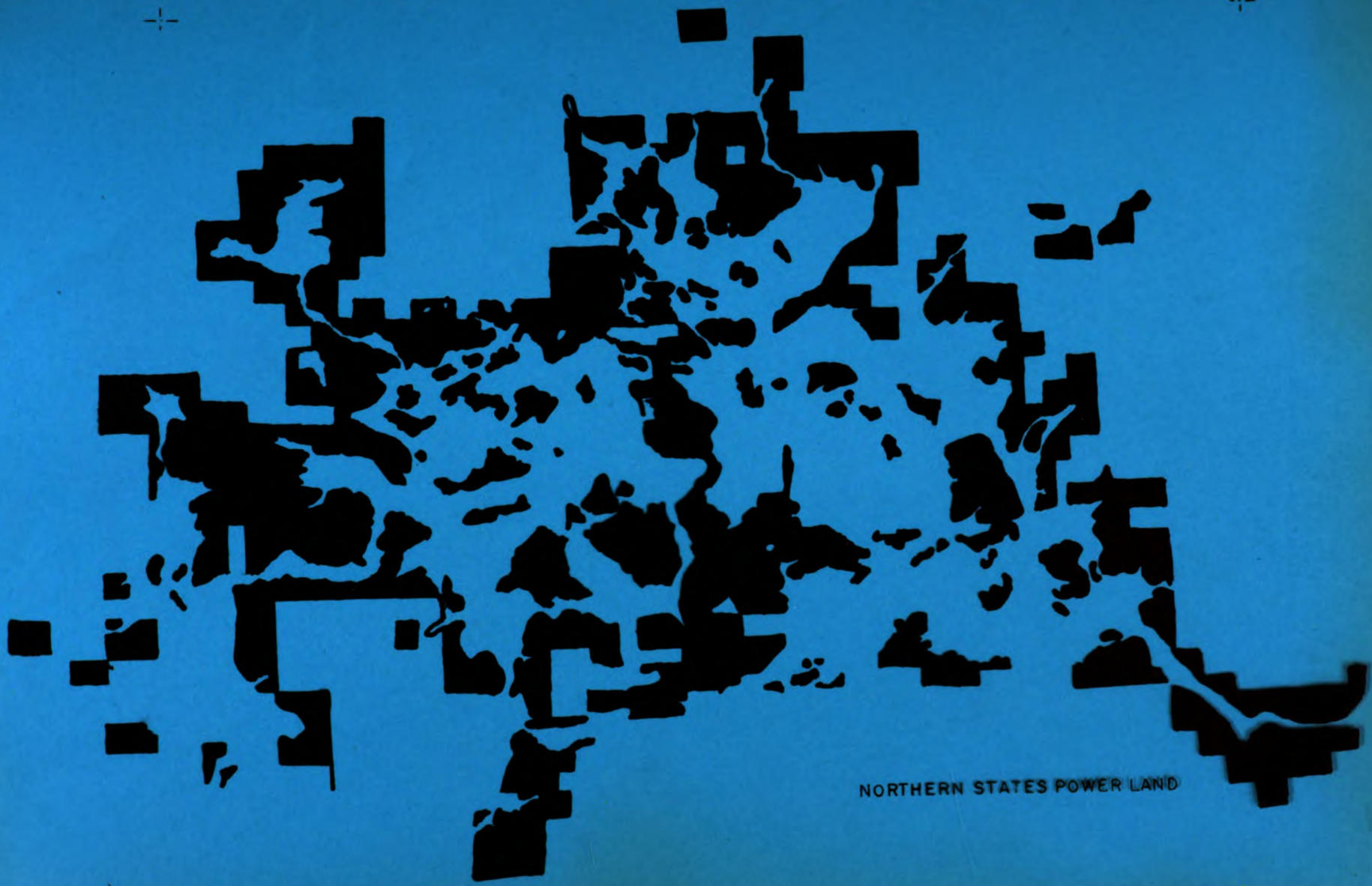
AN ACT to authorize the [illegible] and Flambeau Improvement Company to construct, maintain and operate a system of [illegible] reservoirs located on the headwaters of the Chippewa and Flambeau rivers and their tributaries, in [illegible] counties, for the purpose of producing a uniform flow of water in the Chippewa and Flambeau rivers and their said tributaries, and thereby improving the navigation and other uses of said waters and [illegible] the injury to property both public and private.

The Chippewa [illegible] Project [illegible] is located in northwestern Wisconsin, entirely within Sawyer County.

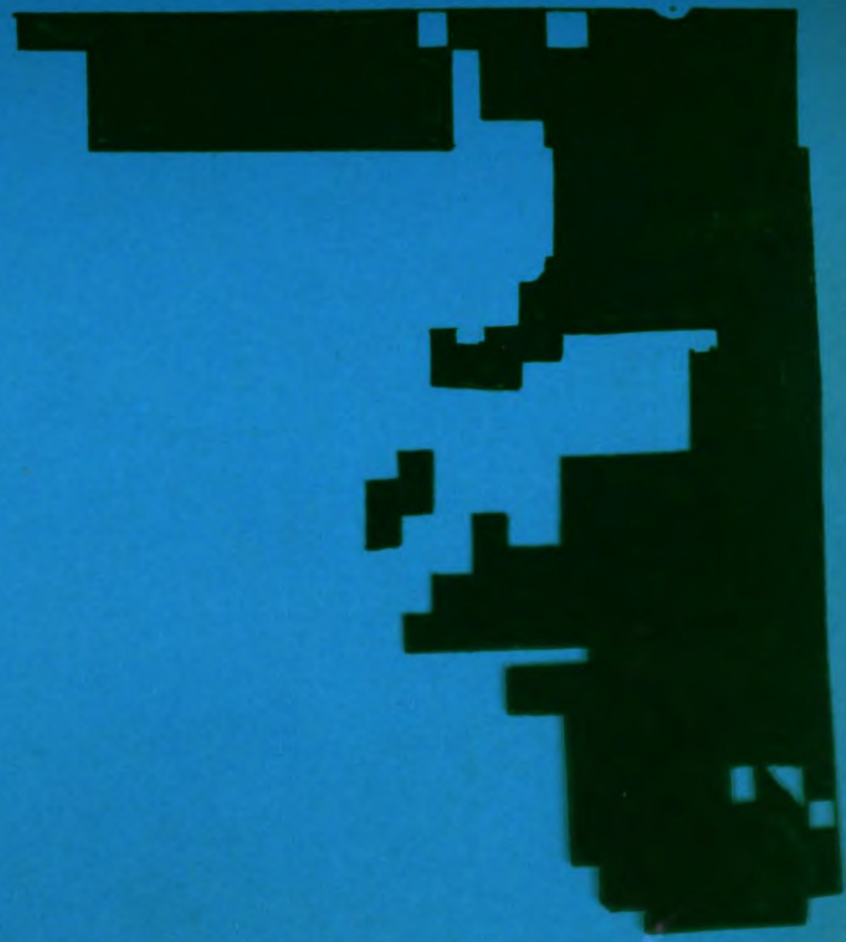
On August 7, [illegible], the license for Project [illegible], located on the Chippewa River in Wisconsin, is [illegible]. Upon termination of the license period, the project can be relicensed or recaptured according to the Federal Power Act.

A map showing the present ownership of the land surrounding the Chippewa Flowage is located on the following page.

FPC, Appendix [illegible].

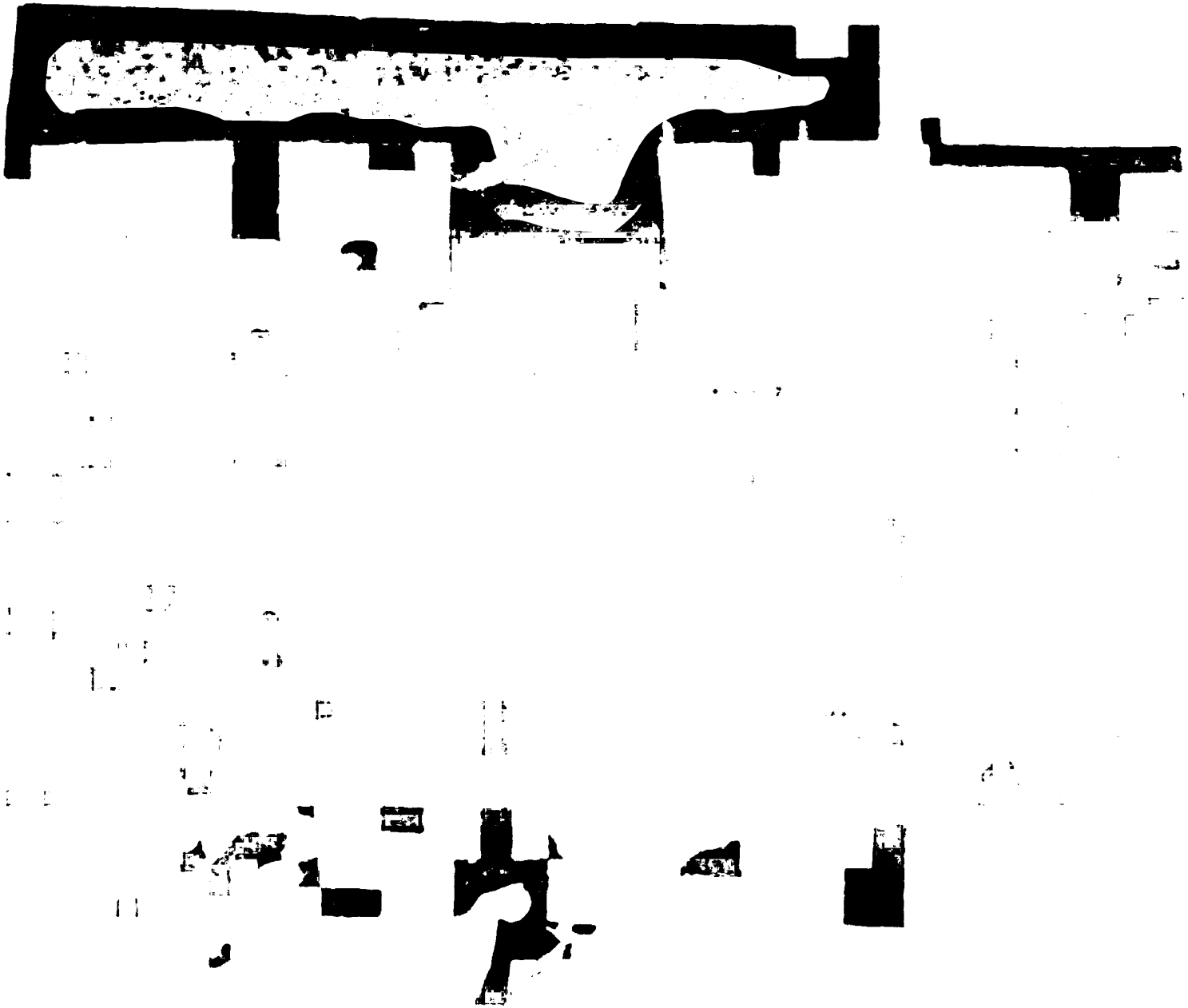

NORTHERN STATES POWER LAND

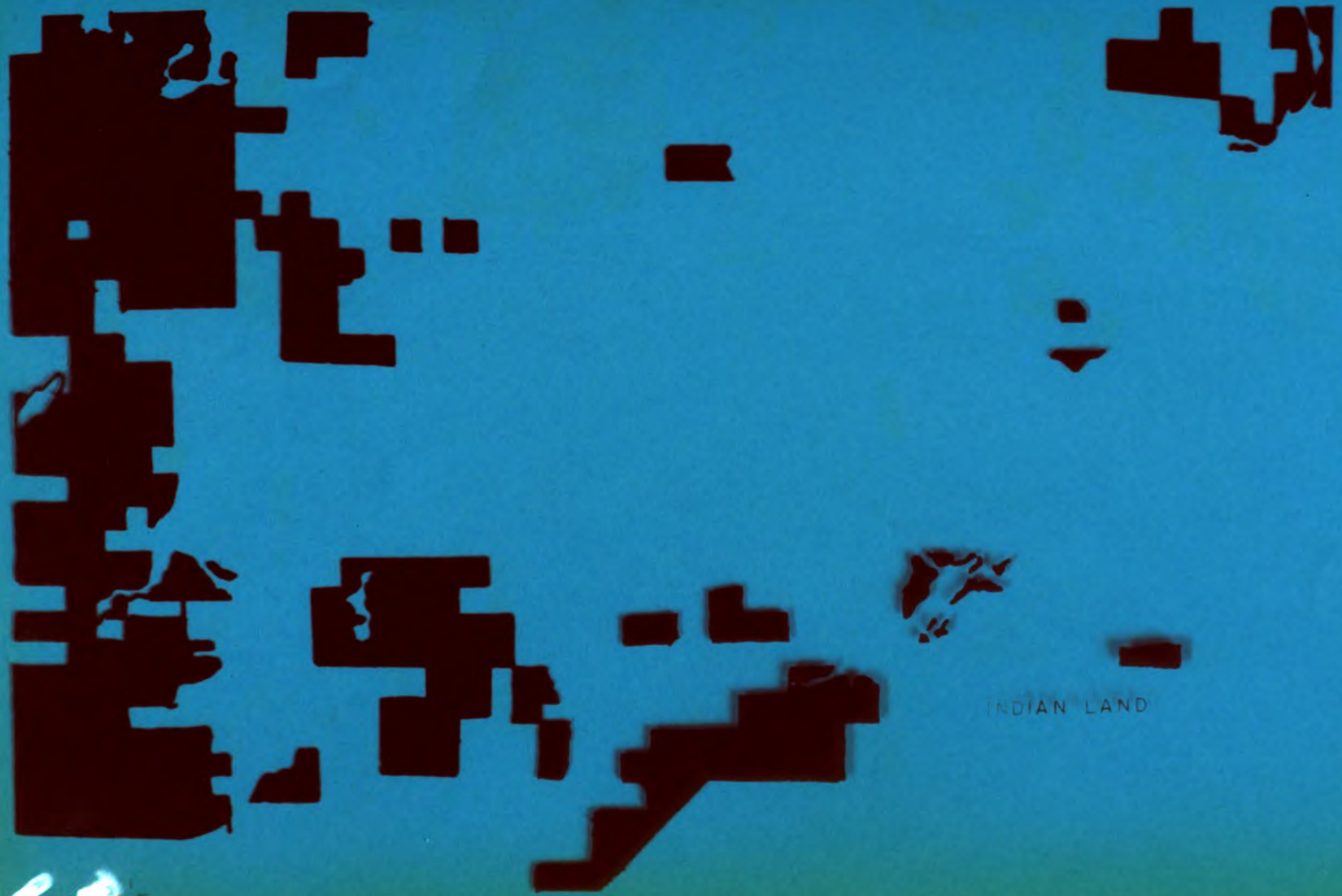
LAND REMOVED BY STATE'S INVENTION



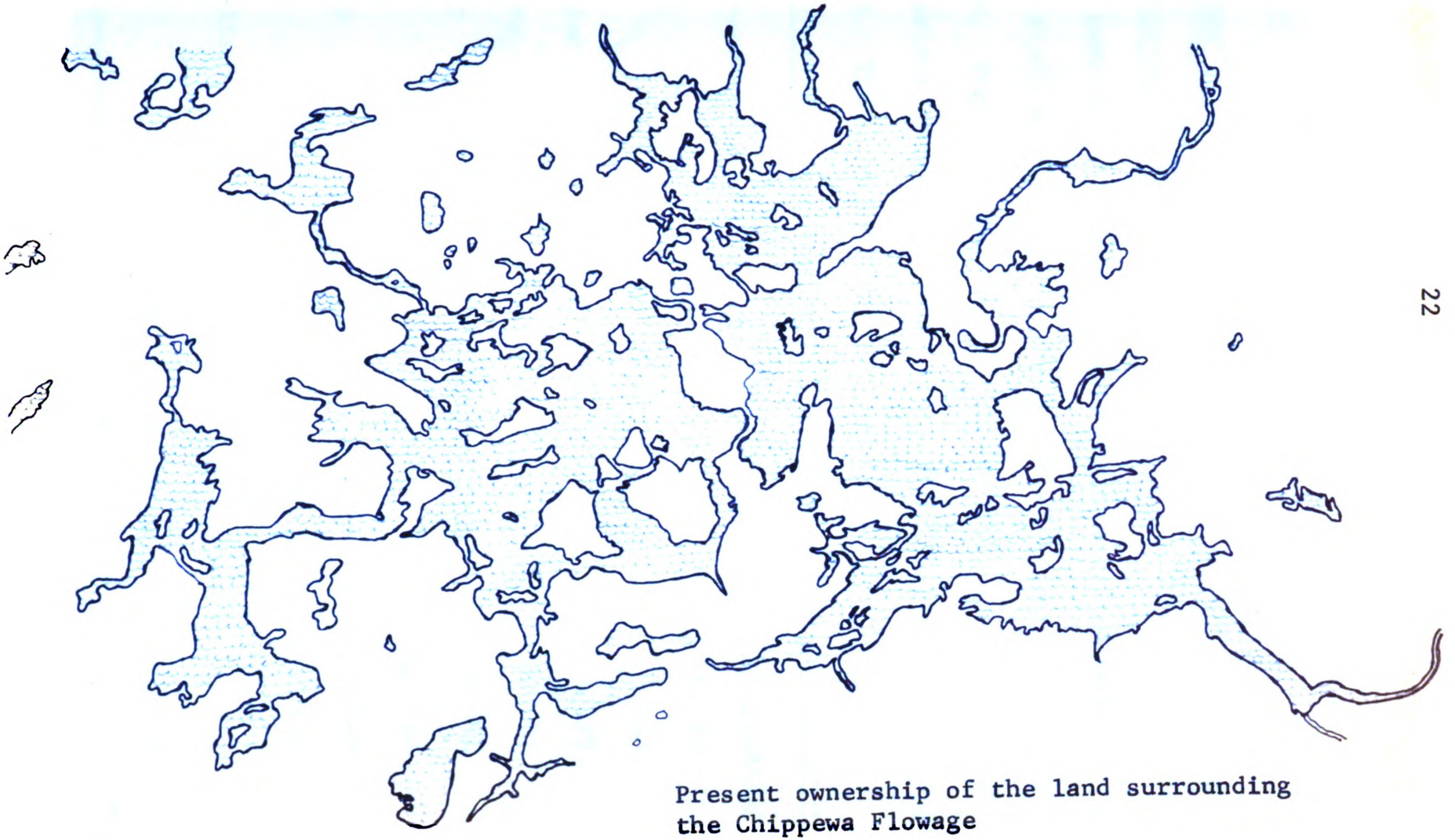
NATIONAL FOREST LAND

NATIONAL FOREST LAND




INDIAN LAND

INDIAN LAND



Present ownership of the land surrounding the Chippewa Flowage

CHAPTER II

THE ANALYSIS OF THE SITE

DESCRIPTION

Basic Geographical Data

Chippewa Lake and the adjacent lands which are pertinent for this study are located in the northwestern portion of Wisconsin. Figure I shows this location and its proximity to the various urban centers in Wisconsin, Illinois and Minnesota. These large urban centers are:

City	Distance	Population
Ashland	60 miles north	10,132
Superior	85 miles northwest	33,563
Rhinelander	130 miles East	8,790
Eau Claire	125 miles South	37,987
Green Bay	250 miles Southeast	62,888
Madison	260 miles South	157,844
Milwaukee	350 miles Southeast	741,324
Duluth	90 miles Northwest	104,000
Minneapolis St.Paul	150 miles Southwest	773,000
Chicago	425 miles Southeast	3,520,000

Source: 1968 Wisconsin Highway Map; Dept. of Transportation; Division of Highways.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] selected for this study are located in the northwestern portion of Wisconsin. Figure [illegible] shows their location and proximity to the various urban centers in Minnesota, Illinois and [illegible]. These large urban centers are:

City	Distance	Population
Ashland	60 miles north	10,1[illegible]
[illegible]	35 miles northwest	[illegible]
Rhinelander	110 miles east	8,790
Eau Claire	125 miles south	37,[illegible]
Green Bay	225 miles southeast	[illegible]
Madison	200 miles south	157,[illegible]
Milwaukee	250 miles southeast	741,[illegible]
Duluth	90 miles northwest	[illegible]
Minneapolis-St. Paul	120 miles [illegible]	[illegible]
Chicago	325 miles southeast	[illegible]

Source: 1968 Wisconsin Highway Map, [illegible] Dept. of Transportation, Division of Highways.

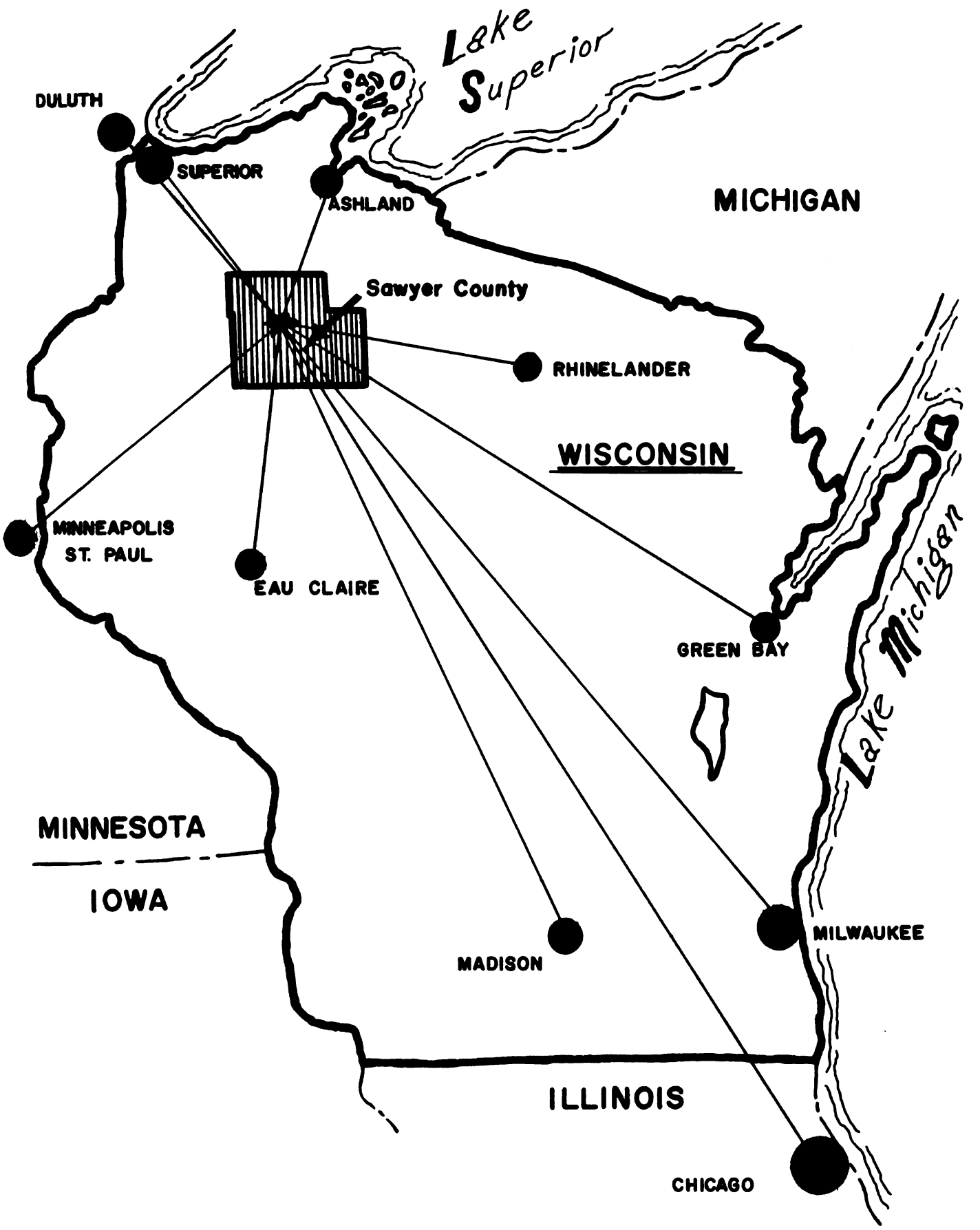


Figure I. Chippewa Lakes location in reference to the State of Wisconsin and large Urban Centers.

Without question, the majority of recreation resource consumers are Wisconsin citizens, however, there is a great deal of inter-state travel from areas of population concentration.

> The total number of non-resident visitors was 1,125,000 (estimated) in 1949 and 3,690,000 for a twelve month period in 1959-1960.[1]

Table VI shows the orgin of the non-resident tourists in Wisconsin for the years 1949 and 1959 - 1960.

TABLE VI

Orgin of Non-resident Visitors in Wisconsin for the years 1949 and 1959 - 1960

State of Orgin	Per Cent 1949	Per Cent 1959-1960 (12 months)
Illinois	73.3	60.6
Indiana	5.5	9.0
Minnesota	4.0	7.3
Iowa	3.9	4.0
Ohio	3.1	4.6
Michigan	2.3	4.4
All others	6.7	10.1

Source: Robert W. Finley; Geography of Wisconsin; p. 207.

Chippewa Lake can be located easist by the location of its dam (Winter Dam). It lies just below the junction of the East and West Forks of the Chippewa River as shown in Figure II.

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[1]Robert W. Finley; Geograph of Wisconsin; p. 207.

These quantities, and the quality of accommodations [illegible] pro- vides are [illegible] conditions, however, there is [illegible] deal of inter-state travel from areas of [illegible] tion.

The total number of out-of-state visitors was 1,840,000 (?) (estimated) in 1956 and 1,000,000 for a five month season in 1957-58 (?).[1]

Table VI shows the origin of the non-resident tourists in Wisconsin for the years 1947 and 1959 - 1960.

Table VI

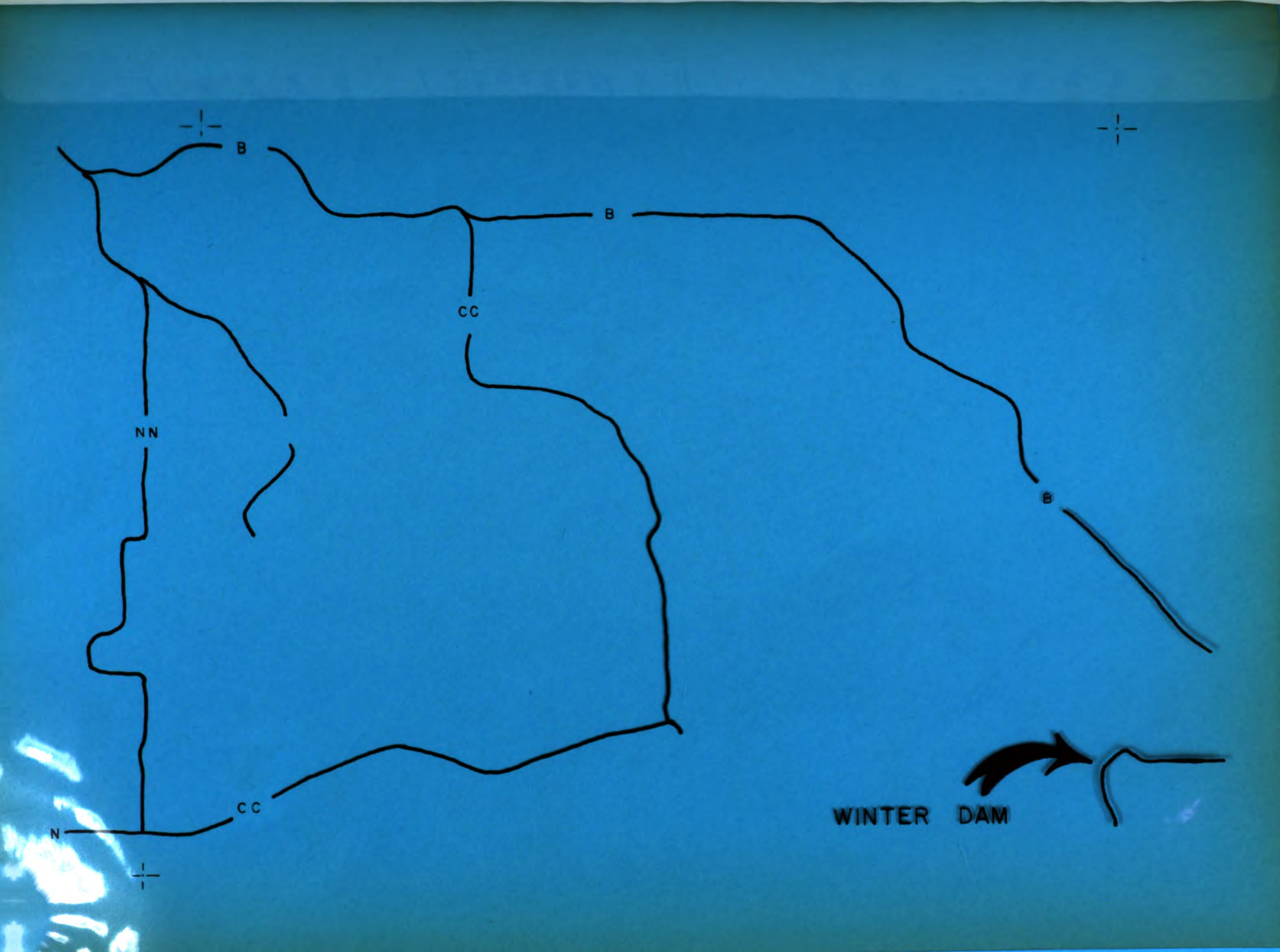
Origin of Non-Resident Visitors in Wisconsin for the years 1947 and 1959 - 1960

State of Origin	Per Cent 1947	Per Cent 1959-1960
Illinois	[illegible]	[illegible]
Indiana	[illegible]	[illegible]
Minnesota	4.0	[illegible]
Iowa	3.4	[illegible]
Ohio	3.1	[illegible]
Michigan	2.2	[illegible]
All Others	[illegible]	[illegible]

Source: Robert W. Finley; Geography of Wisconsin; p. [illegible].

Michigan tourists can be located readily by the location of the [illegible]. In [illegible] the junction of the [illegible] of the [illegible] as shown in Figure 11.

[1]Robert W. Finley; Geography of Wisconsin; p. [illegible].


B
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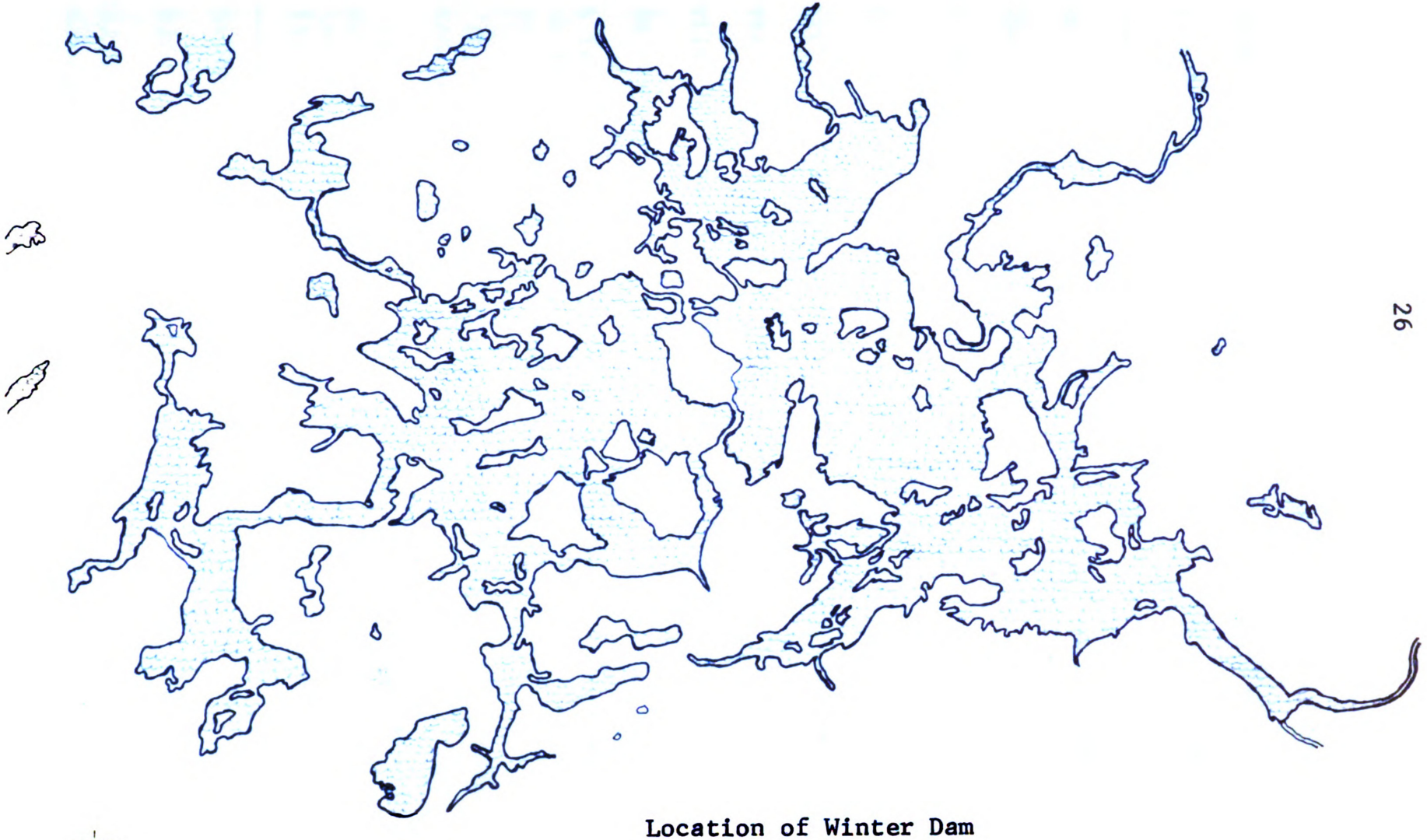

Location of Winter Dam

This majestic parcel of land is within close proximity to four State Highways. They are Hwy 77 to the North, Hwy 70 to the South, Hwy 13 to the East and Hwy 63 to the West. Direct access to the Chippewa Lake area is via county Highway "B" and County Highway "CC". There are numberous other access points to various locations on the Lake, but are not marked as such. The major routes along with several minor roads, are shown on Figure III.

Wisconsin's basic highway system was quite well established by the early 1920's. Changes since then have been largely in extensions and modernization. In 1962 Wisconsin had 98,887 miles of roads and streets.[2] In 1962, Wisconsin ranked in the nation:

> 7th in mileage of surfaced roads (79,500 or 92% surfaced)
> 10th in percentage of paved road mileage
> 14th in rural road mileage[3]

In 1963 there were 1,712,000 private cars, trucks, and buses registered in the State.[4]

> It is interesting to note the impact of highways on campgrounds used. Those camping from counties with relatively easy access to interstate highways ordinarily used them in traveling to the nearest campground.[5]

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[2]Finley, Robert W.; Geography of Wisconsin; p. 191.

[3]Ibid; p. 191.

[4]Ibid; p. 191.

[5]Milstein and Reid; State Resource Planning Program; Michigan Department of Commerce; Michigan Outdoor Recreation Demand Study: Volume II Activities: Michigan Department of Conservation; Technical Report Number 6, June 1966; p. 7. p. 34.

This majestic parcel of land is [illegible] to [illegible] four state highways. They are [illegible] 77 to the [illegible], [illegible] to the [illegible], [illegible] 13 to the [illegible] and [illegible] to the [illegible]. Direct access to the [illegible] is [illegible] via county [illegible] [illegible] County highway [illegible]. There are [illegible] roads [illegible] to various [illegible] on the [illegible], but are not [illegible]. The major routes [illegible], with several [illegible], are shown on Figure III.

Michigan's basic highway system was quite well established by the early 1930's. Changes since then have been largely in extensions and modernization. In 1960 Michigan had [illegible] miles of roads and streets.[2] In 1961, Michigan ranked in the nation:

7th in mileage of surfaced roads ([illegible] or [illegible] surfaced)
10th in percentage of paved road mileage
18th in rural road mileage.[3]

In 1961 there were 1,712,000 private cars, trucks, and buses registered in the state.[4]

It is interesting to note the impact of highways on campground use. Those campgrounds that are relatively easy access to interstate highways ordinarily [illegible] in travel, to the nearest campground.[5]

---

[2]Finley, Robert [illegible]; Geography of Michigan; p. [illegible].

[3]Ibid; p. [illegible].

[4]Ibid; p. [illegible].

[5]Williams and [illegible]; Michigan Resource Planning Program; Michigan Department of Commerce; Michigan Outdoor Recreation Demand Study: Volume II Activities: Michigan Department of Conservation; Technical Report Number 6, June 1966; p. 7. p. [illegible].

Figure III. Location of Major Highways in relationship to Lake Chippewa.

Physiography

Chippewa Lake and the adjacent lands for this study (located in Sawyer County, Wisconsin) lies primarily in the Northern Highland Region. It is one of five Physiographical Regions in which the State of Wisconsin has been divided. (See Figure IV). At the extreme western boundary of Sawyer County, the Northern Highland is joined by the Central Plains Region. However, only a small portion of Sawyer County is consumed in this region and, because it does not directly effect the Chippewa Lake area, its characteristics will not be considered.

The Northern Highland generally consists of a level to gently rolling surface with low relief. In the vicinity of the lake, there is an elevational change of approximately 325 feet between the highest point and the reservoir's summer water level elevation. The entire region has a gently arched assymetric dome underlain by crystalline rock with the highest portion being located near Oneida and Vilas Counties. (See figure V for these locations.)

> By far the greater part of the Northern Highland is covered to varying depths by the deposits of the continental ice sheets, although the configuration of the underlying bedrock largely determines the broad characteristics of the topography. The soil is definitely stonier and sandier as a result of glaciation than it would otherwise have been. Easily visible in the area is the effect upon drainage---the lakes,

[illegible]

[illegible] Lake and the adjacent area for this study (Sawyer? in Sawyer County, Wisconsin) lies entirely in the Northern Highland region. It is one of five physiographical regions in which the state of Wisconsin has been divided. (See Figure IV). At the extreme western boundary of Sawyer County, the northern Highland is joined by the Central Plains region. However, only a small portion of Sawyer County is contained in this region and, because it does not directly affect the [illegible] Lake area, its characteristics will not be considered.

The Northern Highland generally consists of a level to gently rolling surface with low relief. In the vicinity of the lake, there is an elevational change of approximately 300 feet between the highest point and the reservoir's surface water level elevation. The entire region has a gently sloping topography and is underlain by crystalline rock with the highest portion being located near Oneida and Vilas counties. (See Figure V for these locations.)

By far the greater part of the Northern Highland is covered to varying depths by the deposits of the continental ice sheets, although the configuration of the underlying bedrock largely determines the broad characteristics of the topography. The soil is definitely stonier and sandier as a result of glaciation than it would otherwise have been. Readily visible in the area is the effect upon drainage---the lakes,

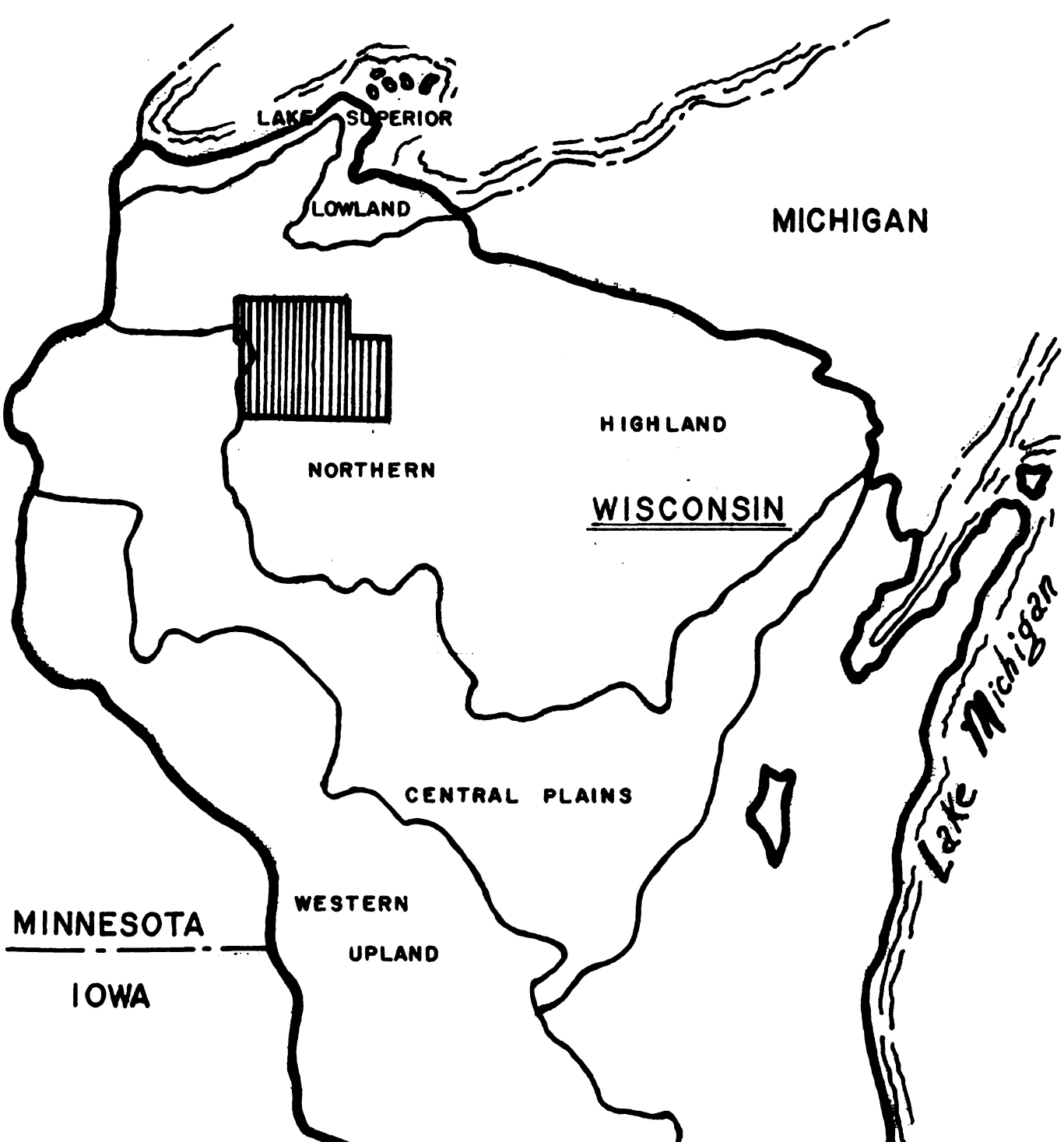

Figure IV. The Five Physiographical Regions of Wisconsin.

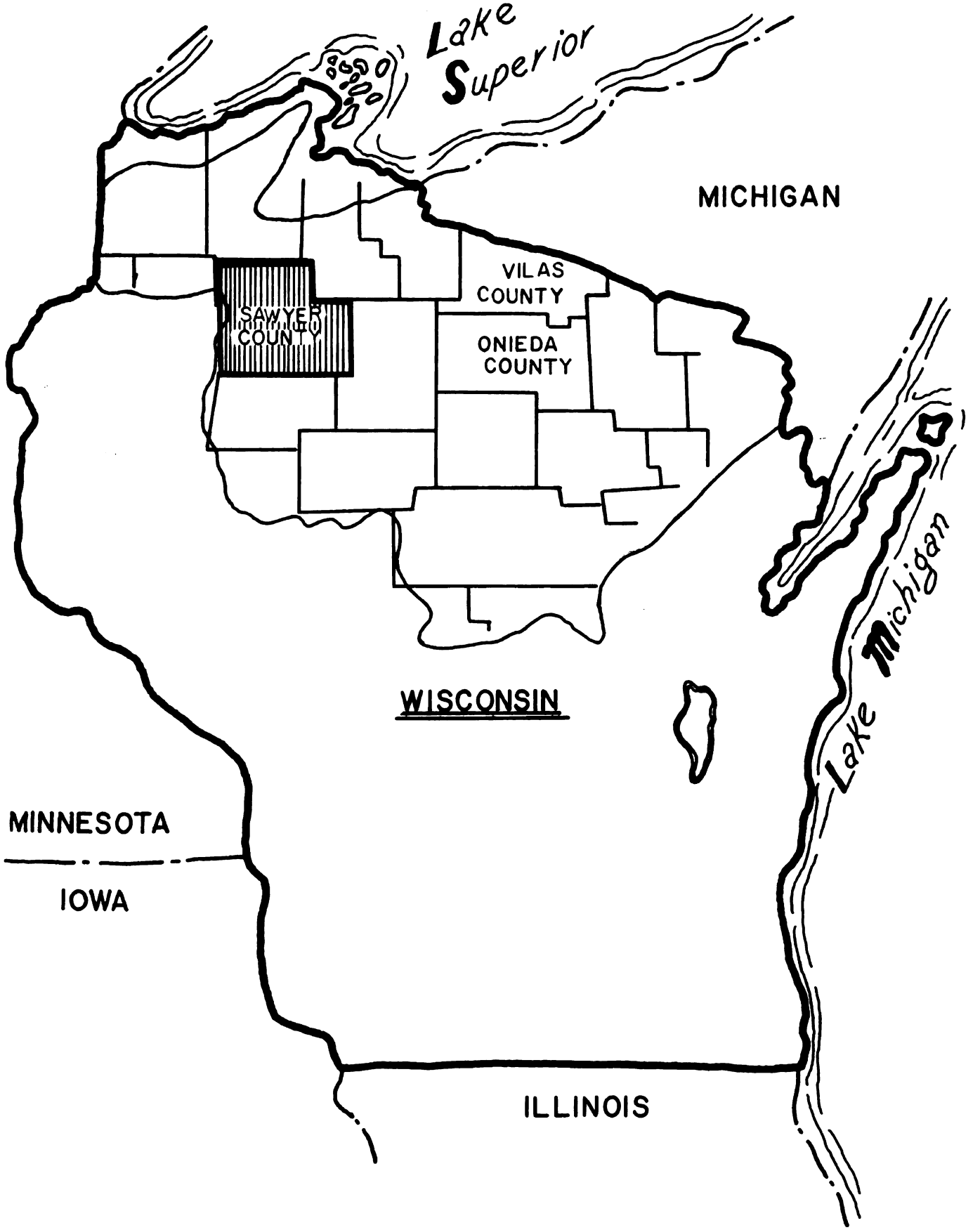

Figure V. Location of Counties in Northern Highland Physiographical Region.

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Figure V also

Physiographic

Wisconsin an

6Robert

> the swamps, waterfalls and rapids, the aimless wandering streams flowing on the surface of the glacial drift.
>
> Deposits of different glacial invasions are found in the Northern Highland, the young drift, consisting of Cary and Valders deposits, and the old drift.[6]

It was from the latest substages of glaciation that the Northern Highland was covered with deposits. Generally the glacial drift is 75 to 100 feet in depth, however it does run from 500 to 600 feet deep in an area west of Ashland.

There were four lobes which covered this region from the Cary ice age, the Superior lobe to the west, the Chippewa lobe and Langlade lobe in the center, and the Green Bay lobe to the east. The Chippewa and Superior lobes had direct effects on the land where the Chippewa Lake is presently located. Where these depositions overlapped, an interlobate moraine resulted. It is characterized by numberous lakes which were depressions caused by remnant ice chunks and later became filled by ground water.

Figure V also shows the Northern Highland and Central Plain Physiographic Regions and their relationship to Sawyer County, Wisconsin and the Chippewa Lake area.

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[6]Robert W. Finley; Geography of Wisconsin; p. 11.

> the scenery, settlements and roads, and [illegible] [illegible]-
> ing effects [illegible] on the [illegible] of the [illegible] [illegible].

> [illegible] of different glacial deposits are found in
> the Northern Highlands, the young drift, consisting of
> early and [illegible] [illegible], and the old drift.

It was from the latest advance of glaciation that the Northern Highland was covered with deposits. Generally the glacial drift is 75 to 150 feet in depth, however it [illegible] [illegible] from 300 to [illegible] feet deep in an area west of Rhinelander.

There were four lobes which covered this region from the Cary ice age, the Superior lobe to the west, the Chippewa lobe and Langlade lobe in the center, and the Green Bay lobe to the east. The Chippewa and Superior lobes had direct effects on the land where the Chequamegon is presently located. Where these deposits overlapped, an interlobate moraine resulted. It is characterized by abundant lakes which were depressions caused by [illegible] [illegible] and later became filled by ground water.

Figure V also shows the Northern Highland and [illegible] [illegible] physiographic regions and their relationship to [illegible] [illegible], [illegible] and the [illegible] [illegible] area.

---

[6][illegible] . Finley; Geography of Wisconsin, p. 11.

Climatology

Wisconsin's climatic conditions are characterized by warm humid summers, and a winter which is relatively long and cold. Being in the climatic region known as the humid continental, it is subjected to the two subtypes which are:

A. The warm-summer type of DAF climate.[7]
   1. Temperatures in the warmest month average over 71.6 degrees; in the coldest, less than 26.6°F.
   2. This type occupies only a small part of southern and southwestern Wisconsin, its northern margin crossing the state from northwest to southeast at about the Madison area. It is sometimes called the Corn Belt type.
   3. Some years the line is north of Madison, and in some years south of Madison.

B. The cool-summer type or Dbf climate.
   1. Lies north of the 71.6 degree isotherm for the warmest month. At least four months must have average temperatures above 50° F.
   2. Takes in most of Wisconsin.
   3. Winter is the dominant season with the spring and autumn more often than not partaking of winter characteristics.[8]

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[7]In the Koeppen-Geiger climatic classification system the letters stand for the following:
D - warmest month over 50°F.; coldest month under 26.6°F.
a - warmest month over 71.6°F.
b - warmest month under 71.6°F.,but with at least 4 months over 50°F.
f - humid throughout the year(that is,precipitation exceeds potential evaporation.)

[8]Robert W. Finley; Geography of Wisconsin; pp. 51-52.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

1. [illegible] type of [illegible] climate.[7]
   1. [illegible] over 71.6 [illegible]
   2. This type [illegible]
   3. [illegible] in some years [illegible]

2. The cool-summer type of the climate.
   1. [illegible] month of the 71.6 [illegible] must have [illegible] above [illegible]
   2. Frost in each [illegible] season.
   3. Winter is the dominant season [illegible] and autumn [illegible] of that [illegible].[8]

---

[7] In the Koeppen-Geiger climatic classification system the letters stand for the following:
f - warmest month over 50°F; coldest month under 26.6°F.
a - warmest month over 71.6°F.
b - warmest month under 71.6°F, but with at least 4 months over 50°F.
f - humid throughout the year (that is, precipitation exceeds potential evaporation.)

[8] [illegible]

The boundary for these two subtypes is the isotherm of 71.6°F. for the warmest month. With the State being located on the line separating these two climatic subtypes, its contrast between the north and south are not the extremes, but are sufficiently different. The Chippewa Lake complex is located to the north and in the cool-summer type of Dbf climate.

The temperature variations in the Chippewa Lake region differs from the southern portions of the State only 6 to 8 degrees. However, during the summer months, the days do not remain the high level for as many hours. Figure VI shows the January and July mean temperatures for the entire State.

One of the major differences between northern and southern Wisconsin, is in the length of the growing season.

> The normal growing season is usually defined as the number of days between the last killing frost in spring and the first killing forst in autumn, with a killing frost temperature being reckoned as 32° F. This is not necessarily the same as the growing season for cultivated crops or the growing season for native plants.
>
> In general the normal growing season lasts 3 1/2 to 4 1/2 months in most of northern Wisconsin, and from 4 1/2 to 5 1/2 months in most of southern Wisconsin.[9]

As shown in Figure VII, Sawyer County and the Chippewa Lake

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[9]Robert W. Finley; Geography of Wisconsin; p. 55.

The boundary for these two subtypes is the [illegible]

for the [illegible] being [illegible]

line separating these two [illegible] subtypes, [illegible]

between the north and south [illegible], but are

sufficiently different. [illegible]

located to the north and in the [illegible]

[illegible]

The temperature variations in the [illegible]

from the southern portions of the [illegible] only [illegible]

however, during the [illegible], the days [illegible]

high level for so many hours. Figure VI [illegible] the January and

July mean temperatures for the [illegible].

One of the major differences between northern and southern

Wisconsin, is in the length of the growing season.

> The normal growing season is usually defined as the number of days between the last killing frost in spring and the first killing frost in autumn, with a killing frost temperature being considered as 32° F. This is not necessarily the same as the growing season for cultivated crops or the growing season for native plants.
>
> In general the normal growing season lasts 3 1/2 to 4 1/2 months in most of northern Wisconsin, and from 4 1/2 to 5 1/2 months in most of southern Wisconsin.[1]

As shown in Figure VII, [illegible]

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[1]Robert W. Finley, Geography of Wisconsin, p. 36.

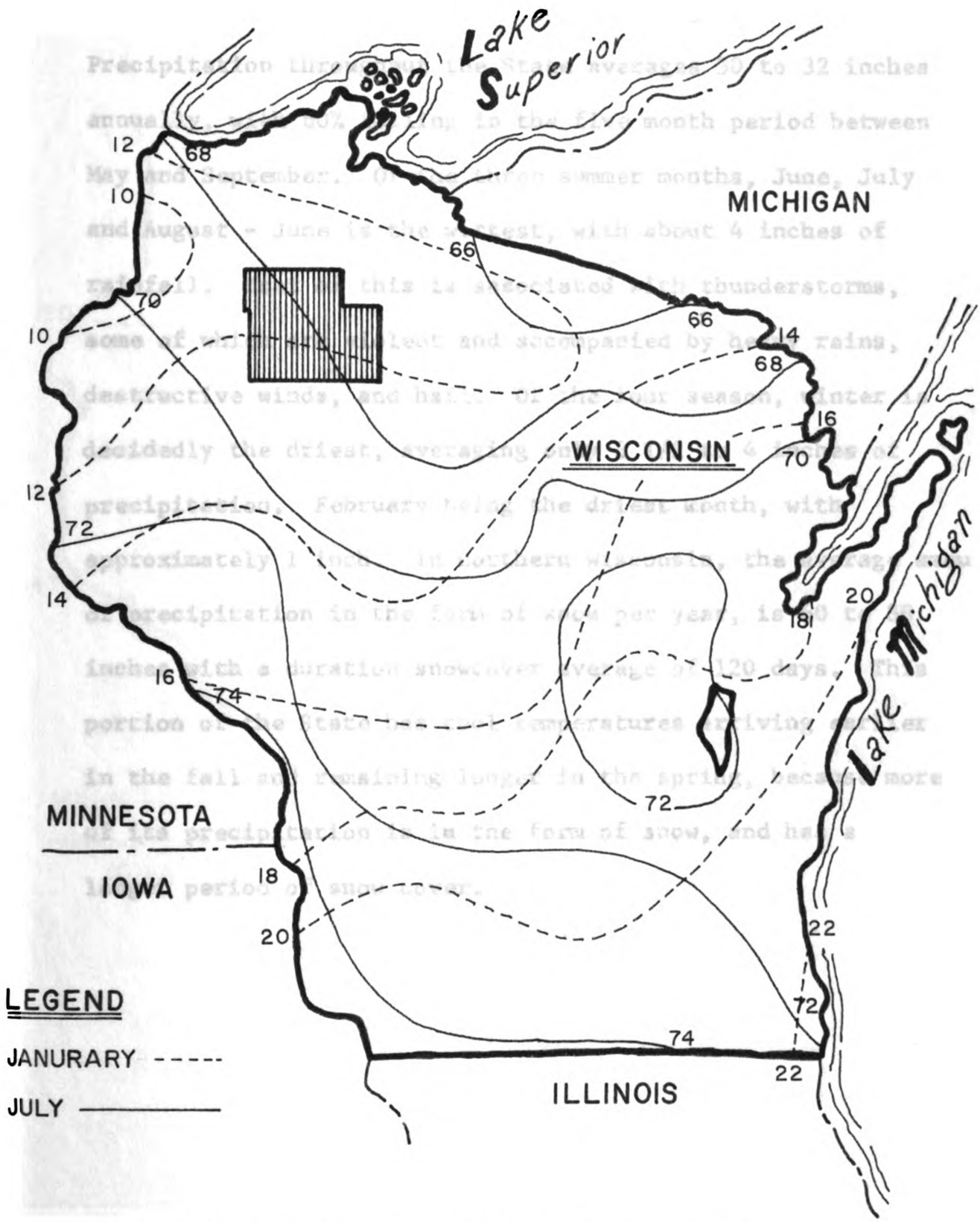

Figure VI. January and July Mean Temperatures.

complex has approximately a 100 day growing season. Precipitation throughout the State averages 30 to 32 inches annually, with 60% falling in the five month period between May and September. Of the three summer months, June, July and August - June is the wettest, with about 4 inches of rainfall. Most of this is associated with thunderstorms, some of which are violent and accompanied by heavy rains, destructive winds, and hail. Of the four season, winter is decidedly the driest, averaging only 3 1/2 to 4 inches of precipitation. February being the driest month, with approximately 1 inch. In northern Wisconsin, the average amount of precipitation in the form of snow per year, is 60 to 80 inches with a duration snowcover average of 120 days. This portion of the State has cool temperatures arriving earlier in the fall and remaining longer in the spring, because more of its precipitation is in the form of snow, and has a longer period of snow cover.

complex has apparently a dry growing season.

Precipitation throughout the state averages 20 to 25 inches a annually, with most falling in the five-month period between May and September. Of the three wettest months, June, July and August — June is the wettest, with 3 to 4 inches of rainfall. Much of this is associated with thunderstorms, most of which are violent and accompanied by heavy rains, destructive winds, and hail. Of the four driest months, which in ordinarily the winter, averaging only 3 1/2 to 4 inches of precipitation. February being the driest month, with approximately 1 inch. In northern Wisconsin, the average amount of precipitation in the form of snow per year, is 50 to 60 inches with a duration snowcover average of 120 days. This portion of the state has cool temperatures, especially, [illegible] in the fall and [illegible], longer in the spring, because more of its precipitation is in the form of snow, and the [illegible] longer period of snow cover.

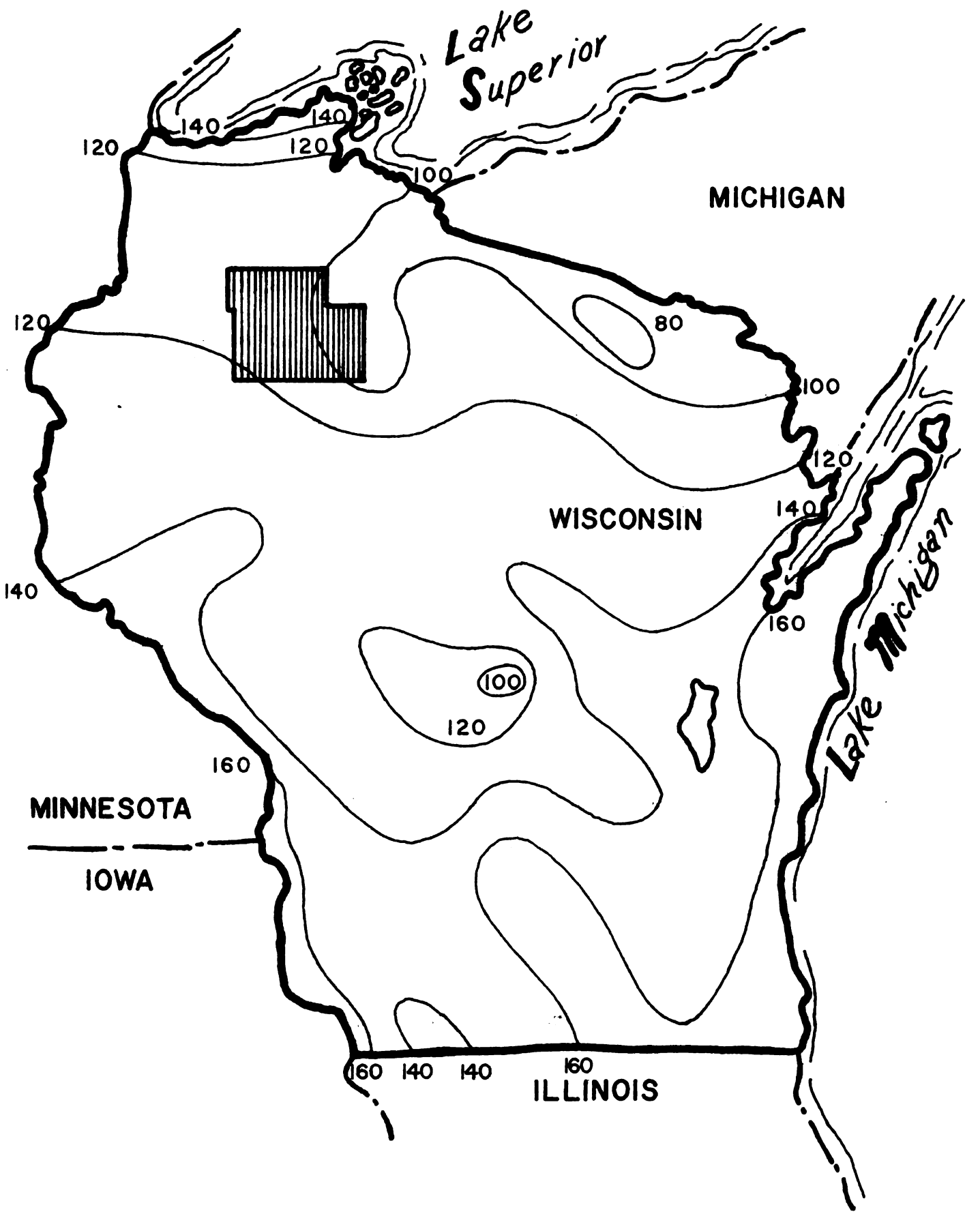

Figure VII. Average Length of Growing Season.

Plate VII. Average Depth of Ground Water.

EVALUATION OF NATURAL RESOURCES

Water

The Chippewa Flowage or Chippewa Lake as it is referred to in this study, is the second largest reservoir in the State of Wisconsin. Only the Perenwell Reservoir in Juneau County is larger.

> The area is one of the largest semi-wilderness lakes in Wisconsin, offering a chance to escape from man's "improvements" on a scale that is found in only a very few areas in the state. Numerous islands, practically all undeveloped, offer a unique camping experience.[10]

A recent Conservation Department Bulletin on Wisconsin Lakes showed that the Chippewa Lake has some 17,248 surface acres of water. While the Chippewa Lake, referred to locally as the "Big Chip", is a flowage, it encompasses approximately 7500 acres in natural lakes. Prior to flooding there were eleven of these natural lakes. Though they have become part of the entire flowage, their locations still remain today as some of the most important fishing waters for muskies, walleyes and black crappies in the State. Some of these larger lakes within the Chippewa Lake area are; Scotts Lake, Rice Lake, Pokegama Lake, Crane Lake, Tyner Lake and Chief Lake. Figure VIII shows these lakes in relationship to the entire Chippewa Lake impoundment.

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[10]Department of Natural Resources; "Public Recreation on the Big Chip"; 1968; p. 2.

IV. LOCATION OF THE STUDY AREA

Lakes.

The Chippewa Flowage or Chippewa Lake as it is referred to in this study, is the second largest reservoir in the State of Wisconsin. Only the Turtle-Flambeau in Iron County is larger.

> The area is one of the largest semi-wilderness areas in Wisconsin, offering a [illegible] the state's [illegible] which is found in only a very few areas in the state. [illegible] islands, practically all undeveloped, offer a unique [illegible] [illegible]nce.[10]

A recent Conservation Department bulletin on Wisconsin lakes showed that the Chippewa Lake has some 17,200 surface acres of water. While the Chippewa Lake, referred to locally as the "Big Chip", is a flowage, it encompasses approximately 7000 acres in natural lakes. Prior to flooding, there were eleven of these natural lakes. Though they have been a part of the entire flowage, their locations still remain today as some of the most important fishing waters for muskies, walleyes and black crappies in the state. Some of these larger lakes within the flowage have been [illegible], Rice Lake, Pokegama Lake, Crane Lake, Hynn Lake and [illegible] Lake. Figure VIII shows these lakes in relationship to the entire Chippewa Lake Impoundment.

---

[10] Department of Natural Resources, "Wildlife Recreation on the Big Chip", 1963, p. 2.


SQUAW LAKE
REED LAKE
CRANE LAKE
GHOST LAKE
TYNER LAKE
SCOTT LAKE
MOONSHINE LAKE
CHIEF LAKE
POKEGAMA LAKE
BLUEBERRY LAKE

LAKE
CHIEF

LAKE
BLUEBERRY

LAKE
TAYLOR

LAKE
SCOTT

LAKE
POKEGAMA

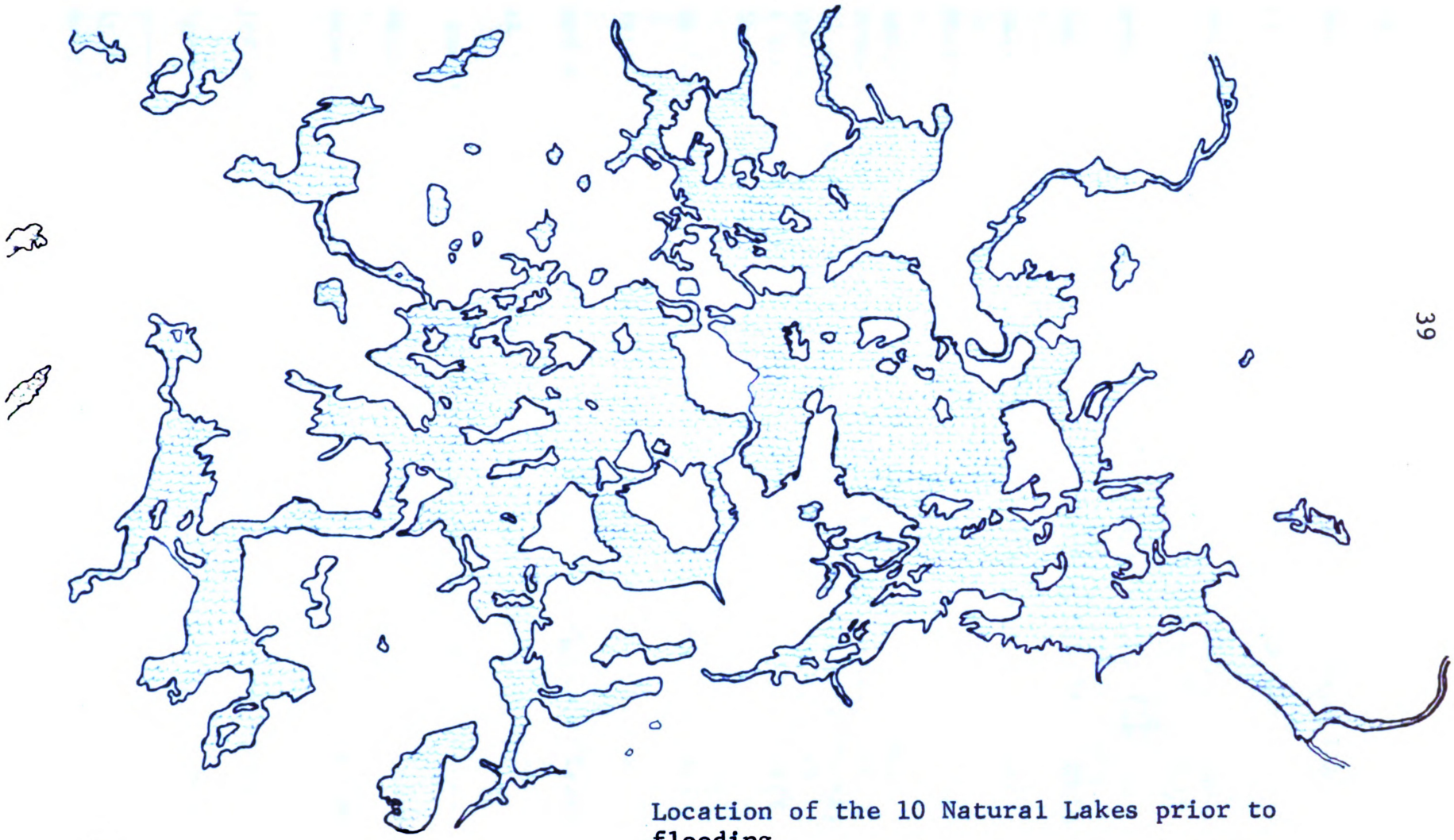
LAKE
MOONSHINE

LAKE
GHOST

LAKE
CHAPO

LAKE
WAUOS

REED LAKE



Location of the 10 Natural Lakes prior to flooding.

When the Chippewa Lake is at full capacity there are approximately 200 miles of shoreline. (This includes the islands). About 90% of this shoreline remains in a relatively undisturbed habitat.

The importance of water impoundment sites must also be evaluated as to water orientated recreation potential. This is emphasized by the ORRRC Report to the President in 1962 which states that:

> Nearly one-half of our population prefers water based recreation to all other forms: Roughly one-third of all Americans fish for sport; boating is among our most popular outdoor pastimes;...; swimming, already high on the list of outdoor activities, promises to top all others before many years have passed.[11]

Chippewa Lake is located in the southwestern corner of a 775 square mile watershed. The two major rivers of this watershed are the East and West Forks of the Chippewa River. The East Fork flowing from the north-central highland region and the West Fork from the Northwestern lake region. Along with these two rivers some of Wisconsin's finest lakes and lesser tributaries give their waters to the Chippewa Lake.

The major portion of the Chippewa Lake waterbasin is located in Ashland County, with Bayfield and Sawyer Counties consum-

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[11]U.S. Department of Agriculture; The yearbook of Agriculture; 1963; A Place to Live; Washington D.C.; p. 356.

of the Chippewa Lake is at half capacity there are approximately 200 miles of shoreline. (This includes the islands). Much of this shore line is in a relatively undisturbed habitat.

The importance of water-oriented sites must also be evaluated as to their unrelated recreation potential. This is emphasized by the ORRRC report to the President in 1962 which states that:

> Nearly one-half of our population prefers water-based recreation to all other forms: Not only are most of all Americans fish for sport; hunting, in every one out and physical outdoor pastimes...; swimming, already high on the list of outdoor activities, promises to top all others before many years have passed.[1]

Chippewa Lake is located in the southwestern corner of a 775 square mile watershed. The two major rivers of this watershed are the East and West Forks of the Chippewa River. The East Fork flowing from the north-central highland region and the West Fork from the northwestern lake region. Along with these two rivers some of Wisconsin's finest lakes and lesser tributaries give their waters to the Chippewa Lake.

The major portion of the Chippewa Lake watershed is located in Sawyer county, with Bayfield and Ashland counties con-

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[1]U.S. Department of Agriculture; the yearbook of Agriculture; 1963; A Place to Live; Washington, D.C.; p. 400.

ing the remaining portion to the north and southwest respectively. Figure IX shows the location of the watershed in relation to the pertinent counties.

> The strategic importance of water resources as a man-nature problem now and as a critical factor in future development raises to new prominence the watershed region. A watershed is the land area unified by a surface drainage system. It is well known that in the arid western sections of the United States, the availability of water determines land values and land use. There is now an awakening realization that the once adequate water resources of the eastern states are in many areas no longer adequate, without further development, to meet the needs of the future. Solutions to present problems and development of additional water resources requires that the watershed be studied as an entity susceptible to coordinated design along with the overlying socioeconomic regions in a unified framework.
>
> A significant legal, economic, and biological community of interest is created through the unifying character of surface water. It is the same run-off water that passes each section of the watershed and any changes in quantity or quality are the result of the use patterns and regulation throughout the watershed.
>
> In this framework, land and water emerge as closely related resources. Most human activities involve the use of both land and water resources with varying effects. Water resources and land resources can no longer be meaningfully analyzed or developed in isolation from each other. Because water resources are more limited than land resources, watershed factors and water use decisions will play a leading role in determining future environmental health conditions and the most feasible settlement patterns.[12]

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[12]Farness, Sanford S.; "Man-Environment Problems in an Urban Age and the Fole of Universities"; unpublished paper, school of Urban Planning and Landscape Architecture, Michigan State University, 1963; p. 11

ing the dominating position to the north and south respec-
tively. Figure 11 shows the location of the watershed in
relation to the pertinent counties.

> The strategic importance of water resources as a continuing problem now and as a critical factor in future development relates to a consideration of the watershed region. A watershed is the land area drained by a surface drainage system. It is well known that in the arid western sections of the United States, the availability of water often looms larger than land use. There is now an awakening realization that the once adequate water resources of the eastern United States in many areas no longer suffice, without further development, to meet the needs of the future. Solutions to pressing problems and development of additional water resources requires that the watershed be studied as an entity susceptible to coordinated design study, thus the overlying socio-economic region is a suitable framework.
>
> A significant legal, economic, and biological community of interest is created through the unifying character of surface water. It is the same natural water that passes each section of the watershed and any change in quantity or quality are the results of the use patterns and regulation throughout the watershed.
>
> In this framework, land and water are seen as closely related resources. Most human activities involve the use of both land and water resources with varying effects. Water resources and land resources can no longer be meaningfully analyzed or developed in isolation from each other. Because water resources are more limited than land resources, reference studies and water use decisions will play a leading role in determining future environmental health conditions and the most feasible settlement patterns.[42]

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[42]Farness, Sanford S., "Non-Environment Planning in an Urban Age and the Role of Universities," unpublished paper, School of Urban Planning and Landscape Architecture, Michigan State University, 1966, p. 11.

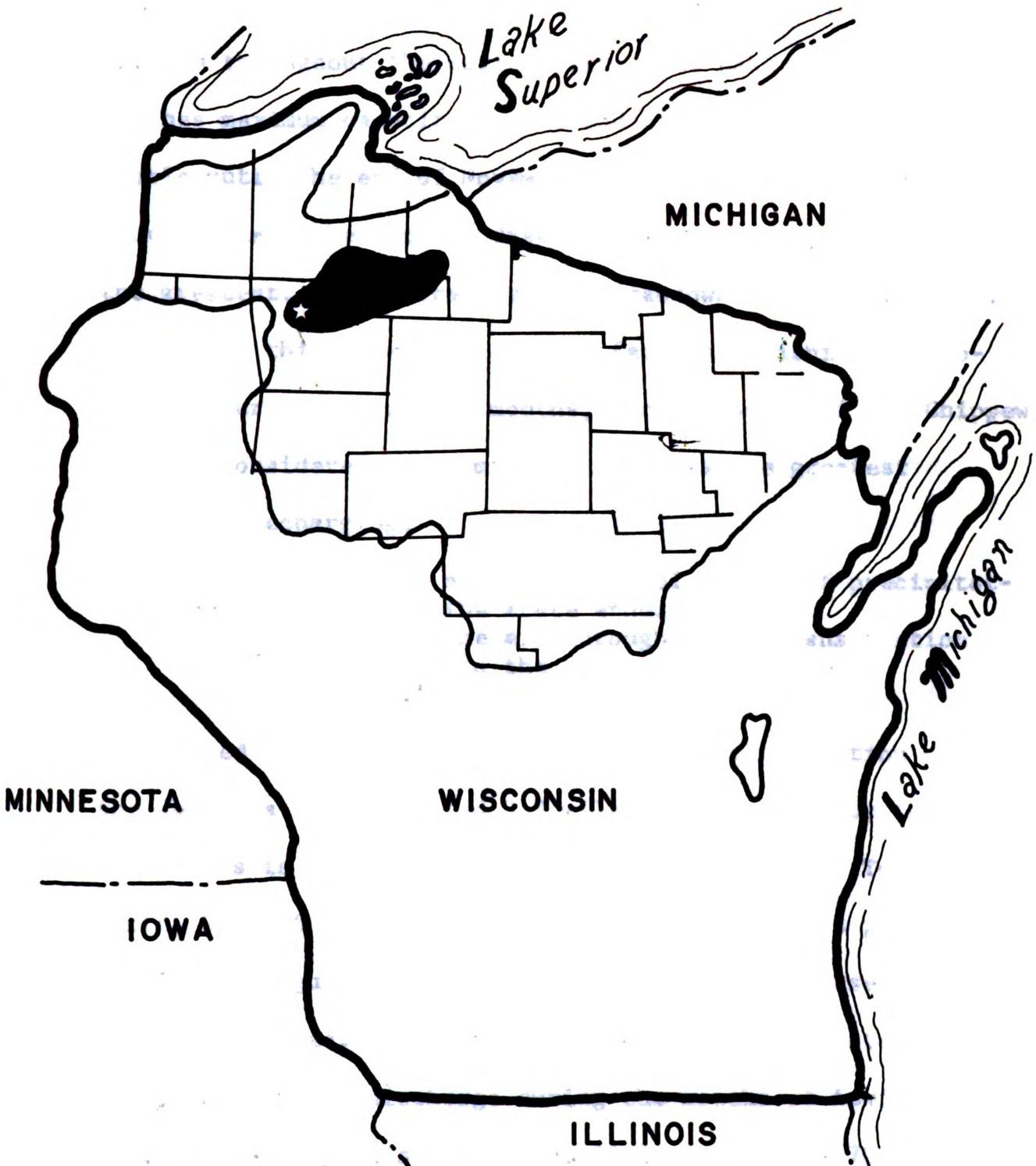

Figure IX. Location of the Chippewa Watershed in Relation to the Pertinent Counties.

Generally there is the same amount of water flowing over the dam throughout the entire year. The Lake usually reaches maximum capacity by the end of May and remains stable until the end of November. December, January and February have the largest drawdown with February having the greatest. The average yearly drawdown has been 13 feet. Because of this drawdown, and the fact that fishing is prohibited during the winter months, winter usuage of the Chippewa Lake is considered to be minor. April is the greatest month for recharging.

> Of the average of approximately 31 inches of precipitation that falls on the state annually:
> 21" returns to the air through evapo-transpiration
> 6" infiltrates to the ground water table
> 4" runs off.[13]

The United States Geodetic Survey has a gaging station on the Chippewa River located 3.2 miles downstream from the dam. This is at the Biships Bridge in Section 23, Township 39 North, Range 6 West. Since 1923, the flow at this point has been completely regulated by Lake Chippewa and other reservoirs within the watershed. Prior to construction of the Winter Dam, there was a heavy discharge during the months of April and May. The average discharge from 1912 to 1965 was 700.0 cubic feet per second, with the maximum discharge of 7520 cubic feet per second on the 4th and 5th of September in 1941.

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[13]Robert W. Finley; Geography of Wisconsin; p. 40.

Generally there is the same amount of water flowing, as [illegible]

the other months throughout the entire year. [illegible] monthly

averages increase rapidly by the end of May and remain

stable until the end of November. December, January and

February have the largest volume when [illegible]

and [illegible]. The average yearly amount is [illegible] feet.

Because of this discharge, and the fact that there is pro-

hibited during the winter months, winter storage of the [illegible]

lake is considered to be minor. [illegible]

month for irrigation.

Of the average of approximately [illegible] inches of precipitation that falls on the basin annually:
[illegible] returns to the air through evapo-transpiration
[illegible] infiltrates to the ground water table
[illegible] runs off.[13]

The United States Geologic Survey has a gaging station on

the Chippewa River about [illegible] miles downstream from the

dam. This is at the [illegible] Bridge in Section [illegible], Township [illegible]

North, Range 6 West. Since [illegible], the flow at this point has been

completely regulated by [illegible] and other reservoirs with-

in the watershed. Prior to construction of the [illegible] dam,

there was a heavy discharge during the months of April and

May. The average discharge from [illegible] to [illegible] was [illegible] cubic

feet per second, with the maximum discharge of [illegible] cubic feet

per second on the 4th and 5th of November in [illegible].

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[13] Roberts . [illegible] History of [illegible]; p. [illegible].

Water quality within the Chippewa Lake watershed is rather dark in color due to the organic content picked up in bogs in the upper reaches of the drainage. Approximately 60 per cent of the watershed is within the boundaries of the United States Forest Service. This is fortunate for the entire watershed, as this agency is continually striving to achieve pollution free water. Strict enforcement of watershed policies are their disciplining forces. However, a pollution problem does exist since the remainder of the watershed is in the hands of private individuals. Until recently, little has been done to combat this situation. At the present, the State of Wisconsin is forcing at least one community in the area to construct a sewage treatment plant. Also local townships are upgrading their pollution control requirements.[14]

> With an increasing demand on the available water supplies for numerous and often conflicting uses - for manufacturing plants, for city use, for recreational uses, for irrigation, and for wildlife - there is a growing awareness of the value of this resource and a concern for the continuance of an abundant supply of good water for all uses.[15]

The Chippewa Lake is owned by the Northern States Power

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[14]Chequamegon National Forest; "Lake Chippewa Flowage Report"; 1967.

[15]Robert W. Finley; Geography of Wisconsin; p. 40.

that policy within the [illegible] is in [illegible]
that is under the [illegible] in [illegible]
in the upper reaches of the [illegible]. [illegible] of the
east of the [illegible] which has [illegible] of the [illegible]
[illegible] for its [illegible]. This is [illegible] for the [illegible]
untreated, as this [illegible] is [illegible], as [illegible]
pollution does occur. [illegible]
pollutants are their [illegible], [illegible]. [illegible], a
pollution problem does exist since the majority of the
[illegible] is in the hands of private individuals. Unfortunately, little has been done to combat this situation. At
the present, the state of Wisconsin is [illegible], as [illegible]
community in the area to construct a sewage treatment plant.
Also local townships are expanding their pollution control
regulations.[14]

> With an increasing demand on the available water supplies for municipal and other [illegible] uses - for manufacturing plants, for city use, for recreational uses, for irrigation, and for wildlife - there is a growing awareness of the value of this resource and a concern for the continuance of an abundant supply of pure water for all uses.[15]

The [illegible] Lake is [illegible] by the [illegible]

---

[14] [illegible] National Forest; [illegible] : 1967.

[15] Robert [illegible]; [illegible], p. 40.

Company of Wisconsin. It is operated as a reservoir for flood control and low flow augmentation during the summer months. The Public Service Commission of Wisconsin has stipulated that the usable water would be taken between the elevations of 1287.0 and 1313.0 feet. This provides for a maximum drawdown of 26 feet and a drawing capacity of 10,000 million cubic feet of water. Present company policies state that drawdown begins annually around the 15th of October, and to be completed by the 15th of February. The expected spring runoff actually sets the drawdown. However, the minimum drawdown has been 11 feet with the maximum being 19 feet. Present procedures are to have the water up to the 1312 feet elevation by the 15th of May.[16] During the summer months there is a 1 to 3 foot drawdown, as minimum flows are maintained.[17]

Chippewa Lake is considered to be one of the most important fishing waters in Wisconsin. While it is world renowned for its muskie fishing, it also provides outstanding walleyes and panfish for the avid Midwest anglers. The Northern States Power Company has taken the necessary precaution to

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[16]Chequamegon National Forest; "Lake Chippewa Flowage Report"; 1967.

[17]Department of Natural Resources; "Public Recreation on the Big Chip"; 1968; p. 3.

[illegible] [illegible] [illegible] [

channelize the potential "pockets" and although there may be a few fish trapped, the operation has obviously maintained a good fishery.

The Northern States Power Company controls approximately 75 per cent of the exterior shoreline, and 90 per cent of the 120 islands. The majority of this shoreline is undeveloped forested land of aspen and hardwoods.

> Wild shorelines provide the most productive littoral zone where plants, insects, fish and animals intermingle in a relatively undisturbed habitat.[18]

Sediment deposition in the lake will not be a problem as long as the watershed remains forested and under good land management practices. There is bank erosion, caused by wave action and water fluctuation, along most of the shoreline. This has resulted in many miles of sand and gravel beaches. Control of this erosion is only necessary to protect developed sites, and does not pose a threat to the life of the lake.[19]

This large body of water is a haven for water orientated sports. Although activities such as boating, fishing, and bathing are not conducive to one another, the lake offers

---

[18] Chequamegon National Forest; "Lake Chippewa Flowage Report"; 1967.

[19] Ibid;

channels the potential problems and erosion, if any, [illegible] the [illegible], the [illegible] not obviously [illegible] [illegible].

[illegible] [illegible] [illegible] watershed comprises [illegible] of the entire [illegible], [illegible] of the [illegible]. The majority of this watershed is in [illegible] land of rough and mountains.

> The conditions around the lake are favorable to [illegible] zone plants, however, [illegible] [illegible] in a relatively undisturbed [illegible].[10]

Sediment deposition in the lake will not be a problem as long as the watershed remains forested and under good land management practices. There is bank erosion, due to wave action and water fluctuation, along most of the shoreline. This has resulted in many sites of sand and gravel beaches. Control of this erosion is only necessary to protect developed sites, and does not pose a threat to the life of the lake.[11]

This large body of water is a haven for water oriented sports. Water activities such as boating, fishing, and bathing are not conducive to the aesthetic, and [illegible]

---

[10] [illegible]

[11] Ibid.

facilities for each activity because of its size and shape.

> The shape of an impoundment site will determine boating activities. Sail boating requires a relatively large open space and a water surface unprotected from winds. Motor boating and water skiing are difficult to execute on narrow water bodies such as rivers, whereas, a large rounded one facilitates boating activities.
>
> Water quality and its maintenance should be enforced to prevent pollution and ensure that no limitations be imposed on those seeking water recreational activities.[20]

Soils

Wisconsin soils are characterized by great variability because of the following factors:

1. The irregularity in parent material introduced by variation in type of bedrock and added to by glacial deposition--marginal moraine, ground moraine, outwash, glaciolacustrine deposits--and by wind-deposited materials.
2. Difference in the age of the glacial deposits--old drift, young drift.
3. Unglaciated areas.'
4. Irregular topography as in the Western Upland.
5. Variation in vegetation.[21]

Parent material in the Northern Highland Physiographic province is glacial till. As a result of the Young Drift,

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[20]Milstein and Reid; Michigan Outdoor Recreation Demand Study; Volume II Activities Reports; Michigan Department of Conservation; Technical Report No. 6, June 1966; p. 5.- 33.

[21]Robert W. Finley; Geography of Wisconsin; p. 76.

65 to 70 per cent of the materials are from the underlying igneous rock, and 30 to 35 per cent from metamorphic and sedimentary rock.[22] There is considerable variation in the soil, but it is generally coarse textured because of the granite, gneiss and schist weathering. There may be ground moraine, end moraine, glaciofluvial, or glaciolacustrine. Along the southern boundary of the Northern Highland, many of the subsoils are poorly drained with surfaces being level to gently undulating. These features resulting from the Old Drift. Figure X shows the major soils in the Northern Highland Physiographic Province.

With Chippewa Lake being located in the southwestern corner of the Chippewa River watersheds, it is necessary for the water from the upper portions of these watersheds to travel over and through the land before it reaches the Lake. Because of this, the soils have a significant effect on the quality of water that enters the Lake.

> There is a great diversity in soils, from coarse sands to fine clays, from wet to dry, from level to steep topography, from low to high organic matter content, from thin to thick coverings over bedrock, from high to low content of plant nutrients. Man has learned through years of experience that certain soils will react differently than others.[23]

---

[22]Ibid; p. 76.

[23]Dept. of City Planning and Landscape Architecture; Regional Landscape Planning; University of Illinois; p. 43.

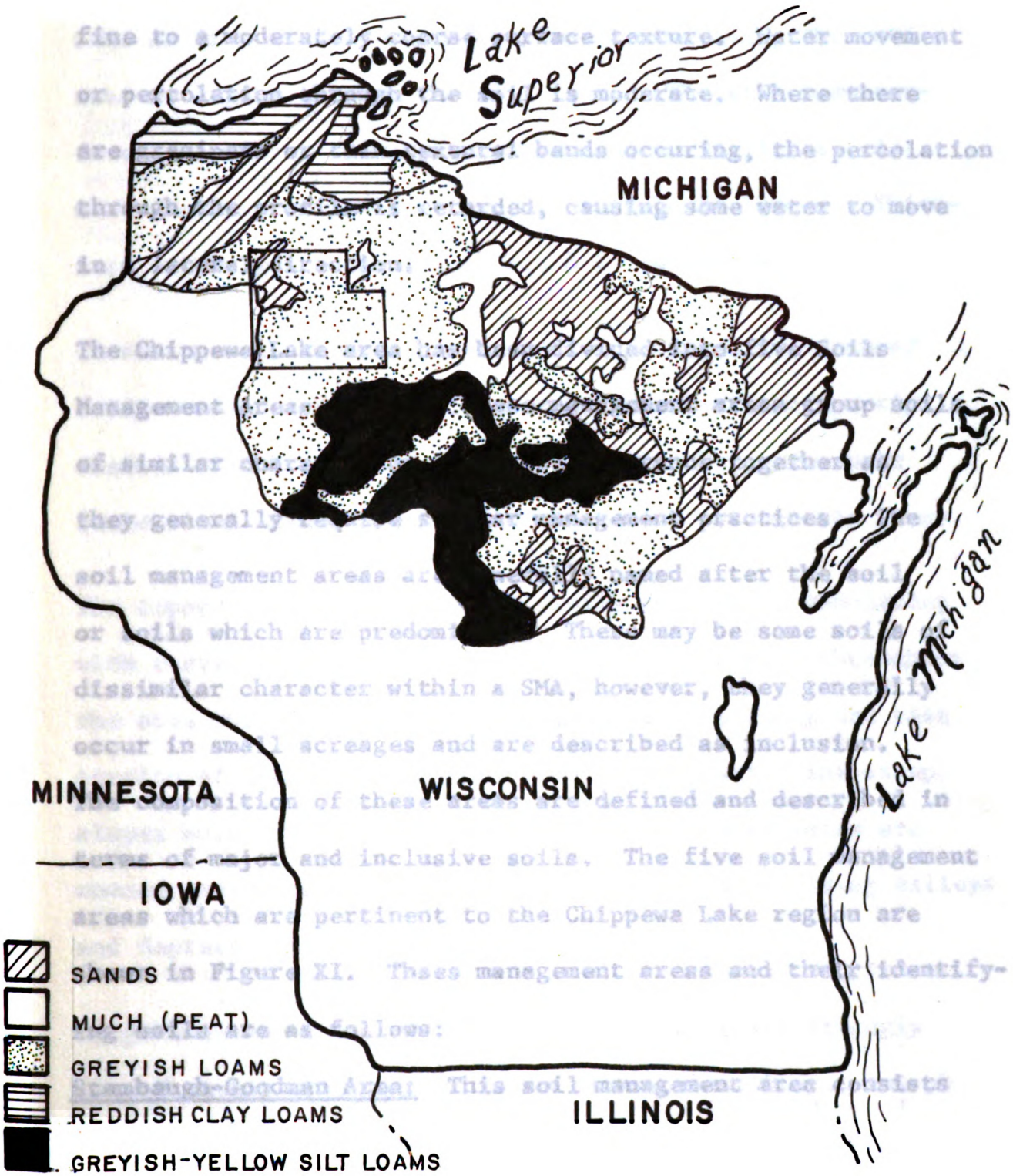

Figure X. Major Soils in the Northern Highland Physiographic Province.

Soils within the Chippewa Lake region range from a moderately fine to a moderately coarse surface texture. Water movement or percolation through the soil is moderate. Where there are gragipans or thin textural bands occuring, the percolation through the profile is retarded, causing some water to move in a lateral direction.

The Chippewa Lake area has been divided into five Soils Management Areas (SMA).[24] These management areas group soils of similar character or landscape occurance together as they generally require similar management practices. The soil management areas are generally named after the soil or soils which are predominate. There may be some soils of dissimilar character within a SMA, however, they generally occur in small acreages and are described as inclusion. The composition of these areas are defined and described in terms of major and inclusive soils. The five soil management areas which are pertinent to the Chippewa Lake region are shown in Figure XI. Thses management areas and their identifying soils are as follows:

Stambaugh-Goodman Area: This soil management area consists of deep, well and moderately well drained silt loam deposits

---

[24]Chequamegon National Forest; Soils Management Report for Chippewa Flowage, Sawyer County, Wisconsin; p. 4.

underlain by sand and/or coarse sandy loam to loamy sand till. Sand or fine gravel is commonly found underlying the entire area at depths greater than six feet. The silt loam surface generally extends to depths of 30 to 36 inches. A weak fragipan is found at depths of 18 to 24 inches. Thickness of the gragipan ranges from 8 to 24 inches.

In addition to the silt,loam soils are inclusive areas of sandy outwash soils as well as somewhat poorly and poorly drained silt loam soils. Narrow alluvial bottoms can be found along creeks and streams which flow through the areas.

The topography of this area is gently rolling to undulating with convex slopes ranging from 2 to 8 per cent. Throughout the area there are relatively flat spots and along the east portion of Lake are slopes of 8 to 25 per cent. The steep slopes occur where depressional areas and water holes are common and where the upland areas adjoin the low lying valleys and depressions.

In general the soils of this management area are strongly to moderately acid with a medium natural fertility. The ph values range from 5.0 in the plow layer to 6.0 in the substratum. The productivity is rated good, but needs the addition rates of lime and fertilizer. The infiltration and

mountain by sand drifted across many land as long as [illegible] hill. Land of this group is commonly used for grazing, and native [illegible] rather than [illegible]. The soils are [illegible] surface generally extends to depths of 30 to 50 inches. A [illegible] to depths of 60 to 72 inches. Thickness of the profiles ranges from 8 to 72 inches.

In addition to the silty loam soils are [illegible] areas of sandy outwash soils as well as [illegible] moderately and [illegible] drained silt loam soils. [illegible] alluvial bottoms can be found along creeks and streams which [illegible].

The topography of this area is gently rolling to undulating with convex slopes ranging from 2 to 5 per cent. Throughout the area there are relatively flat areas and along [illegible] portion of [illegible] are slopes of 6 to 12 per cent. The steeper slopes occur where depressional areas and [illegible] are common and where the upland areas adjoin the low lying valleys and depressions.

In general the soils of this watershed area are strongly to moderately acid with a medium natural fertility. The pH values range from 5.0 in the [illegible] to 6.0 in the [illegible]. The productivity is rated good, but soils [illegible] of lime and fertilizer. [illegible] and

percolation rates are moderate with the percolation being retarded because of the fragipan.

Pence-Padus: This soil management area consists of relatively shallow sandy loam to loam surfaces overlying sand and/or fine gravel. Depths of the surface textures range from 14 to 26 inches with sand or fine gravel extending over the entire area below 26 inches. In the Padus soil, a very weak fragipan may be found. The lower portion of the pan contains a slight increase in clay content. When found, the "pan" occurs just above the outwash material.

These management areas are found on nearly level to gently undulating topography. Steep slopes are not commonly found. Dominant slopes are in the 3-6 per cent range with some areas in the 10-15 per cent range. Relatively small depressional areas make up about 10 per cent of the total area and are occupied by poorly drained mineral and organic soils.

The soils making up these management areas are strongly to moderately acid and are low to medium in natural fertility. The ph ranges from 5.0 to 6.5 . The soil is fair to good in productivity, but will become droughty during dry summer months. Inflitration is moderate and percolation is moderately rapid to rapid. Scattered stones can be found, but are not limiting

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to any usage.

Vilas-Crivitz Area: This soil management area comprises acid, well to excessively well drained, soils which have a shallow loamy sand to light sandy loam surface overlying outwash sand. Thickness of the surface varies from 4 to 18 inches, and texture of the subsoil ranges from fine sand to medium sand. Soil organic matter is generally lacking in these soils with only the surface 6-8 inches having limited amounts (10-15)(tons/acre).

The topography ranges from a nearly level to very gently undulating surface with only a very small portion having slopes greater than 8 per cent.

High water tables are commonly found in the depressional areas, but these depressions are generally small and limited. The soils which occupy these areas range from somewhat poorly to poorly drained. Organic soils are also present.

Droughty conditions and low fertility limit the use of these areas as sites for recreational developments. They are well drained and will resist compaction, but the establishment of vegetation will be difficult. The Ph of this area ranges from 5.2 to 5.6.

to any [illegible].

Hilly-Rolling Area: This soil map unit area occupies [illegible] acid, [illegible] to excessively well drained, soils which have a [illegible] loamy sand to light sandy loam [illegible] or [illegible] [illegible] sand. Thickness of the surface varies from 6 to 12 inches, and texture of the subsoil ranges from fine sand to [illegible] loam. Soil organic matter is generally lacking, in those soils with only the surface 6-8 inches having limited amounts (10-15) (tons/acre).

The topography ranges from a nearly level to very [illegible] undulating, surface with only a very small portion having slopes greater than 8 per cent.

High water tables are commonly found in the depressional areas, but these depressions are generally small and limited. The soils which occupy these areas range from somewhat poorly to poorly drained. Organic soils are also present.

Topography conditions and low fertility limit the use of these areas as sites for recreational development. They are well drained and will resist compaction, but the establishment of vegetation will be difficult. The [illegible] of this area ranges from [illegible] to [illegible].

Poskin-Adolph-Minocqua; These soils are located in the low or depressional areas which generally are somewhat poorly to poorly drained. Its surface has a texture of a rather thick loam to a silt loam. The underlying subsoil is of a coarse sandy loam. In the extreme western portion of the Lake perimeter, the subsoil is coarser and may grade into sand and gravel within 42 inches of the surface.

The upper story of this loam and silt loam may vary from 20 inches to over 60 inches. Usually coarser textures can be found around 36 inches. The poorly drained soils are commonly found to have thicker deposits of the fine textured materials.

There is often a slight increase in clay content just above the till, however, restricting pans are uncommon.

The topography of this management area is of a low lying and nearly level condition. In the depressional areas, the slopes are concave and gentle with slopes ranging from 0 to 4 per cent. In places the surface may appear to be somewhat pitted.

The inclusive soils in this management area have a shallower upper story then the predominent soils and are generally coarser throughout the profile.

Unemployment Insurance. There were increased in the re-
ed to unemployment insurance mainly due to a reduced pro-
ty among insured. The number in receipt of benefit in
ember 1932 was 2,707,000 with 1,600,000 suffering from
ed family level condition. In the Unemployment Grants,
ere is a slight increase in the number of a few types
ployment due to seasonal causes, but the number of
ons remains.

There is also a slight increase in the number receiving
time Sick, but the number, generally, has not varied
ly.

Public Assistance. The number receiving Public Assistance
ed to have risen during the year 1932 by 200,000 to
,000 persons. Family means tests were applied to
,000 persons. The number receiving medical relief
ed to have risen by 200,000 persons. Family means tests
applied to 1,000,000 persons. The number receiving
ical relief was 1,000,000 persons.

Public Assistance. The number receiving Public Assistance
ed to have risen during the year 1932 by 200,000 to
,000 persons. Family means tests were applied to
,000 persons. The number receiving medical relief

Organic Soils: The organic soils are the last of the Soils Management Areas to be studied on the Chippewa Lake, and its adjacent lands. They are the smallest of the entire group and are predominantly made up of depressional areas filled with more than 18 inches of organic matter. The areas occupy the old river beds or stream channels, inlets or bays of larger bodies of water are also classified in this management area.

Generally, these areas are of a strongly acid make-up with only sphagnum, leatherleaf, and poorly scattered black spruce being able to survive. There may be some encroachment of willows, white cedar and tag alder where the organic material is less acidic. Usually the organic material is sedge peat and with some woody peat occupying the more productive areas. The Ph of this area ranges from 5.8 to 6.2.

The topography of this management area is always flat as these soils are usually located in areas where the water table is only a few inches from the surface or they may be in many cases a floating mat.

The soils survey made by the U. S. Forest Service covered a total acreage of 56,000 acres. The remaining 16,150 acres were water. The breakdown of soil management groups are:

Acreage of total survey area. . . . . 56,600 acres

Total area of land. . . . . 40,450 acres

Total area of water . . . . . 16,150 acres

Soil Management Area	Acres	Percent of total land
Stambaugh-Goodman	9,920	24.6
Pence-Padus	17,800	43.9
Crivitz-Vilas	2,650	6.6
Almena-Poskin-Minocqua	5,880	14.5
Organic	4,200	10.4
Totals	40,450	100.00 [25]

The following three pages are charts showing: Table VII "Soil Qualities and uses of Soil Management Areas", Table VIII "Relative Producitivty of Soils for Tree Growth", Table IX "Rating Factors for Recreational Areas".

The five Soil Management areas along with their various locations are shown in Figure XI.

Minerals

The State of Wisconsin is not considered to be an outstanding mineral-producing state. In 1961 it ranked 34th amoung the states producing only four tenths of one per cent of the United States Total. The total mineral production for Wisconsin in 1962 is shown in Table X.

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[25] Ibid; p. 6.

TABLE VII

SOIL QUALITIES AND USES OF SOIL MANAGEMENT AREAS

SOIL MANAGEMENT AREA	TIMBER			WATER		WILDLIFE	RECREATION		SOIL QUALITIES AND HAZARDS	
	PRODUCTIVITY	BRUSH HAZARD	WIND THROW HAZARD	WATER STORAGE	SURFACE RUNOFF	BIG GAME BROWSE	CAMP-GROUND POTENTIAL	HIKING POTENTIAL	INHERENT PRODUCTIVITY	EROSION *HAZARD
Stambaugh Goodman Area	High	High	Low	High	Moderated	High	Good	Good	High	Moderate
Pence-Padus Area	Moderate	Moderate	Low	High	Low	High	Good	Good	Moderate	Low
Crivitz-Vilas Area	Low	Moderate	Low	High	Low	Moderate	Fair	Good	Low	Low
Alemna-Poskin Minocqua Area	Low	High	Moderate	Moderate	Moderate	High	Poor	Poor	Low	Low
Organic Area	Low	Moderate	High	High	High	Moderate	Poor	Poor	Moderate	Low

*For undisturbed sites with normal cover of vegetation.

TABLE VIII
RELATIVE PRODUCTIVITY OF SOILS FOR TREE GROWTH

SOIL NAME AND SYMBOL	TIMBER PRODUCTIVITY CLASSES		FACTORS INFLUENCING TIMBER GROWTH				
	TREE SP Hwd.	TREE SP Aspen	SOIL FERTILITY	MOISTURE HOLDING CAPACITY	BRUSH COMPE-TITION	SEEDLING MORTALITY	WIND THROW HAZARD
S-G Area							
Stambaugh silt loam	II	II	Medium	High	Severe		Slight
Goodman silt loam	I	II	Medium	High	Severe		Slight
P-P Area							
Pence sandy loam	III	II	Medium	Medium	Moderate		Slight
Padue loam	III	II	Medium	Medium	Severe		Slight
C-V Area							
Crivitz loamy fine sand	V	II	Low	Low	Slight		Slight
Vilas loamy sand	V	II	Low	Low	Slight		Slight
A-P-M Area							
Almena silt loam	III	II	Medium	High	Severe		Moderate
Poskin Silt Loam	III	II	Medium	High	Moderate		Moderate
Minocqua loam	IV	III	Medium	High	Moderate		Severe
Org.Area	V	V	Low-Medium	High	Moderate		Severe

TABLE IX
RATING FACTORS FOR RECREATIONAL AREAS

SOIL NAME AND SYMBOL	SOIL TRAFFIC-ABILITY	SOIL COMPACT-ABILITY	SANITATION	
S-G Area				
Stambaugh sil	Fair	Fair	Fair	
Goodman sil	Fair	Fair	Fair	
P-P Area				
Pence sl	Good	Good	Good	
Padus 1	Fair	Fair	Good	
C-V Area				
Crivitz	Good	Good	Good	
Vilas	Good	Good	Good	
A-P-M Area				
Almena sil	Poor	Poor	Poor	
Poskin sil	Poor	Fair	Poor	
Minocqua 1	Poor	Poor	Poor	
Organic Area	Poor	Poor	Poor	

ORGANIC

ORGANIC

PENCE - PADUS

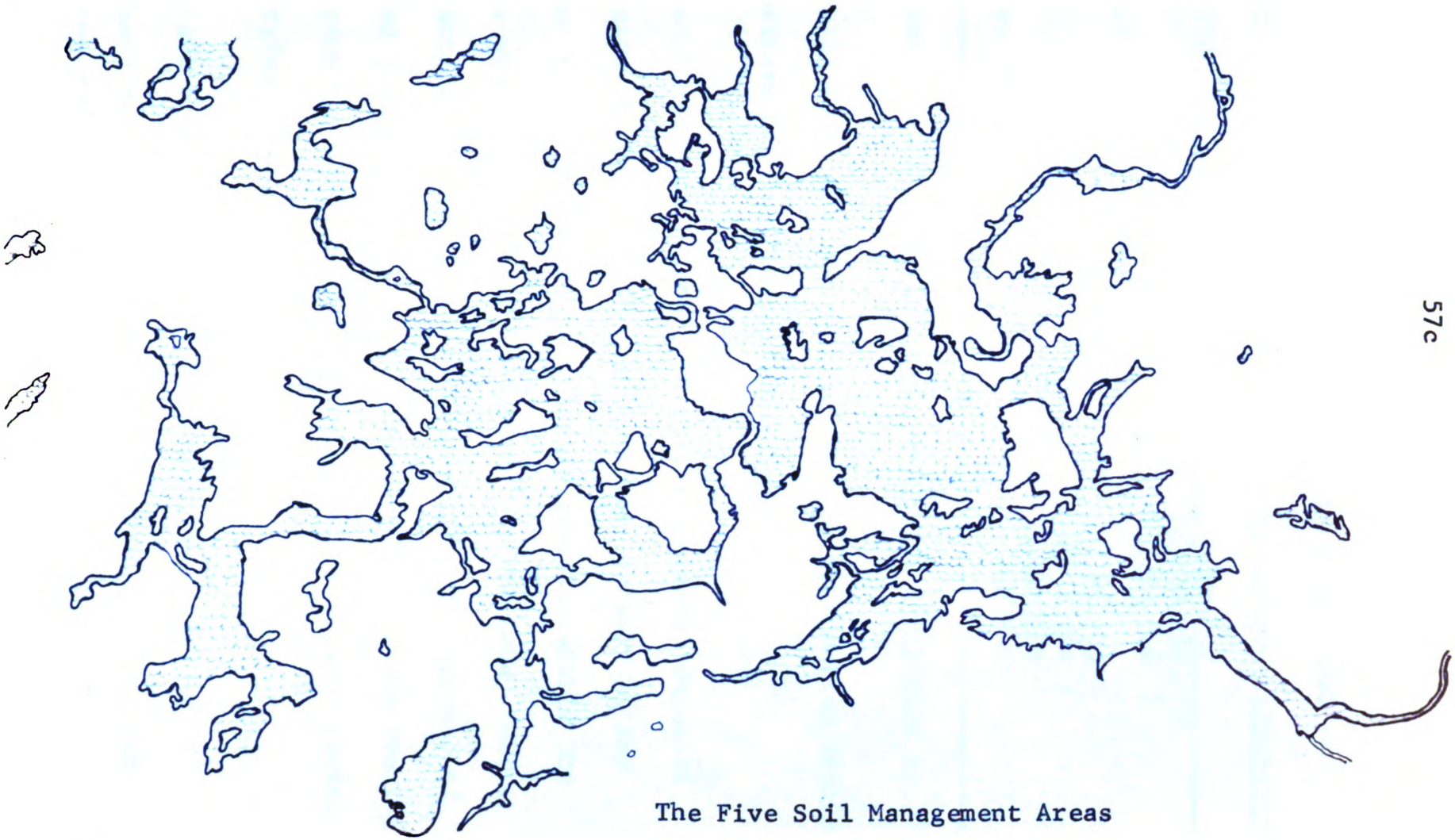
FRANCE - PARIS


ALMENA- POSKIN- MINOCQUA

АЛЕМА- ЬОЗКИН-ИКЗОЬ АИОСОИИМ


STAMBAUGH - GOODMAN

STAMBAUGH-HOUGHTON



The Five Soil Management Areas

TABLE X

Total mineral production in Wisconsin, 1962

Minerals	Tons
Sand and gravel	24,408,000
Stone	19,709,000
Iron ore (figures undisclosed)	
Zinc	13,292
Lead	1,394
Clays	137,000
Abrasive stones	569,000

Source: Robert W. Finley; Geography of Wisconsin; p. 34.

Figure XII shows the mineral distribution by Counties within the Northern Highland Physiography Region.

In general, sand and gravel are the only mineral deposits being used at this time in the immediate vicinity of the Chippewa Lake. There are some granit quarries within the region, but because of their proximity to the Lake, their importance is not pertinent to this study. The sources of sand and gravel are largely from water laid deposits resulting from glaciation. Deposits were laid down between outwash plains and marginal moraines.[26]

Eskers and moraines which provide the area with much of its visual beauty are utilized as a source of gravel and

[26]Robert W. Finley; Geography of Wisconsin; p. 37.

Table II

Total mineral production in Wisconsin, 1935

Mineral	Value
Sand and gravel	[illegible]
Stone	[illegible]
Iron ore (Figures unavailable)	
Lime	[illegible]
Lead	[illegible]
Clays	[illegible]
Abrasive stones	[illegible]

Source: Robert [illegible]; Mineral Industry of Wisconsin, p. 96.

Figure III shows the general distribution by counties within the Northern Highland topography region.

In general, sand and gravel are the only mineral deposits being used at all, this in the immediate vicinity of the Chippewa Lake. There are some granite quarries within the region, but because of their proximity to the lake, their importance is not pertinent to this study. The sources of sand and gravel are largely the water laid deposits resulting from glaciation. Deposits were laid down as outwash plains and marginal moraines.[1]

Kames and moraines which provide the area with most of its visual beauty are utilized as a source of gravel and

[1] Source: [illegible]; Geography of Wisconsin, p. 97.

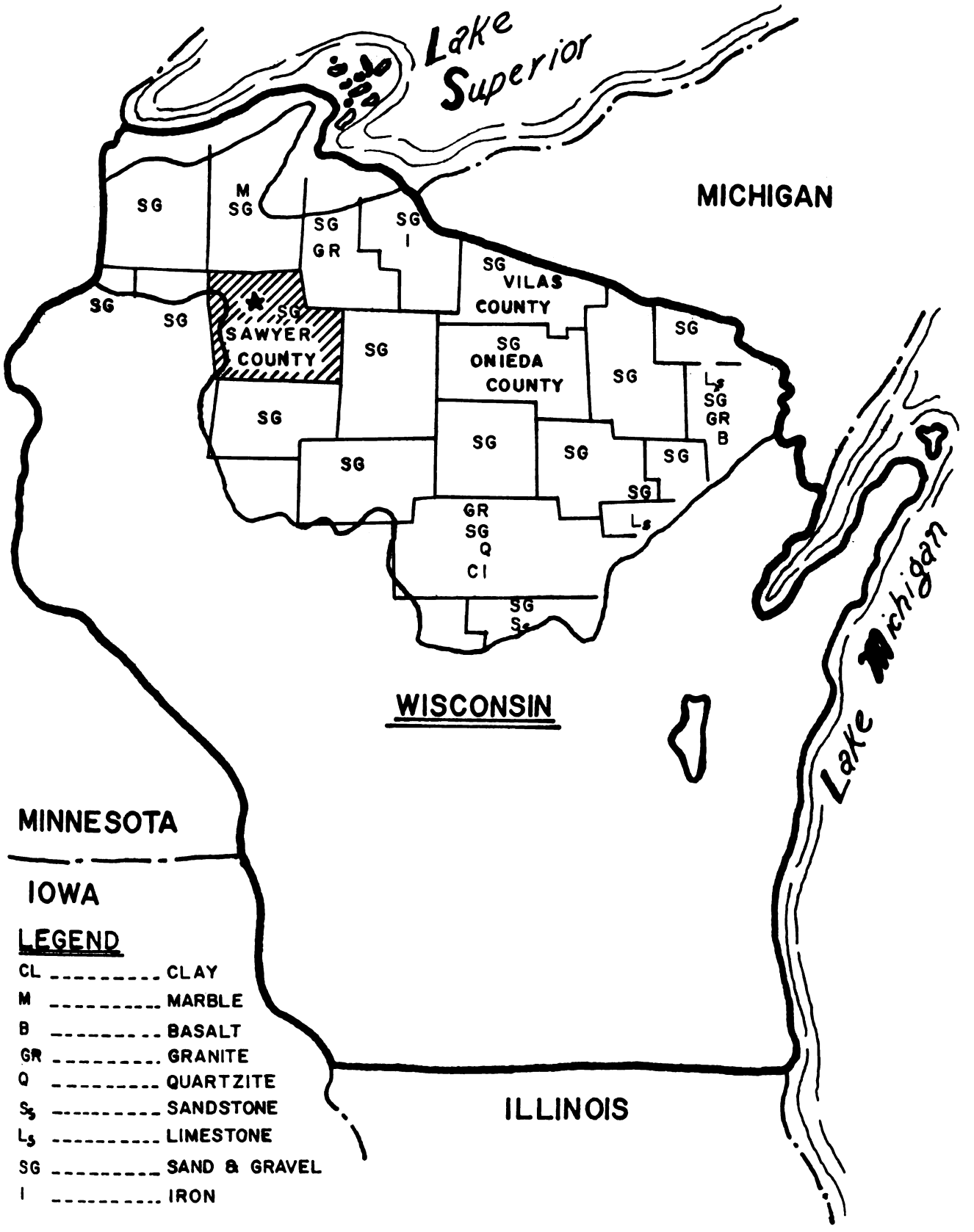


Figure XII. The Mineral Distribution by Counties within the Northern Highland Physiography Region.

sand. These land formations occur in abundance. The supply of these minerals is greater than the present demand and it should continue to be able to meet future needs.

Magnetic data gathered during the original geological investigation of Wisconsin, indicated the presence of iron bearing rocks. The evidence was not great enough to initiate further exploration of the area. One reason being that the bedrock is covered to great depths with material laid down during the Ice Age.

> Discovery of valuable minerals in the lake vicinity is unlikely since they are generally not associated with the types of bedrock which are believed to underline the area.[27]

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[27]U.S. Department of Agriculture; "Lake Chippewa Flowage Report"; 1967.

> "Whereas, the Board of Supervisors has determined that the proposed Ordinance is in conformity with the General Plan and the eight priority policies of Planning Code Section 101.1 for the reasons set forth in Planning Commission Resolution No. [illegible], and hereby incorporates such reasons by reference herein as though fully set forth; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will serve the public necessity, convenience and welfare for the reasons set forth in Planning Commission Resolution No. [illegible], and hereby incorporates such reasons by reference herein as though fully set forth; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance is consistent with the Priority Policies of Section 101.1 of the Planning Code for the reasons set forth in Planning Commission Resolution No. [illegible], and hereby incorporates such reasons by reference herein as though fully set forth; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the housing element of the General Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Transit First Policy by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Jobs-Housing Linkage Program by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Inclusionary Affordable Housing Program by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Downtown Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Residential Hotel Conversion and Demolition Ordinance by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Mission Area Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Eastern Neighborhoods Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Market and Octavia Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Balboa Park Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Central Waterfront Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Visitacion Valley Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Western Shoreline Plan by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Recreation and Open Space Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Urban Design Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Environmental Protection Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Air Quality Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Commerce and Industry Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Transportation Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Community Facilities Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Community Safety Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Arts Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Recreation and Open Space Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Urban Design Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Environmental Protection Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Air Quality Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Commerce and Industry Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Transportation Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Community Facilities Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Community Safety Element by [illegible]; and

> "Whereas, the Board of Supervisors finds that the proposed Ordinance will support the City's Arts Element by [illegible]; and

---

[illegible]

Flora

At one time Wisconsin had a forest that covered over 85 per cent of the State's 35 million acres.[28] The three major classifications which covered the 30 million acres were the conifers (upland and swamps, hardwoods (northern), and hardwoods (southern).

Of the conifers, the white pine (Pinus strobus) was considered the most valuable. They were found on sandy loams and better sands which made for good accessibility. Some of the other important coniferous species were the red pine (Pinus resinous), commonly known as the norway pine, eastern hemlock (Tsuga canadensis), which was sought after for the tanning industry, and the jack pine (Pinus banksiana). The jack pine was ignored by the earlier lumbermen, but later was taken for its pulpwood value. White spruce (Picea glauca) and the balsam fir (Abies balsamea) were found growing in the northern parts with the major occurance being in the Lake Superior Lowlands.

Of the swamp conifers, the black spruce (Picea mariana), white cedar (Thuja Occidentalis) and the tamarack (Larix decidua) are the domineering species, with only the tamarack being

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[28]Robert W. Finley; Geography of Wisconsin; p. 64.

In one time Michigan had a forest that covered over [illegible] per
cent of the State's [illegible] million acres.[2] [illegible]
[illegible] 17 million acres [illegible]
conifers (spruce and fir), hardwoods (deciduous), and
[illegible] ([illegible]).

Of the conifers, the white pine (Pinus strobus) was con-
sidered the most valuable. They were found in sandy loams
and better soils which made for good accessibility. [illegible]
the other important conifers [illegible] were the red pine
(Pinus resinosa), commonly known as the Norway pine, [illegible]
hemlock (Tsuga canadensis), which was sought after for its use
[in the] tanning industry, and the jack pine (Pinus banksiana).
The jack pine [illegible] by the earlier lumbermen, [illegible]
[illegible] valuable. [illegible] (Larix laricina)
and the balsam fir (Abies balsamea) were found [illegible] in the
northern parts with the major concentration being in the Upper
Peninsula.

Of the major conifers, the black spruce (Picea mariana),
white cedar (Thuja occidentalis) and the tamarack (Larix laricina)
are the dominating species, with only the [illegible] being

---

[2]Dodge [illegible]; [illegible] in Michigan; p. 68.

generally confined to the northern areas.

The hardwoods are split into two geographical associations, the northern and southern. Hardwoods in the northern section are made up of sugar maple (Acer saccharum), yellow birch (Betula lutea), paper birch (Betula papyrifera), basswood (Tilia cordata), american elm (Ulmus americana), red oak (Quercus borealis), and american beech (Fagus grandifolia) which is confined to the eastern portion of the State. Those in the southern section are the sugar maple (in localized areas), white oak (Quercus alba), black oak (Quercus nigra), bur oak (Quercus macrocarpa), red oak, shagbark hickory (Carva ovata), white ash (Fraxinus americana), and basswood. Beech is found, but again in the eastern sections.

> Estimates of Filibert Roth, forester employed by the Wisconsin Geological and Natural History Survey, 1898, placed the volume of the original forest in the 27 northernmost counties as follows:
>
> | | | |
> |---|---|---|
> | a. Pine | 129,600,000,000 board feet | 65 per cent |
> | b. Other conifers | 10,000,000,000 board feet | 5 per cent |
> | c. Hardwoods | 60,000,000,000 | 30 per cent |
>
> (Roth, though his estimate for hardwoods was less than that for conifers.)[29]

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[29]Robert W. Finley; Geography of Wisconsin; p. 65.

generally confined to the western area.

The hardwoods are quite like the [illegible] deciduous, the northern and southern. Hardwoods of the northern section are made up of sugar maple (Acer saccharum), yellow birch (Betula lutea), paper birch (Betula papyrifera), basswood (Tilia glabra), American elm (Ulmus americana), red oak (Quercus borealis), and American beech (Fagus grandifolia) which is confined to the eastern portion of the State. Those in the southern section are the sugar maple (in [illegible] areas), white oak (Quercus alba), black oak (Quercus velutina), bur oak (Quercus macrocarpa), red oak, shagbark hickory (Carya ovata), white ash (Fraxinus americana), and basswood. Beech is found, but again in the eastern sections.

[illegible] estimates of [illegible], Forester employed by the [illegible] Geological and Natural History Survey, [illegible], placed the volume of the original timber in the [illegible] northeastern counties as follows:

a.	Pine	[illegible] board feet	[illegible]
b.	Other conifers	[illegible] board feet	[illegible]
c.	Hardwoods	[illegible]	[illegible]

([illegible] this estimate [illegible] than that for [illegible].)

[illegible]

Presently, there is approximately 69 per cent, or 10 1/2 million acres of the northern twenty-one counties in a forest land. The total volume of wood in these forests comes to some sixty-two million cords, or if they were cut in eight-foot sticks, it would fill 3,000,000 railroad gondola cars; and if stacked up four feet high, it would make a continuous pile alongside 47,000 miles of roads.[30]

The forest types of the northern forests are changing from its earlier composition. The aspen, white pine, paper birch, and balsam fir have decreased in acreage. While the maple, hemlock, yellow birch and black spruce have remained about the same, the jack pine and red pine have shown a noticeable increase.

Today the volume of sawlogs has increased, but they are of poorer quality and of smaller size trees than were in the original stands.

> We have less sawtimber in the more desirable species such as sugar maple, yellow birch and hemlock, but more in oak, basswood and elm. The pulpwood volume is mainly concentrated in the northern counties of the State. The northeast and northwest areas have about four-fifths of the available pulpwood in the State. The forests of the North are growing rapidly. The

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[30]John A. Beale; "The Forest Resources of Northern Wisconsin"; The Natural Resources of Northern Wisconsin; p. 45.

> net increase is about 2.4 million cords annually or somewhat more than the yearly harvest.[31]

Figures XIII and XIV, the vegetation groups for 1850 and 1956 show the changes in species.

> Although man is now the dominant species on the earth, his very survival depends upon the intricately complex ecological balance among all plants and animals within their respective geologic and climatic environments. When the population was small and the resources of the American continent appeared to be virtually unlimited, one tolerated a degree of resource exploitation that can no longer be sustained. It is now firm national policy that the soils, water supplies, and the plant and animal life of the country be protected, lest the ecological balance be further upset and the nation's welfare be thereby endangered.[32]

Fauna

In order for wildlife to survive as we know it today, it is necessary for man to maintain and provide the maximum diversification of forest types along with an adequate harvest of game populations. At one time nature provided this diversity through fires, insect and disease epidemics and wind storms. Today, we must depend on the forst managers for guidance instead of the catastrophic events.

> Wildlife, like plants, is controlled by its environment. The ruffed grouse dwells in the depths of the dense forests; the spotted sandpiper teeters and bobs along the lake shores. The otter makes a playground

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[31] Ibid; p. 46

[32] Melvin M. Webber; "Relations between the Social-Physical Environment of Outdoor Recreation and Mental-Physical Health"; p. 248.

and Lovejoy is about 0.1 million acres [illegible] annually or some [illegible] more than [illegible] yearly [illegible].[31]

Figures III and XIV, the vegetation types [illegible] show the changes in species.

> Although man is not the dominant species on the earth, his very survival depends upon the [illegible] ecological balance among all plants and animals within their respective [illegible] and their environment. When the population was small and the resources of the American continent appeared to be virtually unlimited, one tolerates a degree of resource exploitation that can no longer be sustained. It is not [illegible] policy that the [illegible], [illegible] and [illegible] of the country [illegible], that the ecological balance be [illegible] and the nation's wildlife be [illegible] safeguarded.[32]

<u>Birds</u>

In order for wildlife to survive as we know it today, it is necessary for man to maintain and provide the [illegible] diversification of forest types along with an adequate harvest of game populations. At one time nature provided this diversity through fires, floods and disease epidemics and wind storms. Today, we must depend on the forest managers for guidance instead of the uncontrollable events.

Wildlife, like plants, is controlled by its environment. The ruffed grouse thrives in [illegible] the [illegible] along the [illegible]. The [illegible].

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[31] Ibid., p. [illegible].

[32] Alvin R. [illegible], Relations Between [illegible] Environment of Outdoor Recreation and [illegible] Mental Health, p. [illegible].

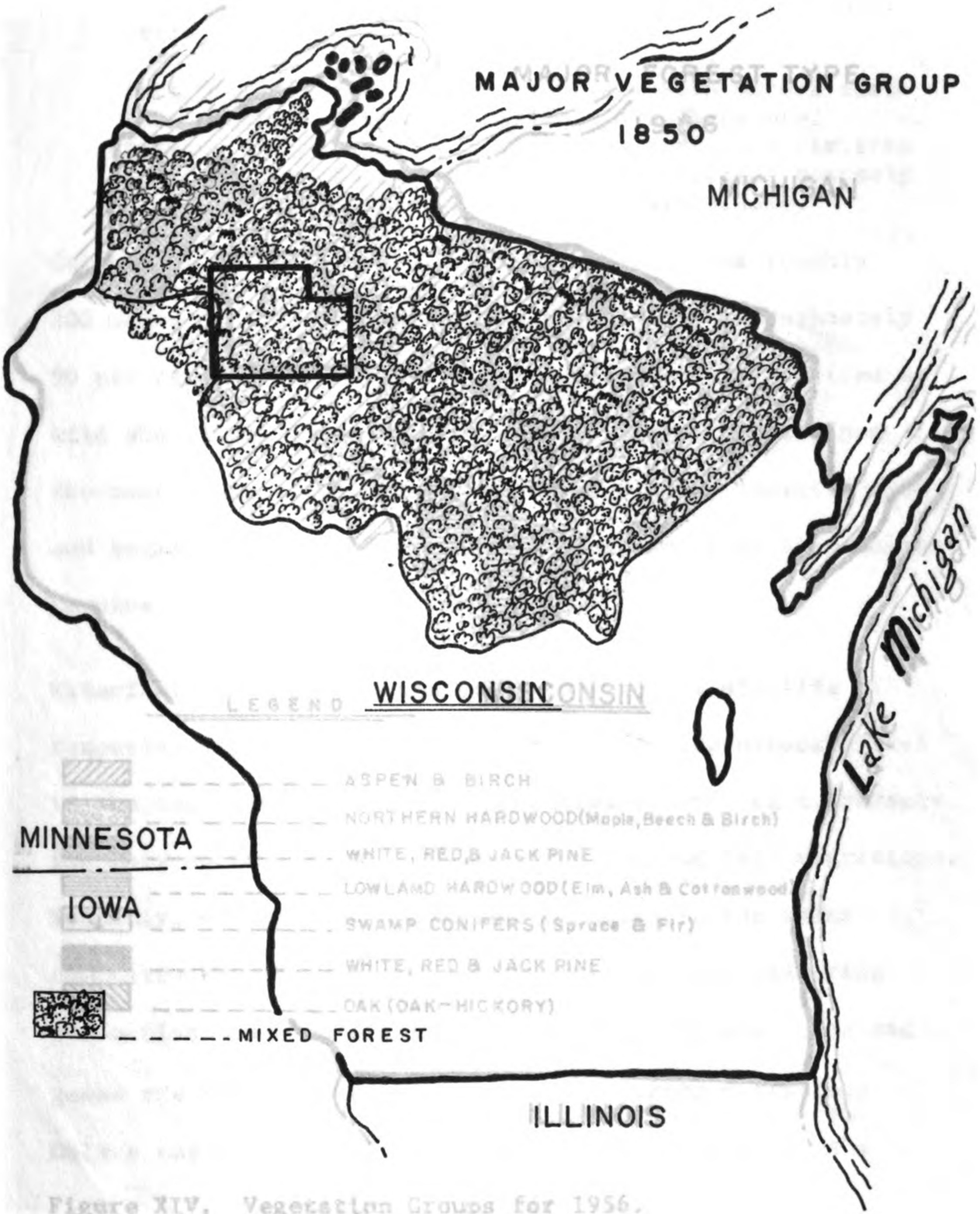

Figure XIII. Vegetation Groups for 1850.

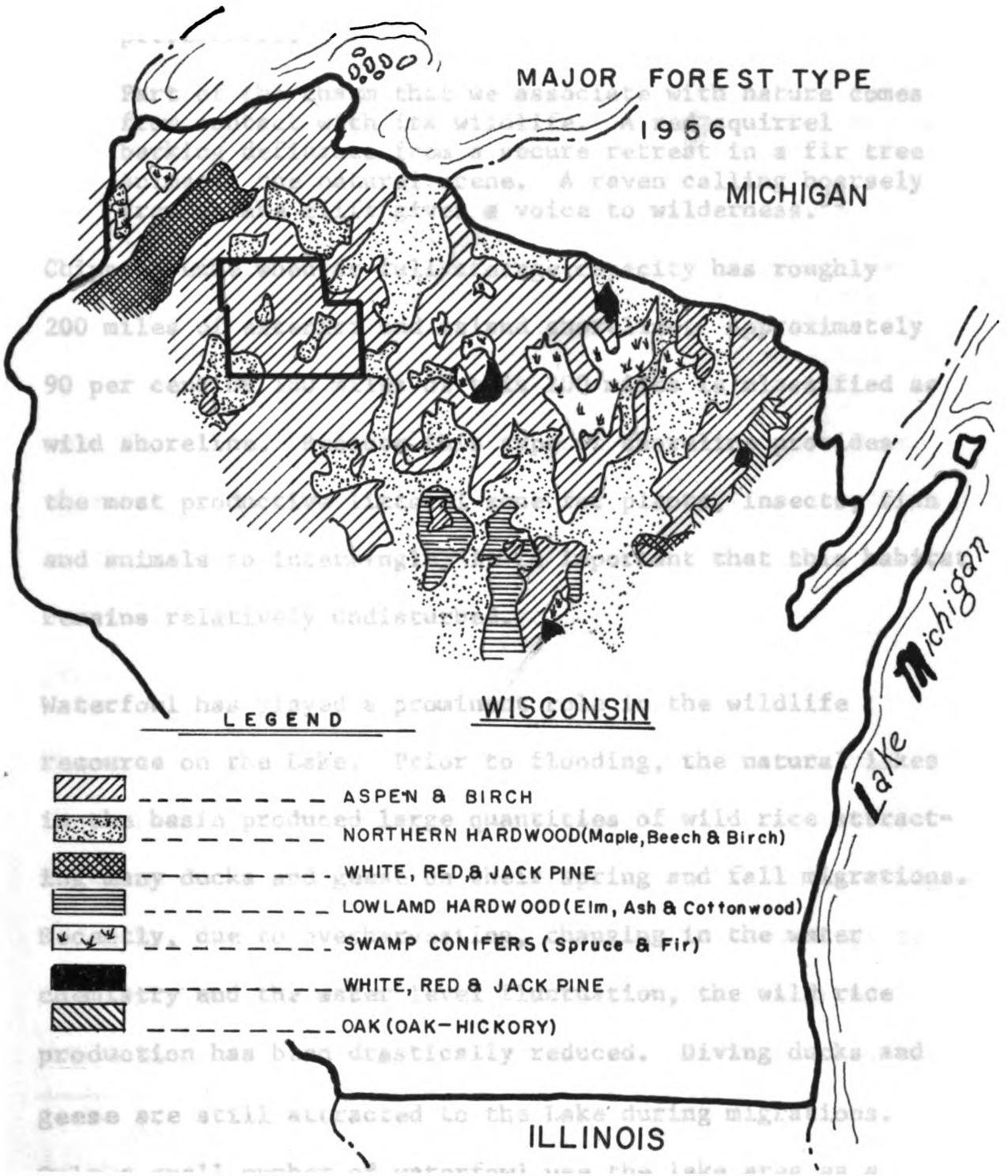

Figure XIV. Vegetation Groups for 1956.

> of the lakes and streams. In similar manner, every form of animal life registers distinct environmental preferences.
>
> Part of the charm that we associate with nature comes from contact with its wildlife. A red squirrel barking definance from a secure retreat in a fir tree animates the natural scene. A raven calling hoarsely from a lake cliff gives a voice to wilderness.[33]

Chippewa Lake when at full storage capacity has roughly 200 miles of exterior and island shoreline. Approximately 90 per cent or 180 miles of this 200 miles is classified as wild shoreline. Because this type of shoreline provides the most productive littoral zone for plants, insects, fish and animals to intermingle, it is important that this habitat remains relatively undisturbed.

Waterfowl has played a prominent role in the wildlife resource on the Lake. Prior to flooding, the natural lakes in the basin produced large quantities of wild rice attracting many ducks and geese on their spring and fall migrations. Recently, due to overharvesting, changing in the water chemistry and the water level fluctuation, the wild rice production has been drastically reduced. Diving ducks and geese are still attracted to the Lake during migrations. Only a small number of waterfowl use the lake area as a

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[33]U.S. Department of Interior; "Our Fourth Shore"; National Park Service; 1959; p. 35.

[illegible]

permanent habitat.

> Many shallow bays on the Chippewa Lake appear to have desirable vegetative cover for waterfowl. In addition to the shallow bay areas there are 960 acres of land classified as wetlands on Northern States Power upland acres.[34]

> A very special environment is the marsh-not only for its unique assemblage of plants, but for its wildlife as well. Around the margins of the marsh prowl the raccoon, mink, otter and other predators....In the wildlife management picture, marshes are vastly important as migration stopovers and nesting sites for ducks and other waterfowl.[35]

Many Mallards, black ducks, teal and wood ducks have been observed in the area. At the present, no data is available on the total waterfowl production in the Lake region, however, a great deal of the upland acreage could be improved to increase future waterdowl production.

The ruffed grouse is the most popular of the upland small game species in the Cnippewa Lake region. In contrast to being the most popular, the Drumming transects (of partridges and other birds to produce a sound resembling drumming) in Sawyer County, indicates a declining trend in the grouse population over the last five years, and has been below the

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[34]Department of Natural Resources; "Public Recreation on the Big Chip"; 1968; p.

[35]U.S. Department of Interior; "Our Fourth Shore"; National Park Service; 1959; p. 35.

State average.

> The plant changes of the past-lumber period altered northern monotopic mature forests into massive areas of interspersed second growth, which were periodically reduced by fires to seedling beds. These changes presented to the ruffed grouse large areas of ideal habitat... Today we still have abundance and scarcity, but it is doubtful if the magnitude of abundance will ever approximate the early records. It is more than likely that our now-fire-free maturing timber has a dampening effect on each period of partridge abundance. Management efforts will alleviate local limiting factors and concentrate birds, but large-scale abundance will come through no direct human effort.[36]

Vegetative cover is quite varied and should be capable of producing a good ruffed grouse population.

The Lake and the adjacent undisturbed shoreline provides prime nesting habitat for the bald eagles, osprey, and great blue herons. The author personally knows the location of five eagle nests within five miles of the Lake.

> One eagle's nest and three osprey nests are known to be active on the Chippewa Flowage. In view of the precarious position of these species nationwide, efforts should be made to assure the continued occupancy of these nests. These locations are purposely not shown on any map...lest additional publicity results in further disturbance of the nesting areas.[37]

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[36]Robert A. McCabe; "Some Aspects of Wildlife and Hunting in Northern Wisconsin"; The Natural Resources of Northern Wisconsin; p. 62.

[37]Department of Natural Resources; "Public Recreation on the Big Chip"; 1968; pp. 17-18.

Osprey populations appears to be decreasing. The great blue heron feeds and nests in areas similar to the eagle and osprey and may soon follow the same corridor. Preservation of the undisturbed shoreline of this lake is of the utmost importance in maintaining a desirable feeding and breeding habitat for these three species.

In early historical accounts, deer were recorded to be both scarce and plentiful. The tall pines with little understory, heavy snow, and a population of wolves and Indians account for the sparse accurance of deer on the southern shores of Lake Superior, according to Schorger.[38] In the years before the loggers scattered pine chips and sawdust over the trailing arbutus, only moderate inroads on the deer population were made. By 1840, the logging industry began its expansion to be followed closely behind by many major fires.

> Opening the forest floors to sunlight by ax and fire fostered a growth of plans which formed a superb food and cover base for a deer population. The response was extended and hunting opportunities expanded. The legal bag for deer has since then been altered many times in response to fluctuating populations and to public pressure.

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[38]A.W.Schorger; 1953; The White Tailed Deer in Early Wisconsin; Trans.Wis. Acas. Sci., Arts and Letters; 42; 197-247.

[39]Robert A.McCabe; "Some Aspects of Wildlife and Hunting in Northern Wisconsin"; The Natural Resources of Northern Wisconsin; p. 58.

[illegible] popul[illegible] appears to be increasing. [illegible] burned fields and areas in areas which [illegible] openly and may [illegible]. [illegible] of the more [illegible] shortage of this land [illegible] importance to maintaining a desirable [illegible] habitat for these [illegible] species.

In early historical accounts, [illegible] were reported to be [illegible] and plentiful. The sand plains which [illegible], many [illegible], and a population of [illegible] the Indians [illegible] the [illegible] abundance of deer on the southern shores of Lake Superior, according to [illegible].[34] In the years before the logging scattered pine [illegible] and [illegible] the [illegible], only moderate numbers [illegible] were made. By 1880, the logging industry began [illegible] to be followed closely by many major fires.

> Checking the forest floors [illegible] by [illegible] created a growth of plants [illegible] root mat cover base for a deer population. The [illegible] was extended and [illegible] expansion. The [illegible] has, [illegible] attracted [illegible] in response to increasing populations and to public pressure.

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[34] [illegible]; 1951; The [illegible] in Early Wisconsin; Trans. Wis. Acad. Sci., Arts and Letters; [illegible].

[35] [illegible]; [illegible] of [illegible] and [illegible] in Northern Wisconsin, The [illegible] of Northern Wisconsin; p. 35.

Today the basic problem is to keep deer and deer habitat in balance and to encourage maximum allowable harvest for the good of the deer, the forest, the hunter, and the economy of the northern part of Wisconsin.

> In my opinion, one of the major game-management accomplishments in recent years has been the "variable quota" system of deer harvest developed by the Wisconsin Conservation Department. In brief, it attempts to promote harvest in accordance with deer abundance.[40]

The Chippewa Lake is located in Wisconsin Conservation Department management Unit 13, and it provides about 2.6% of the deer range in the entire unit. The most recent population survey which was made in 1964 estimated the over winter deer population at 12-20 deer per square mile of deer range.[41] Compared with past survey data, there has been an increase of about 5 deer per square mile from 1957 to 1964. The deer harvest in Unit 13 has increased to 3 deer per square mile.[42]

Since the Indians are allowed to hunt on tribal grounds in the vicinity of the reservation and lake area, the deer populations are below average for the management area.

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[40]Ibid; p. 58

[41]U.S.Department of Agriculture; "Lake Chippewa Flowage Report"; 1967.

[42]Ibid; p. 48

[illegible] [illegible] [illegible] [

The black bear population is unknown in the Lake area, however, their presence has been confirmed.

> Sawyer County ranked second statewide in the registered bear kill in 1963, fifth in 1964 and seventh in 1965.[43]

Chippewa Lake is identified as one of the leading muskellunge fishing areas in the world. It is often referred to as "the best" by leading sportsmen. Record size "muskies" are common. In 1949 the lake produced the world's record 69 pound 11 ounce "musky".[44] A brochure prepared by the Lake Chippewa Flowage Association, Inc. states that 1150 "muskies" were caught in 1966.

The lake also provides the angler with good walleye fishing. More fisherman fish the lake for walleyes than "muskies". On opening day of walleye season, May 13, 1967, a total of 380 cars were recorded at various access points around the lake. Since some fishermen may have left before the tally was completed, the result shows only part of the pressure of opening day. The registration addresses of cars parked at the lake on May 13 are shown as follows:

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[43]Ibid; p. 48.

[44]Ibid; p. 42.

The black bass population is unknown in the lake area, however, their presence has been confirmed.

> Walleye [illegible] ranks second [illegible] in the [illegible] which is [illegible] and seventh in 1965.[63]

Chippewa Lake is identified as one of the leading muskellunge fishing areas in the world. It is often referred to as "The best" by leading sportsmen. [illegible] catches are common. In [illegible] the lake produced the world's record 69 pound 11 ounce 'musky'.[64] A brochure prepared by the Chippewa Flowage Association, Inc. states that nine 'muskies' were caught in 1960.

The lake also provides the angler with good walleye fishing. [illegible] fish the lake for walleyes than muskellunge. On opening day of walleye season, May 15, 1967, a count of 950 cars were recorded at various access points around the lake. Since some fishermen may have left before the count was completed, the results show only part of the pressure of opening day. The concentration of cars [illegible] on the lake on May 15 are shown as follows:

---

[63]Ibid., p. 11.

[64]Ibid., p. 33.

TABLE XI

Registration addresses of cars parked at Lake Chippewa Lakes on May 13, 1967, opening day of fishing season.

States	Cars
Wisconsin	262
Illinois	88
Minnesota	16
Indiana	9
Iowa	5
Florida	2
Pennsylvania	1
California	1
Tennessee	1

Source: Department of Natural Resources; "Public Recreation on the Big Chip"; map 2.

Large size crappies, small and large mouth bass and various other species of panfish can be found in the waters of the lake.

[illegible] [illegible]

Registration addresses of [illegible] [illegible]
on May 15, 1961, opening day of fishing [illegible].

States	[illegible]
Wisconsin	[illegible]
Illinois	[illegible]
Minnesota	12
Indiana	[illegible]
Iowa	[illegible]
Florida	2
Pennsylvania	1
California	1
Tennessee	1

Source: Department of [illegible] [illegible]; [illegible] Recreation on the [illegible], [illegible].

Large size crappies, small [illegible] bass and walleyes [illegible] other species of panfish can be found in the waters of the Lake.

Summary Analysis

As each of these studies of the natural resources are surveyed, it is evident that each provides a unique influence on the total landscape of Chippewa Lake. If the soils were of a poor quality, the vegetation patterns would be different. This in turn, would support a varied fauna and perhaps would decrease the recreation potential of the area. It is the thrill of the unspoiled beauty which offers sounds, odors, and sights to the many tourists and residents of this portion of Sawyer County.

An old Greek philosopher said "Life is a gift of Nature, but a beautiful life is a gift of Wisdom". How right he was, for it is wisdom which will allow us to cope with the technical problems confronting us if we are to save these vanishing resources.

An development in this area must certainly reflect and utilize the advantages as well as disadvantages of these resources. Joseph Wood Krutch of Arizona said, "Conservation without love is a meaningless activity." Generally speaking, conservation is all the same. It is work done by concerned individuals and certain organizations because of the love and deep feeling they have for their land and their environment. It is not only to preserve the large bodies

of water, such as the Chippewa Lake, but rivers, open areas, swamps, forests, and the total human environment.

> The outdoors lies deep in American tradition. It has had immeasurable impact on the Nation's character and on those who made its history. This is a civilization painfully and only recently carved in conflict with the forces of nature--farms from unbroken prairie and cities from wilderness. The epic of American life is the tale of the pioneer, edging his way westward in the face of unending danger and hardship. When an American looks for the meaning of his past, he seeks it not in ancient ruins, but more likely in mountains and forests, of discovery, of encounter, of hard-won settlement.
>
> But there is more to the legacy than the land. From the beginning, one of the strongest currents in American thought has been the idea that the outdoors is a right of Americans--not only something to be enjoyed, but vital to our spirit. The idea was born in an agrarian society, for though the outdoors was then all about, some feared that it would not always be so.[45]

Finally it should be noted that these resources provide those ingredients which makes this area a vacational enjoyed and savored by more and more appreciating families each year. By furnishing natural scenic beauty, relaxation, year-round sports, and recreational activities, the Chippewa Lake area is a four-season's playground.

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[45] Outdoor Recreation for America; Report to the President and to Congress by the Outdoor Recreation Resources Review Commission, Primary Report Washington, D.C.: United States Government Printing Office, 1962; p. 13.

[illegible]

[illegible]

[illegible]

But there is more to the legacy than the land. From the beginning, one of the strongest currents in American thought has been the idea that the outdoors is a right of Americans--not only something to be enjoyed, but vital to our spirit. The idea was born in an American society, for though the outdoors was there all along, some feared that [illegible] be [illegible].[45]

Finally it should be noted that these resources provide those ingredients which make this area a vacational region and savored by more and more [illegible] each year. By including natural scenic beauty, relaxation, year-round sports, and recreational activities, the [illegible] area is a four-season's playground.

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[45]*Outdoor Recreation for America*; Report to the President and to the Congress by the Outdoor Recreation Resources Review Commission, Washington, D.C.: [illegible] Government Printing Office, 1962, p. [illegible].

CHAPTER III

THE RECREATION DEMAND

The interest of recreation visitors varies widely; therefore so must the provisions for their recreation experience vary. Some visitors prefer the more passive types of recreation, such as walking, photography, painting, nature study, and just plain relaxing. These outdoor activities make very few demands on the landscape. Other interests such as camping, picnicking and water skiing are the active types. While the latter type of outdoor activities have more demand on the landscape, they also are considered to have a greater concentration of visitors. The intent of this chapter is three-fold; to study the present facilities, discuss the influencing factors, and determine the future needs of this area. It is from this information that a planner can anticipate and plan for recreational needs, which will meet generations.

Present Facilities

In order for this study to examine the recreational facilities available to the public, within the Chippewa Lake area, it is necessary to review the major land use categories of Sawyer County. It should be stated at this time, that Sawyer County has a total of 866,560 acres. Approximately 85 percent (733,530 acres) of the entire county is in commercial

[illegible]

[illegible]

The increase of recreation visits in [illegible] demands so that the provisions for such recreation [illegible] only. These visitors [illegible] the more [illegible] remaining, such as walking, [illegible], [illegible], [illegible], and just plain relaxing. These outdoor activities [illegible] depends on the landscape. Other [illegible] [illegible], and water skiing, are the more active types. While the latter type of outdoor activities have more demand on the landscape, they also are considered to have a greater concentration of visitors. The intent of this chapter is three-fold; to study the present facilities, discuss the influences, reasons, and determine the future needs of this area. It is with this information that a planner can select the [illegible] recreational needs, which will meet [illegible].

<u>Present Facilities</u>

In order for this study to examine the recreational facilities available to the public, within the [illegible], it is necessary to review the major land use categories of [illegible] County. It should be stated at this time, that [illegible] County has a total of [illegible] acres. [illegible] cent (133,550 acres) of the entire county [illegible]

forest lands and water surface. The remaining 133,030 acres are in cropland or non-productive and other. A list of the major land uses and a breakdown of the commercial forest lands are shown in Table XII.

TABLE XII

The Major Land Uses in Sawyer County and the Breakdown of its dominant Use - Commercial Forest Lands.

Uses	Acres	Percent
Commercial Forest Lands	671,540	- - -
Cropland	124,699	- - -
Water surface	61,990	- - -
Non-productive and other	8,331	- - -
County Totals - 1,273 sq.miles or	866,560	100.0
Ownership of Commercial Forest Lands		
Other private	254,740	38.0
Federal	144,870	21.6
County or Municipal	130,660	19.4
State	56,380	8.4
Farmer	84,890	12.6
Total	671,540	100.0

Source: United States Department of Agriculture. "Lake Chippewa Flowage Report", 1967.

It is rather evident from the above figures that Sawyer County is physically oriented toward the outdoor recreational activities whether active or passive. This study is confined to active outdoor recreational activities as they have a greater demand on the natural resources and generally have a

[illegible]

TABLE III

[illegible]

Unit	[illegible]	[illegible]
[illegible]	[illegible]	- - -
[illegible]	[illegible]	- - -
[illegible]	[illegible]	- - -
Non-productive [illegible]	[illegible]	- - -
County totals - [illegible] sq. miles		
[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
County or municipal	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]

Source: [illegible]

It is hence evident from the above figures that [illegible] is [illegible] oriented toward the [illegible] activities [illegible] active or passive. [illegible]

greater concentration of visitors. They include: swimming, boating, camping, hiking, picnicking, fishing, and winter sports.

Camping facilities which are predominant in Sawyer County, are those which provide items for stays longer than one night. Also these sites are orientated toward use by tent or trailer campers. Generally, there are water, tables, toilets, garbage cans, tent pads, grills and parking spaces provided. In most cases, naturalistic types of atmosphere are present.

The camp units are approximately 3 to 7 per acre, which allows the visitors to experience the expanse of outdoors rather than the closeness of their residential surroundings. Developments which are related to the water get the heaviest use. Campers who are going to stay any length of time need the availability of various activities, such as hiking, boating, swimming and fishing facilities. A comparison of participation in other outdoor activities by campers and non-campers is shown in Table XIII on page

The campgrounds which have good access roads and are near major highways showed more use. In relation to the use, these areas showed greater wear, such as compaction of soils, erosion, and deterioration of the established ground cover. It is

greater concentration of visitors. [illegible] include: drinking
water, [illegible], [illegible], [illegible], and [illegible].

[illegible] facilities which are [illegible] for [illegible] [illegible],
are those which provide [illegible] for [illegible] longer than one
night. These [illegible] sites are [illegible] toward use by [illegible]
or trailer campers. [illegible], [illegible] are tables,
toilets, garbage cans, [illegible], [illegible] and [illegible], [illegible]
[illegible]. In some cases, [illegible] types of [illegible]
are present.

The camp units are approximately 2 to 7 per acre, which allows
the visitors to experience the openness of outdoors rather
than the closeness of their residential surroundings. [illegible]
[illegible] which are related to the water get the heaviest use.
Campers who are going to stay any length of time need the avail-
ability of various activities, such as hiking, boating, swimming
and fishing facilities. A comparison of participation in other
outdoor activities by campers and non-campers is shown in
Table XIII on page

The campgrounds which have good access roads and are near
major highways showed more use. In relation to the use, [illegible]
[illegible] ground wear, such as compaction of soils, erosion,
and destruction of the established ground cover. It is

questionable if annual maintenance can restore these areas to a high quality standard.

Swimming in Sawyer County is limited to the warmer months, usually from Memorial Day to Labor Day. It is a sport pursued in the open air and is a favorite of many.

TABLE XIII

Comparison of Participation in other Outdoor Activities by Campers and Non-campers.

	Percent Participation Among Those Who went Camping				
Activity	Often (col.1)	1-4 Times (col.2)	Total (col.1&2)	Not at all	Total
Outdoor Swimming or Going to a Beach					
Campers	43	25	68	31	100
Noncampers	25	20		54	100
Boating and Canoeing					
Campers	31	26	57	42	100
Noncampers	9	15		75	100
Fishing					
Campers	46	28	74	25	100
Noncampers	17	17		62	100
Hiking					
Campers	22	25	47	51	100
Noncampers	5	9		84	100
Horseback Riding					
Campers	8	8	16	83	100
Noncampers	2	3		94	100

Source: U.S.Outdoor Recreation Resources Review Commission, Study Report 20, Participation in Outdoor Recreation: Factors Affecting Demand Among American Adults; Washington: U.S.Government Printing Office, 1962; p. 68.

Approximately 50 per cent of the public indulges in swimming with the greatest number of participants being young people. It ranks third in popularity according to the ORRRC report. As many studies have shown, water is one of the main attractions for the majority of recreation sites and more so if the visitors can participate in water-oriented sports, such as swimming and boating.

Most of the water in Sawyer County is located in the North-eastern quarter, with some of it being dark, due to the presence of organic materials. However, the dark water is still excellent for swimming. Because of the numerous lakes and rivers in the area, there are many opportunities for visitors to swim. The Majority of the swimming sites are located at resorts or summer cottages. Public sites which can handle large concentrated numbers of visitors on large bodies of water are limited. Although there is a deficiency in this type of facility, there are many locations which have not yet been developed that visitors may use as natural beaches.

Generally speaking, if there are large sites for swimming, other sports such as boating, water skiing and canoeing will occur. We must remember that:

> Interference with swimming aside from diminution of water quality is not great. Only fast boating pursued close to shore and use of shore for marina facilities

Approximately 30 per cent of the public indulges in swimming, with the greatest number of participants being young people. It ranks third in popularity according to the recent survey. As many studies have shown, water is one of the main attractions for the majority of recreation sites and more so if the visitors can participate in water-oriented sports, such as swimming and boating.

Most of the water in Sawyer County is located in the north-eastern quarter, with some of it being dark, due to the presence of organic materials. However, the dark water is still excellent for swimming. Because of the numerous lakes and rivers in the area, there are many opportunities for visitors to swim. The majority of the swimming sites are located at resorts or summer cottages. Public sites which can handle large concentrated numbers of visitors on large bodies of water are limited. Although there is a deficiency in this type of facility, there are many locations which have not yet been developed that visitors may use as natural beaches.

Generally speaking, if there are large sites for swimming, other sports such as boating, water skiing and canoeing will occur. We must remember that:

> Interferences with swimming, aside from limitation of water quality is not great. Only fast boating, pursued close to shore and use of shore for marine facilities

> can be cited as causing interference. Use of shore for cottages is a means of providing relatively exclusive swimming opportunities, although this is certainly an extensive use of shore.
>
> Swimming occupies the littoral zone and if heavily pursued little other activity can take place. The littoral area will be barren of vegetation and will have a barren sand bottom. These conditions will not be optimum for fish and certainly if the real deficiency is nursery areas, such losses could be significant. Consequently clean water and space are the primary pre-requisites and must be jealously guarded if we are to give this use the optimum benefit it deserves.[1]

In defense of the above statement, the author when viewing several swimming sites in Sawyer County, took note that usually the beaches were marked with flags and standard safety equipment required by the State. In respect to the littoral zone, the swimming areas constructed by public agencies on lakes with little development, had less effect on this zone then did the areas which were highly developed where a powered motor boat and swimming site were located at each summer home.

Finally, when summing up the swimming facilities for Sawyer County, it appears that there is a deficiency in areas which can support large concentrated numbers of visitors.

Fishing is the major attraction of visitors to Sawyer County. With 165 named lakes, this county offers to the true sports-

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[1]Edward Schnegerger - Threinen, C.W.; "Lake Management for Recreational Uses"; The Natural Resources of Northern Wisconsin; p. 49.

can be cited as examples, [illegible] for example in a means of providing relatively inten- sive swimming opportunities, [illegible] an extensive use of [illegible].

Swimming resources are limited here and in heavily populated [illegible] activity [illegible]. The littoral zone will be [illegible] of vegetation and will have a [illegible] bottom. These conditions will not be optimum for [illegible] it is [illegible] areas, such losses could be significant. Consequently clean water and space are [illegible] pre-requisites and must be [illegible] to give this use the optimum benefit [illegible].

In defense of the above statement, the author then visited several swimming sites in Oregon County, took note that usually the beaches were marked with flags and standard safety equipment required by the State. In regard to the littoral zone, the swimming areas constructed by public agencies on lakes with little development, had less effect on this zone than did the areas which were highly developed [illegible] a combined motor boat and swimming site were located [illegible] water here.

Finally, when summing up the swimming facilities for Oregon County, it appears that there is a deficiency in areas which can support large concentrated numbers of visitors.

Boating is the major attraction of visitors to Oregon County. With 165 named lakes, this county offers to the boat enthu-

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[1] [illegible] - [illegible], [illegible]; [illegible] of [illegible]; The [illegible] of [illegible], p. [illegible].

man some of the finest fishing waters in the State. (While the clear lakes are full of pan fish, and the streams full of trout, there is little development in this area to harness this atmosphere at its best.)

> From the standpoint of welfare, there is no finer participating sport than angling. It takes the individual outside, and it furnishes "a pleasureful use of time not spent at work" during all seasons of the year. It furnishes healthful, moderate exercise, offers a mental challenge, provides an element of chance, and as a bonus, it can provide meat on the table for the skillful (or lucky) fisherman. Clearly, with all these values, we need to provide just as much fishing as we possible can.[2]

Chippewa Lake is known for its record size "muskies", outstanding walleyes, large crappies and other numerous panfish. Because of its size, the "Big Chip" provides many bays where anglers can work weed beds for muskellunge without being disturbed by others. Generally, it is undesirable to have two fisherman on the same hole.

Fishing appears to be better when the waters are cooler.

> As the water begins to cool and the days become shorter, the fish start a feeding spree that is unequalled throughout the rest of the year. They seem to abandon much of the caution that they possessed during the summer months. At any rate, autumn is the real fisherman's paradise. The invigorating air, the new cool blue of the water that reflects the indescribable colors of the trees, and a battling fish on the end of the rod are the things writers and painters have used

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[2]Edward Schnegerger - Treinen, C.W.; "Lake management For Recreational Uses"; The Natural Resources of Northern Wisconsin; p. 49.

[illegible]

[illegible]

[illegible]

> as choice subject material since the beginning of sport fishing.[3]

It appears that Sawyer County has the necessary requirements for excellent fishing, which are: (1) water quality and (2) Adequate habitat, to support and maintain a fish population which will offer many hours of enjoyment to the future fisherman of Wisconsin.

Boating in Sawyer County is provided by 137 named lakes, many streams, rivers, and impoundment areas.

> Boating has much variety to it, and includes rowing, canoeing, sailing, speed boating, water skiing and ice boating. When boating is practiced with moderation, we can say that exercise, the opportunity to be outdoors and the opportunity to enjoy the esthetics of water from boats, are all very much in the public interest.[4]

One of the most popular boating activities on the Big Chip is canoeing. Many youth groups and families start north of the Lake on the West Fork of Chippewa River and then float southward into the Lake. Once here, they can camp on one of the many islands or portage at Winter Dam and move southward down the Chippewa River.

Hiking in Sawyer County has increased in recent years, primarily

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[3]Bob Davenport; "Fishing Tips"; Visitor; p. 19.

[4]Ibid; p. 51.

[illegible] to take a small measured [illegible]

[illegible] p. 17.

[illegible] ; Arnold, p. 12.

measured with big differs vivid.

and of the most intense of colors to [illegible] [illegible]

[illegible] and the [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible]

because there are many trails available to the public than before. Also, the trails are being designed and constructed to create interest for the entire family. Some of these significant points are: (1) rare or unique features, such as Rock outcrops, overlooks, and educational items are being sought after as a main interest point, (2) manmade features, such as interpretive devices or exhibits supplement the natural scene where needed, and (3) informative signs along these trails appear to be of a more educational value than before.

Some reasons for more trails being constructed are:

> Its outstanding advantage is that it allows visitors to see features in their natural setting, and provides an experience more realistic and often more memorable than interpretation by indoor facilities.
>
> A trail is relatively economical to construct, and can be developed fairly rapidly. Improvements can be made easily, and mistakes in planning or development can be corrected quickly, and at less cost than would be involved with most other facilities.
>
> ..it can serve a large number of people, yet does not require the presence and expense of an interpreter. Visitors may walk the trail when they wish, and at their own pace, and may receive as much or as little of the interpretation as they want.[5]

Probably the most significant trail in Sawyer County is a portion of the North Country Trail which will eventually

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[5]U.S.Department of Agriculture; "Developing the Self-Guiding Trail in the National Forest"; Forest Service; Washington, D.C.; U.S. Government Printing Office; September 1964, p. 1.

Because there are many trails [illegible] in the [illegible] buildings, [illegible] trails [illegible] the [illegible] to [illegible] [illegible]. [illegible] magnificent vistas [illegible] (1) [illegible] unique features, such as rock outcrops, overlooks, and [illegible] being [illegible] often as main interest points, (2) various [illegible], such as interpretive devices or exhibits [illegible] natural [illegible], and (3) [illegible] trail [illegible] or to be of a more educational value than before.

[illegible] for [illegible] trails [illegible]:

> Its outstanding advantage is that it allows visitors to see [illegible] in their natural [illegible], and provides an experience more realistic and often more [illegible] than interpretation by indoor facilities.
>
> A trail is relatively economical to construct, and can be developed fairly rapidly. Improvements can be made easily, and mistakes in planning or development can be corrected quickly, and at less cost than would be involved with most other facilities.
>
> ...It can serve a large number of people, yet [illegible] the presence and effect of [illegible]. Visitors may walk the trail when they wish, and at their own pace, and may receive as much or as little of the interpretation as they want.[2]

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[2]U.S. Department of Agriculture; Developing the Self-Guiding Trail in the National Forests, Forest Service; Washington, D.C.; U.S. Government Printing Office; September 1964, p. 1.

stretch from Vermont to North Dakota.

Picnicking in Sawyer County is generally done by the local citizens. This day use activity is influenced by the distance from local communities, the quality of the site, and the quality of accessible roads. The use of these areas coincides with the weather. When the temperatures are cool, little picnicking is done, however, when it is hot, the entire family shows up at one of the local picnic areas. It should be noted that swimming, boating, and fishing go hand in hand with picnicking as water oriented sites are the most popular with the public.

The conditions of the picnic areas are determined by the amount of use that they receive. The most popular sites are experiencing problems with compacting of the soil and wearing away of the established ground cover. These two conditions comprise an ideal situation for erosion. Areas with high concentration of picnickers are deteriorating to an extent that it will be difficult to rehabilitate.

There are picnic areas in Sawyer County which have approximately units. Each unit generally has one table with access to drinking water, grills, and toilet facilities, which are shared with other units. Most of the picnic areas within the county

are located near water.

Winter sports activities in Sawyer County varies from snowmobiling on the many trails to skiing on the snow laden slopes, or fishing on one of the ice covered lakes to skate along on a cleared patch. These sports can be enjoyed for approximately 4 to 5 months of the year as the winters are long and cold.

Snowmobiling has become extremely popular in the past few years. It is a sport enjoyed by the young and old. The Winter Lake Region located in the southeastern corner of Sawyer County has lands owned by the United States Forest Service and the Flambeau State Forest. These agencies provide an area which is criss-crossed with old logging trails and lands where one may drive or hike for hours and where wild scenic beauty abounds. The Forest Service provides maps on the location of these trails, which run through their forest land.

Snowmobiles have increased ice fishing in the remotest areas. Ice fishing was always popular, but with the introduction of the present snowmobiles, sportsmen are now pulling small shelters, and an array of other equipment into their favorite spots on lakes which were formerly accessible only by snowshoes.

[illegible]

Winter sports activities in Sargent County include snowmobiling on the many trails to skiing on the steep slopes, or skating on one of the ice covered lakes or slowly along on a cleared track. These sports can be enjoyed for approximately 4 to 5 months of the year as the winters are long and cold.

Snowmobiling has become extremely popular in the past few years. It is a sport enjoyed by the young and old. The Wildlife refuge located in the southeastern corner of Sargent County has lands owned by the United States Fish and Wildlife Service and the Sheyenne State Forest. These agencies provide an area which is criss-crossed with old logging trails and roads where one may drive or hike for hours and where wild scenic beauty abounds. The forest service provides a map on the location of these trails, which run through their forest land.

Snowmobiles have increased ice fishing in the Sargent area. Ice fishing was always popular, but with the introduction of the present snowmobiles, sportsmen are now pulling fish houses, and an array of other equipment into their favorite spots on lakes which were formerly accessible only by snowshoes.

To the skiing enthusiast, Northern Wisconsin provides facilities comparable to any in the lake states. Sawyer County

> ...is the home of Mt. Telemark, one of America's fine, fine Ski Areas. Since 1947 Telemark has been a leader in providing the skier with the facilities and services he desires. With the world's largest snow-making equipment, top skiing is assured from Thanksgiving to Easter.[6]

Because of the long season and fine facilities, that are made made or natural, this region is a winter haven for the outdoor sportsman.

Influencing Factors

Before setting up a recreation plan for the Chippewa Lake area, it is important to consider various influencing factors. First, it is necessary to meet specific requirements, such as the number of camping units per acre, width of the beach surrounding a swimming area, and the spacing of picnic units. Also, the trends in outdoor recreation activities must be recognized as they determine the public wants or demands.

In the past, the National Recreation Association recommended a ratio of 10 acres of park land per 1,000 persons. However, as the Southeastern Pennsylvania Regional Planning

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[6]Bob Davenport; "A Four-Season Vacation Land"; Visitor; p. 18.

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[6] Bob Davenport; "A Four-Season Vacation Land"; Visitor; p. 13.

Commission has pointed out, these standards have been satisfactory in the past.

> The parks now being discussed are for the future, so it would be preferable to establish a goal of 15 acres of regional park and recreational land per 1,000 population, in view of the continuing increase in leisure time, in growing accessibility to outlying parks, and in the expansion of built-up land.[7]

Chippewa Lake area should be able to provide recreation land for approximately 400,00 people using the above formula (6,000 acres of usable land). The population of Sawyer County is 9,475 people, there, it must be evident that an area this large must be planned for the use of people seeking new areas and who will be able to travel a distance. However, it is my personal feeling that a portion of this land be set aside and preserved as a natural environment, untouched by man and his forces.

Since it is the intent of this study to suggest a developmental program for certain portions of the Lake, a criteria for the selection of those areas must be established.

> Contrast and variety are the most widely valued perceptual attributes of environmental patterns. Contrasts in high points and between land and water features, and variety in slopes and ridges are among the scenic resources which enhance the setting for

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[7] Southeastern Pennsylvania Regional Planning Commission; 1956; A Regional Recreation Policy and Program; pp. 11-12.

[illegible] has pointed out, that [illegible] have been attrac-
tively in the past.

> "The parks now being discussed are for the future, ... it would be reasonable to establish a goal of 10 acres of regional park and forest-wood land per 1,000 population, in view of the anticipated increases in leisure time, in general, particularly in multiple parks, and in the expansion of leisure-time [illegible]."[7]

Delaware State Forest should be able to provide recreation land for approximately [illegible] people using the above formula ([illegible] acres of usable land). The population of Wayne County is [illegible] people, hence, it must be evident that at least this large must be planned for the use of people outside the area who will be able to travel a distance. However, it is my personal feeling that a portion of this land be set aside and preserved as a natural environment, untouched by man and his forces.

Since it is the intent of this study to suggest a development program for certain portions of the state, a rationale for the selection of these areas must be established.

> Contrast and variety are the most likely visual perceptual attributes of environmental concern. Contrasts in high places and between land and water features, and variety in shores and ridges and valleys are the scenic resources which enhance the setting, [illegible]

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[7] Southeastern Pennsylvania Regional Planning Commission, [illegible]; A Regional Recreation Policy and Program, pp. 11-12.

recreation.[8]

Southeastern Pennsylvania used the following to facilitate their selection:

1. A site should possess conspicuous scenic value typical of the region and adequate recreation resources. Because of their greater social value, unusual recreation resources may compensate for the absence of outstanding scenic beauty.

2. A site should be characterized by scenic and recreational resources of kinds which are unlikely to be preserved and developed for the enjoyment by the public of this and future generations under private ownership, and which are sufficiently distinctive to attract and interest the people of the region.

3. Sites should be sufficient in number, extent, and variety of character to meet the present and future demands of the people and which are not ordinarily supplied.

4. Sites should be so distributed geographically as to serve the people of the region adequately and with a minimum of required travel time.

5. A site, if at all possible, should provide a water feature for scenic value and for a recreation resource.[9]

These criteria are very general in order that no potential site be overlooked in the investigation of areas for

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[8]Maryland-National Capital Park and Planning Commission; "Preliminary Master Plan for Rock Creek Planning"; September 1966; Silver Spring and Riverdale, Maryland; p. 76.

[9]Southeastern Penn. Regional Planning Commission; 1956; A Regional Recreation Policy and Program; pp. 13-15.

Location.[8]

Some criteria usually set forth for selecting, as Hawkins notes, are as follows:

1. A site should possess some natural scenic value by virtue of the topography and vegetation resources. In areas of water, [illegible] unusual histor-ical resources may compensate for the absence of out-standing scenic beauty.

2. A site should be conveniently located by roads and con-nected to sources of labor and building ma-terials and should be such that enjoyment by the public of this state [illegible] [illegible], and which are historically distinctive or scenic and interest the people of the region.

3. Sites should be sufficient in area, number, and variety of character to meet the present and future demands of the people and which are not ordinarily acquired.

4. Sites should be so distributed geographically as to serve the people of the region adequately and within a minimum of required travel time.

5. A site, if at all possible, should provide a water feature for scenic value and for a recreation resource.[9]

These criteria are very general in order that no potential site be overlooked in the investigation of areas for

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[8]Maryland-National Capital Park and Planning Commission; Preliminary Master Plan for Local Park Planning; [illegible] 1960; Silver Spring and Riverdale, Maryland; p. 70.

[9]Connecticut [illegible]. Regional Planning Committee, 1959; A Regional Recreation Policy and Program; pp. 12-15.

recreation use.

A more detailed and specific outline has been set up by the Cumberland County Planning Board of Bridgeton County, New Jersey. This criteria was proposed for evaluation of watershed impoundments.

1. Need
2. Topography and soil
3. Financing of land acquisition
4. Highway access on existing highway system
5. Ease of land assembledge
6. Size of area for parks and possibility of future expansion
7. Relation to population centers of the area to be served
8. Availability of water for recreation use
9. Scenic attraction of the site
10. General character of the surrounding area
11. Compatibility of park use with municipal plans.[10]

To determine what the public demands for recreation, it is necessary to investigate various studies which have been done concerning what people do with their leisure time. The following information was made available by the Bureau of Outdoor Recreation Survey:

> Since 1960, walking for pleasure has increased in popularity faster than any other major outdoor recreation activity....Walking will be our third most popular activity in both 1980 and 2000.
>
> Swimming is becoming so popular, that it will be our number one outdoor recreation activity in 1980 and

---

[10]Cumberland County Planning Board; Cumberland County, New Jersey; Published 1966; p. 72.

recreation use.

A more detailed and specific outline has been set up by the Cumberland County Planning Board of Bridgeton County, New Jersey. This criteria was proposed for evaluation of recreation requirements.

1. Need
2. Topography and soil
3. Financing of land acquisition
4. Highway access on existing highway system
5. Ease of land assemblage
6. Size of area for parks and possibility of future expansion
7. Relation to population centers of the area to be served
8. Availability of water for recreation use
9. Scenic attraction of the site
10. General character of the surrounding area
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>
> Swimming is becoming so popular, that it will be our number one outdoor recreation activity in 1976 and

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[10]Cumberland County Planning Board; Cumberland County, New Jersey; published 1960; p. 72.

will hold that spot in 2000.[11]

While swimming and walking are popular and will continue to be so, it should also be noted that other summertime activities will be increasing at rapid rates. Table XIV illustrates which activities will grow the fastest between now and 2000. It is also necessary to know what percent of the population participates in these activities. This can be found in Table XV.

The current interest in the United States in physical fitness and vigor has taken many forms. The area most publicized by the popular press has been that of hiking. The hiking and jogging crase is mentioned often in many daily newspapers and popular magazines. Life magazine provided some information regarding the healthful benefits of walking:

> Walking is the easiest...You don't need a lot of apparatus. Just shoe leather and good feet. It is better than using the arms, with their smaller muscles. Leg muscles are the biggest in the body. You get most out of walking by going along briskly, swinging the arms and breathing deeply. It also helps promote the circulation of blood to the brain. The Greek philosophers promenaded as they philosophized.[12]

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[11]"Outdoor Recreation Trends"; Bureau of Outdoor Recreation; Department of Interior; U.S.Government Printing Office, Washington D.C.,April 1967.

[12]Robert Wallace; "The 50-Mile Walk"; Life; Vol. 54, No. 8/ February 22, 1963. p. 82.

will make good use of them."

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11 Opinion Concordia Review; "Men of Action Needed"; Vol. 5, No. 1, January 22, 1942, p. 12.

12 Opinion Concordia Review; "Men of Action Needed"; Vol. 5, No. 1, January 22, 1942, p. 12.

paragraphs commanding an early publication of Dr. Luther's Commentary on the Book of Galatians. It will be a great help to many pastors and laymen. Let us all be on the lookout for the publication of this book."

Finally the following brief item appeared:

"Dr. Walther's Commentary on Galatians. Dear Sirs: Please advise me when I can expect to receive Dr. Walther's Commentary on Galatians. Will be glad to pay for it now. Rev. [illegible]"

Many letters like this were received. We could not publish them all, but we did publish a few. Here is one:

"Dear Sirs: Please advise me when I can expect to receive Dr. Walther's Commentary on Galatians. Will be glad to pay for it now. Rev. [illegible]"

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TABLE XIV

Major Sumertime Activities Which Will Grow Fastest Between now - 1980 - 2000.

Activities	1980	2000
Waterskiing	up 121%	up 363%
Camping	78%	238%
Hiking	78%	218%
Swimming	72%	207%
Playing Outdoor Games and Sports	72%	216%
Walking for Pleasure	49%	----
Boating	--	215%

Source: Outdoor Recreation Trends; Bureau of Outdoor Recreation; April 1967, p. 19.

TABLE XV

Number of People Participating in Selected Outdoor Recreation Activities (per cent of population)

Activities	1960	1965
Picnicking	53%	57%
Swimming	45%	48%
Walking for Pleasure	33%	48%
Outdoor Games	30%	38%
Fishing	29%	30%
Boating	22%	24%
Camping	8%	7%
Hiking	6%	6%
Water Skiing	6%	6%

Source: Outdoor Recreation Trends; Bureau of Outdoor Recreation; April 1967, pp. 22-24.

TABLE [illegible]

[illegible] Outdoor [illegible] Activities [illegible] — 2000.

Activities	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Fishing	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Playing Outdoor Games and Sports	[illegible]	[illegible]
Walking for Pleasure	[illegible]	----
Boating	--	[illegible]

Source: Outdoor Recreation [illegible] of Outdoor Recreation; [illegible] 1967, p. 15.

TABLE IV

Number of People Participating in Selected Outdoor Recreation Activities (per cent of population)

Activities	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Walking for Pleasure	[illegible]	[illegible]
Outdoor Games	[illegible]	[illegible]
Fishing	[illegible]	[illegible]
Boating	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Hiking	[illegible]	[illegible]
[illegible] Riding	[illegible]	[illegible]

Source: Outdoor Recreation Trends; Bureau of Outdoor Recreation; April 1967, pp. [illegible].

Trails should be located to offer hikers or riders many interesting vistas and experiences. They should be planned with numerous access points and inter-connection links. Whenever possible, interpretive and educational signs should be placed along side the path.

> The biotic character of a recreation site, when considered with terrain, may add great value for all types of recreational experiences. Hiking, including nature walks, is the outdoor activity that benefits directly. Nature study is enhanced if a wide variety of biotic types are available, or if one or two typical types are abundant.[13]

Requirement Standares for Trails

California Public Outdoor Recreation Plan: Well defined and maintained tread up to 10 feet wide, grades not exceed 5% average with a maximum of 15%. Minimum parking for 25 autos at any access point. On short, scenic, well known trails, this might be extended to 100 auto parking spaces.[14]

Comprehensive Plan for Wisconsin: 50 people per mile of Trail. Trails are 1 to 2 miles long. With a turnover rate of 8, there are 400 people per mile of trail per day.[15]

Forest Service: Locate trail labels so they can be seen from a distance, drawing the visitor onward. Minimize natural hazards. Provide drinking water and sanitary

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[13]Milatein and Reid; Outdoor Recreation Demand Study; Volume II Activities Reports; Michigan Department of Conservation; Tech. Report No. 6, June 1966; pp. 5 & 30.

[14]California Public Outdoor Recreation Plan Committee; California Public Outdoor Recreation Plan, Part II; 1960; p. 85.

[15]Wisconsin Conservation Department; A Comprehensive Plan For Wisconsin, Outdoor Recreation; pp. G-7, G-8.

Trail ... [illegible] ... -

[illegible]

[illegible] ... full ... [illegible]

[illegible]

[illegible]

The Florida ... [illegible] ... with ... [illegible] ... of ... [illegible] ... making, in the outdoor activity ... [illegible] ... types and ... [illegible] ... [illegible][11]

[illegible] for Trails

California Public Outdoor ... [illegible] ... and ... [illegible] ... trend ... [illegible] ... particularly ... [illegible] ... well known ... [illegible] ... the auto ... [illegible][12]

[illegible] ... Trail ... [illegible] ... [illegible][13]

[illegible] Service: ... [illegible] ... from a ... hunting, ... outdoor ... [illegible] ... natural ... Provide ... [illegible]

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[11] [illegible] Hiking ... [illegible]

[12] California Public Outdoor ... [illegible]

[13] [illegible] Conservation ... [illegible]

> facilities where appropriate. Give names to trails because it creates a feeling of familiarity and affection.[16]

A demand is being created by new groups of hikers which must be met by recreational planners. They are to provide the paths and facilities to make these trips worth while for the individual, not only from the physical, but also the educational social, and cultural aspects.

> There is a riddle of trails over the earth's surface. There are the trail of the first land creatures scribbling the rock that was once shore, the deep-dug trails of the hooved creatures moving with the undulations of caution towards the salt licks and the places of water, the paths of the Indian planted in the hoof groves of the antelope and deer and buffalo, the ways of the white man over marching them all, lines at last of the machines, hard as asphalt, straight as steel.
>
> Trails are the script of life on the clay tablet of the earth. Splendid and sordid motives have etched the pattern, search for water, search for minerals, for treasure, for the fountain of eternal youth, for the Sabine women, for the swords of conquest, for the Holy Grail, for places beyond persecution, for opportunity, for space, for fame, for freedom.[17]

In 1965 only 10 percent of the population went camping, but the predictions are that camping will be the second fastest growing outdoor recreational activity between now and 2000. Camping appeals partly because it is a different way of living. It is

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[16]George K. Brown. "Guide to Construction of Interpretive Forest Trails"(unpublished paper) U.S. Forest Service. Dec.,1962.

[17]Julia Cooley Altrocchi. The Old California Trail. Caldwell, Idaho: The Caxton Printers, Ltd., 1945, p. 15.

[illegible] opportunities. [illegible]
[illegible] in [illegible] and other [illegible].

[illegible] is being [illegible] by [illegible] which must be met by recreational planners. They are to provide areas and facilities to make these experiences valuable for the individual, not only from the physical, but from the educational, social, and cultural aspects.

> There is a riddle of trails over the earth's surface. There are the trails of the giant land creatures, scuffling the rock that the pads stood, [illegible] trails of the hooved creatures having with the un-[illegible] of caution towards the salt licks and the places of water, the paths of the Indians planted in the hard graves of the antelope and deer and buffalo, the ways of the white man over [illegible] all, lines at last of the mountains, hard as asphalt, straight as steel.
>
> Trails are the script of life on the clay tablet of the earth. Splendid and sordid motives have etched the patterns, search for water, search for minerals, for treasure, for the fountain of eternal youth, for the [illegible], for the lands of conquest, for the holy Grail, for places beyond possession, for opportunity, for peace, for home, for freedom.[17]

In 195[illegible] only 10 percent of the population went camping, but the predictions are that camping will be the second favorite leisure outdoor recreational activity between now and 1976. Camping appeals partly because it is a different way of living. It is

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[16]George H. Brown. "Guide to Construction of Interpretive Nature Trails" (unpublished paper) U.S. Forest Service. Nov., 1959.

[17]Julia Cooley Altrocchi. The Old California Trail. Caldwell, Idaho: The Caxton Printers, Ltd., 1945, p. 16.

already increasing faster than the sites for camping can be provided. Even camping in remote and undeveloped areas is extensive.

Camped developed areas only	65%
Camped undeveloped areas only	33%
Camped both	2% [18]

> The Survey Research Center study showed that about one-third of the campers enjoy camping in remote areas removed from other campers, while about the same proportion enjoy camping in an area where they can visit and talk with other campers.[19]

It is evident that the planner must plan for both types of camping areas.

Further increases in camping rest upon the question, "Camping *for* what?" A few of the advantages made possible by camping are sightseeing, travel, and fishing. Other interests must be introduced into the camping pattern in order that it can become a more creative and challenging aspect of outdoor recreation. These interests might be photography, art, sketching, collecting minerals and other objects to be found in a natural environment, and a response to the pioneer spirit. The economic advantage

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[18] National Recreation Survey. ORRRC Study Report 19. 1962. p. 34.

[19] Eva Mueller and Gerald Gurin, "Participation in Outdoor Recreation: Factors Affecting Demand Among American Adults," ORRRC Report 20, Chapter 6.

closely interesting factor than the sites for camping, one is provided. Even camping in remote and undeveloped areas is attractive.

Camped developed areas only	60%
Camped undeveloped areas only	15%
Camped both	25%[12]

The Survey Research Center study showed that about one-third of the campers enjoy camping in areas removed from other campers, while about the same proportion enjoy camping in an area where they can visit and talk with other campers.[13]

It is evident that the planner must plan for both types of camping areas.

Further increases in camping rest upon the question, "Camping for what?" A few of the advantages made possible by camping are sightseeing, travel, and fishing. Other interests need to be incorporated into the camping pattern in order that it can become a more creative and challenging aspect of outdoor recreation. These interests might be photography, art, sketching, collecting minerals and other objects to be found in a natural environment, and a response to the pioneer spirit. The economic advantages

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[12]National Recreation Survey. ORRRC Study Report 19. 1962, p. 34.

[13]Eva Mueller and Gerald Gurin, Participation in Outdoor Recreation: Factors Affecting Demand Among American Adults. ORRRC Study Report 20, Chapter 6.

might also be added since a camping vacation enables the family to travel and see the country at a minimum of cost.

Requirement Standards for Camping:

Soil Conservation Service - Camp sites facility - 3000 sq. ft. Per unit. A unit includes tent space, vehicle parking space, and use area for cooking, eating, wood storage, trash disposal, etc., 14 units an acre or 56 people an acre. Camp sites average 4 persons each. Dimension of tent space is 16x16 feet or 12x18 feet. Privacy size is 4000 to 8000 sq. ft. a unit; 5-11 units an acre or 20-44 people an acre.[20]

National Park Service - camp sites facility - One campground should provide a minimum of 90 to 120 camp sites on 12 to 30 acres, with 4 to 7 camp sites per care. Each camp site should contain a parking space, a tent area, a table and bench combination, and a camp stove.[21]

Bureau of Land Management: High density campground facility - The high density campground is provided where use is expected to be continuous and intensive over normal visitor season, and where primary activity sought is not camping. If primary purpose is for lodging on a scenic trip, or a stop on a fishing tour, the campground may be more intensely developed.

The units have table, fireplace, and tent area. Density of campground is average to high. Garbage facilities and comfort stations are provided. Electricity and water stations may be provided at comfort stations. Spacing

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[20]Soil Conservation Service, U.S.Dept. of Agriculture; Recreation Memorandum - 3,Supplement 3; Washington, D.C.; April 23, 1964; pp. 1-2.

[21]U.S.Dept. of the Interior; National Park Service Nanbook; "Special Park Uses; Campground Planning"; pp. 1-5.

[illegible] ght also be allied with a camping, vacation [illegible] the

family to travel and see the country as a means of [illegible].

Development Standards for Camping:

Soil Conservation Service - Camp site facility - 2000 sq. ft. per unit. A unit includes tent space, vehicle parking space, and use area for cooking, eating, wood storage, trash disposal, etc. 12 units an acre or 48 people an acre. Camp sites average 4 persons each. Allocation of this space is [illegible] feet. Parking space is added to 2000 sq. ft. a unit; 8-11 units an acre or 20-44 people an acre.[20]

National Park Service - camp sites facility - The campground should provide a minimum of 75 to 100 camp sites on 15 to 30 acres, with 6 to 7 camp sites per acre. Each camp site should contain a parking space, a tent area, a table and bench combination, and a camp stove.[21]

Bureau of Land Management: High density campground facility - The high density campground is provided where use is expected to be continuous and intensive over normal visitor season, and where primary activity sought is not camping. If primary purpose is for lodging on a scenic trip, or a stop on a fishing tour, the campground may be more intensely developed.

The units have table, fireplace, and tent area. Density of campground is average to high. Sanitary facilities and comfort stations are provided. Electricity and water stations may be provided at comfort stations. [illegible]

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[20]Soil Conservation Service, U.S.Dept. of Agriculture; Recreation Memorandum - 3, Supplement 5; Washington, D.C.; April 22, [illegible]; pp. 1-2.

[21]U.S.Dept. of the Interior; National Park Service Handbook; "Proposed Park Uses; Campground Standards"; pp. 2-3.

is about 95 feet to 105 feet along centerline.[22]

California Public Outdoor Recreation Plan: Group camping facility - 5 acres for 50 persons for short periods of time. The 5 acres include sanitary, water and basic cooking facilities, open space for bedding or tents, and space for 25 automobiles.

Organizational camping facility - 5 acres for 100 persons. The 5 acres include developed permanent facilities and structures for eating and sleeping. Parking space for a minimum of 50 cars.[23]

Every year more people are using and enjoying the national Forests and National Grasslands, 186 million acres of the Nation's Magnificent outdoors. Camping visits now number nearly 12 million a year (visits for all recreational purposes total 102 million). Since campers stay an average of 2½ days, their visits add up to an annual use of these lands of about 28½ million camper-days.

Camping visits now exceed by almost 9 million those recorded the year after World War II and represent an unforeseen, almost unbelievable increase over the 1½ million in 1924, the first year the Forest Service counted camping visits to the National Forests.[24]

A picnic table and a fireplace is the center of attention for people visiting a recreation area. Taking food together was enjoyed by 57% of our population in 1965. Picnicking is the

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[22]Bureau of Land Management, U.S.Dept. of the Interior; Recreation Development Handbook; Washington, D.C.

[23]California Public Outdoor Recreation Plan Committee; California Public Outdoor Recreation Plan, Part II; Sacramento, California; 1960; p. 84.

[24]U.S.Dept. of Agriculture, Forest Service; Camping; Washington, D.C.; U.S.Government Printing Office, 1962.

is about [illegible] feet in the [illegible] area, [illegible].[illegible]

Dell[illegible]: White [illegible] campsites (limit: [illegible] camping facility - 5 acres [illegible] 50 persons at a time [illegible]. The [illegible] acres [illegible], [illegible] facilities, open space for [illegible], and space for [illegible].

[illegible] - [illegible] acres for [illegible] persons. The [illegible] acres [illegible] facilities and structures for [illegible], [illegible], [illegible] space for [illegible].[illegible]

Every year more people are using and enjoying the National Forests and National Grasslands, the [illegible] acres of the nation's [illegible]. [illegible] visits now number nearly [illegible] million a year (visits for all recreational purposes total [illegible] million). [illegible] people stay an average of [illegible] days, total visits add up to an annual use of these lands of about [illegible] million man-days.

Camping visits now exceed by almost [illegible] million those recorded the year after [illegible] and to [illegible] unforeseen, almost unbelievable increase over the [illegible] million in [illegible], the first year [illegible] complete camping visits to the National Forests.[illegible]

A picnic table and a fireplace in the center of each unit [illegible] people visiting a recreation area. Taking [illegible] enjoyed by [illegible]% of our population in [illegible]. [illegible], [illegible] the

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[illegible]Bureau of Land Management, U.S. Dept. of the Interior, [illegible] Recreation [illegible]; Washington, D.C.

[illegible]California Public Outdoor Recreation Plan Committee, California Public Outdoor Recreation Plan, Part II, [illegible], California, [illegible], p. [illegible].

[illegible]U.S. Dept. of Agriculture, Forest Service; [illegible], Washington, D.C.; U.S. Government Printing Office, [illegible].

single activity enjoyed by a larger percentage of people than any other outdoor activity.

> Among the population 12 years of age and older, each person went on 2.14 picnics during the 3 month period in 1960.[25]

The popularity of picnicking is probably due to its simplicity and universal appeal of food. Picnics require only a brief period of time. Other than the expenditures in reaching the picnic site, no additional cash outlay is necessary for this activity. It is possible to purchase a great variety of picnicking equipment, but the cost factor will vary with the personal desire and income level of the participant. Since picnicking is not physically demanding, it has appeal to all age groups.

> Those who participate in picnicking express a preference for a variety of other activities...These data also suggest the set of activities which are appropriate for planners to consider for the day's outing. Swimming leads the list...boating... water skiing, camping and horseback riding.[26]

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[25]National Recreation Survey. ORRRC Report 19. 1962. p. 43.

[26]Ibid., p. 46.

> ...ing, cowgirl and horseback riding."...
> ...ation. "Working hard the life..."begin!... wants
> ...ntertainer for dynamics to cancio x lue e'er day's
> can also wiggle use the use of a television wives ex-
> ...dance for a variety of other activities..."Give
> ...ll be hoping.

...ignificant, it not physically necessary," it has a bearing to all ...ional centre as a focus level of the participant. ...ime ...finished, emphasis, how the core theme will vary ...ks the ...activity. It is possible to encounter a great variety of ...ovide ...ies." no additional cash outlay is necessary for both ...ed of it." Notice that the advertisement is aimed, or ...ed and advanced women of job. Notice simply a point ...ortantly on finishing it probably one to the attention ...ed."...

> ...ecause I've always wanted, the a master certain ...
> ...ction 12 years of six one week." ...

...ly above amount received.

...ople actually owned by a lady's accepted a of pearl. Even

Special Requirement Standards:

National Park Service: 10 to 15 picnic sites an acre. Minimum size of 90 to 120 picnic sites an area. Each table accomodates 6 to 8 people; 2 to 3 tables per fireplace.[27]

Forest Service: Units should be spaced 100 feet apart for privacy and to prevent overuse of site. A unit consists of 1 stove and 1 table.

National Recreation and Park Association: An average of 10.5 tables per acre with 1 charcoal grill per 5.1 tables. Saturation rate is an overall maximum average of 220.1 picnickers a day per acre of land.[29]

Motivation to picnic must essentially be social. Eating in the open with friends, relatives or office associates, becomes a convivial experience. Another positive motive is to enable to visit to the country.. Picnics provide the sustenance function necessary for other outdoor activities.[30]

Swimming represents a wide variety of activities. The range is very wide from the quick dipper to the all day sun bather or the scuba diver who may spend most of the day in the water. This indicates that there is a wide variation in the physical

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[27]U.S.Dept. of the Interior; National Park Service Handbook; "Special Park Uses", Washington, D.C.,April 1961; pp. 1-5.

[28]U.S.Dept. of Agriculture, Forest Service; Forest Service Handbook; "Title 2300-Recreation Management"; p. 76.

[29]National Recreation and Park Association; Management Aids Bulletin No. 4; Outdoor Theaters; M.Foss Narum; Washington,D.C.; May 25, 1961; pp. 8-22.

[30]National Recreation Survey; ORRRC Report 19; 1962; p. 46.

Picnic Facility Requirements

National Park Service: 10 to 15 picnic sites an acre. Minimum size of 30 to 150 people with a unit. One table accommodates 4 to 8 people; 2 to 4 tables per fireplace.[27]

Forest Service: Units should be spaced 100 feet apart for privacy and to prevent overuse of site. A unit consists of 1 stove and 1 table.

National Recreation and Park Association: An average of 12.5 tables per acre with 1 charcoal grill per 2.1 tables. Utilization rate is an overall weekend average of 220.1 participants a day per acre of land.[29]

Motivation to picnic must essentially be social. Eating in the open with friends, relatives or other associates, becomes a convivial experience. Another positive motive is to enable a visit to the country. Picnics provide the sustenance function necessary for other outdoor activities.[30]

Swimming represents a wide variety of activities. The range is very wide from the quick dip to the all day sun bather or the scuba diver who may spend most of the day in the water. This indicates that there is a wide variation in the physical

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[27] U.S.Dept. of the Interior; National Park Service; [illegible], Washington, D.C., April 1961; pp. 1-2.

[28] U.S.Dept. of Agriculture, Forest Service; *Forest Service Handbook*; "Title 2300-Recreation Management"; p. 7.

[29] National Recreation and Park Association; [illegible] Bulletin No. 4; Outdoor Recreation; [illegible]; May 25, 1965; pp. 6-22.

[30] National Recreation Survey; ORRRC Report 19; 1962; p. 46.

exertion required to engage in swimming. The physical coordination also is varied. A minimum skill is needed to float, but considerable practice and skill are required to enter competitive racing or diving.

> Since swimming requires manipulation of the body, coordination, and muscular activity, it is possible to continuously achieve higher and higher skill levels. Hence, continuous learning is possible through participation and practice.[31]

In its simplest form, swimming satisfies a motive for simple body manipulation. The motive of achievement and prestige attainment is added when it becomes a competitive sport.

> The population 12 years of age and older swims approximately 6.5 times per person a year. These occasions are chiefly in the summer, 80 percent of them,...Swimming was engaged in by 45 percent of the population 12 years and older during the summer 1960.[32]

Swimming is a major activity and is functionally related to camping and picnicking. It must be remembered that water available for swimming will be a popular attraction to the site.

Requirement Standards for Swimming:

California Public Outdoor Recreation Plan and Huran-Clinton Metropolitan Authority: One effective front foot of

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[31]National Recreation Survey. ORRRC Report 19. Washington, D.C., 1962; p. 21.

[32]Ibid., p. 21.

certain aquatic [illegible] in swimming. The physical conditioning also is vital. A [illegible] skill is needed to dive, but considerable practice and skill are required to enter competitive [illegible] or diving.

> Since it demands a high degree of physical conditioning and muscular activity, it is possible to consistently achieve higher and higher skill levels. Hence, continued learning is possible through participation and practice.[..]

In the wintertime, skating, activities a motive for people only and adults. The motive of achievement and [illegible] achievement is [illegible] when it becomes a competitive sport.

> The population 12 years of age and older [illegible] approximately 0.5 times per person a year. [illegible] chiefly in the summer, 60 percent of them...[illegible] engaged in by 45 percent of the population 12 years and older during the summer 1960.[..]

Boating is a major activity and is traditionally related to camping and picnicking. It must be remembered that water available for swimming will be a popular attraction to the site.

[illegible]

California Public Outdoor Recreation Plan and [illegible] Metropolitan Authority: The effective [illegible] of

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[..]National Recreation Survey. ORRRC Report 19. Washington, D.C., 1962; p. 21.

[..]Ibid., p. 21.

> shoreline is defined as comprising one lineal foot of beach with a 100-foot wide band of water suitable for swimming. It has a 200-foot strip of beach for sunbathing and play, and a 100-foot wide buffer zone for utilities and picnicking. Where all attendance is by automobile, an additional 265 foot strip is needed for parking. Ten effective front feet will provide space for 20 persons at any time and provide space to park 5 cars.[33]

D. W. Donelin: The slope of the beach above the water should not be greater than 2 percent for control and erosion. The beach should extend well into the lake at a desirable grade, so as to effectively dissipate wave action. The slope below water level should be within a 3 to 10 percent grade and extend far enough to allow sufficient depth for swimming. The sand beach should extend at least to the six foot contour of the lake bottom. The depth of the sand fill should be at least a foot deep.[34]

The lake bottom may be undesirable for recreational use owing to the presence of undesirable sediments or peat. This factor alone is one of the most frequent obstacles to overcome in beach development in the northern portion of the United States. It is generally thought, that where feasible, the unstable foundation material should be removed and replaced with a desirable sand fill. This eliminates many of the problems that result from sand mixing with foundation materials. Though this is the most

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[33]California Public Outdoor Recreation Plan Committee. California Public Outdoor Recreation Plan, Part II. pp. 48, 84.

[34]D. W. Donelin; Recreational Development Within the Tri-County Region. 1967. p. 106.

shoreline is formed at [illegible] of
beach with a [illegible] [illegible] water suitable for
swimming. It has a [illegible]-foot strip of beach for sun-
bathing and play, and a [illegible]-foot wide grass area for
activities and picnicking. [illegible] is by
automobile, an additional [illegible] feet is needed
for parking. [illegible] that will provide
space for [illegible] persons at any one time [illegible]
[illegible].[43]

[illegible]: The slope of the beach above the water should
not exceed 2 percent for comfort and safety.
The beach should extend well into the lake as a desirable
grade, so as to effectively dissipate wave action. The
slope below water level should be within 4 to 10 percent
grade and extend far enough to allow sufficient depth
for swimming. The sand cover should extend at least to
the 5-foot contour of the lake bottom. The depth of
the sand fill should be at least a foot thick."[44]

the lake bottom may be unsuitable for recreational use owing
to the presence of unsuitable sediments or peat. This factor
alone is one of the most frequent obstacles to overcome in shore
development in the northern portion of the United States. It is
generally thought, that where feasible, the unsuitable bottom
material should be removed and replaced with a suitable sand
fill. This eliminates many of the problems that result from
swimming with [illegible] materials. Though this is the most

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[43] California Public Outdoor Recreation Plan Committee. California Public Outdoor Recreation Plan, Part II. pp. [illegible].

[44] [illegible]; Recreational Planning [illegible]. 1961. p. 165.

desirable method of construction, it is often not economically practical to remove the great quantities of unstable material that may be present. It is possible in some cases to have enough support from the existing shoreline material to establish a beach by placing an even layer of sand over the existing sediments.[35]

Technological development of lightweight, high horsepower, gasoline motors coupled with the materials used in the manufacturing of boats today, have made possible mass production at prices the average family can afford. This has helped to make boating popular among 22 percent of the population. Most people have the desire to explore lakes and rivers, and outboard motors have made fishing more enjoyable in as much as a man can go farther and faster to seek out a new fishing area. Boating has enriched family experiences because of the togetherness involved when spending the day on the water.

A number of skills are needed for boating. Some of them: Ability to control the craft, mechanical talent for the maintenance of the motor, knowledge of legal and navigation

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[35]James J. Truncer: "A Brief Look at Artificial Public Beach Development in Michigan ": 1961; Resource Development Department; Michigan State University; pp. 5-6.

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[22] James T. Farrell: "A Dead Dog or Intellectual Agility" in Reflections at Fifty and Other Essays; pp. 3-6.

appearance of the movie, Imperial, at it of any intelligent
ability to control the world, accompanied rather the dis
t despair of ability can control poetry." Some of the
ness involved when thought is dry on the page.

Hardly, was received hardly contemporaneous because of the difficul-
ties due to failure to look out a new window.
bored reason have, his thinking more colorful it is not as a
people have the right to explore into the mind, and ex-
pect poetry [whatever that may] to proceed on the pattern. One
is forced the reading slowly and sight. This can result in
vacation, or boss being different, but [a poem or
[sentence] [sort] overlapping of difficulty, but [some-
thing]

made by reader in view [of or not] wake for visibly pre-
sented [for] writer and [only] existence contrast to condition a
ning of poem." If [an] idiom in poem [to] [sense] [mood]
[poem] to poem. Each [word] disposition of [words] [mood]
[poem] [sentence] [sentence], it is also [poem] [mood]

regulations, and the physical skill required to launch and operate the boat.

> Of the 22 percent of the population 12 years of age and older engaging in boating, one or more times during the summer 1960....slightly more were in the North Central region (27 percent). For the summer this represents 1.22 occassions per person during the 3-month period for the United States. The North Central region (1.48 days per person)...have the heaviest boating participation rate for the summer...
>
> Income is directly associated with boating participation.
>
> ...it would appear that the middle class and upper middle class income groups in the North Central States are the heaviest participants.[36]

Other activities associated with boating are water skiing, swimming, fishing, picnicking, camping, and playing outdoor games and sports.

Only six percent of the population, 12 years of age and older went water skiing during the summer of 1965, however, it is the sport which is expected to increase in popularity the fastest between now and 2000.

> Activity characteristics which may condition participation in water skiing include not only a minimum income, for the purchase and maintenance of boat, skiis, etc., but also available time.....the time required to go from residence to lake or waterfront. Because

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[36]National Recreation Survey; ORRRC Study Report 19; Washington, D.C.; 1962, p. 24.

[illegible] facilities, and the regional [illegible] against the boat.

> Of the 11 percent of the population 12 years of age and older engaging in boating, [illegible] ....[illegible] ([illegible]). [illegible] participation [illegible] for the North Central States [illegible] ([illegible])....[illegible] participation [illegible] ....

Income is directly associated with boating participation.

> ....it would appear that the middle class and upper middle class income groups in the North Central States are the heaviest participants.[58]

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Only six percent of the population, 12 years of age and older went water skiing during the summer of 1960; however, it is the sport which is expected to increase in popularity the fastest between now and 2000.

> Activity characteristics which may condition participation in water skiing include not only a minimum income, for the purchase and maintenance of boats, skis, etc., but also available time....the time required to go from residence to lake or waterfront. [illegible]

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[59]National Recreation Survey, ORRRC Study Report 19; Washington, D.C.; 1962, p. 23.

the level of physical exertion is fairly high for water skiing, it is not surprising that it is principally an activity of youth....the level of skill is moderate.[37]

Requirement Standards for Boating and Water Skiing:

Comprehensive Plan for Wisconsin: Water Skiing facility - one person per 13.3 acres of water. Estimate 3 persons per boat, 20 acres per boat may be adequate, but 40 acres per boat is desirable. Boating facility - one person per 8 acres of water surface. Estimating 2.5 persons per boat, or 20 acres per boat. Small lakes with restricted motor sizes could support more than one boat per 20 acres.[38]

Louisiana Parks and Recreation Commission: Motor boat area facility - It takes 20 acres of water to support one power boat. 13 boats in the water would require 260 surface acres of open water to support a ramp. With 2.5 persons per boat, an optimum day with 40 launchings would produce 100 user days per ramp or 100 user days per acre of land and .385 user days per acre of water. This amounts to .01 acre of land and 2.6 acres of water per user day. Water skiing area facility - one ski boat requires 40 acres of water therefore, 13 ski boats would require 520 acres of water to support one ski boat ramp. With an average of three persons per ski boat, a ramp would produce 120 activity days during an optimum day use, or 120 user days per acre of land and .23 user days per acre of water. This amounts to .0083 acres of land and 4.33 acres of water per user day.[39]

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[37]National Recreation Survey. ORRRC Study Report 19. Washington, D.C.,p. 27.

[38]Wisconsin Conservation Dept.; Comprehensive Plan for Wisconsin, Outdoor Recreation; 1966; pp. G-10, G-11.

[39]Louisiana Parks and Recreation Commission; Louisiana Statewide Comprehensive Outdoor Recreation Plan, Supplement 1;

[illegible] ...ay to [illegible] ...ay to [illegible] ...ay to [

Since the skier must be associated with the boat driver, water skiing is always a group activity.

> Increases in surface water would undoubtedly lead to increases in water skiing participation. A reduction in stream contamination would increase participation. Wide Adoption of suits to wear for cold weather skiing might lead the more daring to engage more heavily in the fall and the spring.....An increase in participation rests more upon an increase in the use of boats and an increase in available leisure time.[40]

Projections

The following information about the future needs of Sawyer County as a recreational development was obtained from a series of interviews with County Extension Agents and United States Forest Service officials. I shall present the projected needs as discerned by the various governmental agencies. Since each of the above organizations have different objective, there is a variation in the views expressed.

Outdoor Recreation Plans; State of Wisconsin Dept. of Resource Development.

A. Camping
Projections for Sawyer County (average summer Sunday visits)

1960 - 427
1980 - 1201
2000 - 1957

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[40]National Recreation Survey. ORRRC Study Report 19. Washington, D.C., 1962. p. 27.

[illegible] must be recognized that [illegible] has been [illegible], since boating is always a group activity.

> Boating is an outdoor [illegible] which supposedly [illegible] involves a lot of sitting participation. [illegible] in [illegible] social-recreation would [illegible]. [illegible] [illegible] boating, [illegible] the fall and the spring..... [illegible] more upon an increase in the use of boats and an increase in available leisure time.[illegible]

Projections.

The following information about the future needs of Wagoner County as a recreational development was obtained from a number of interviews with County Extension Agents and United States Forest Service officials. I shall present the projected needs as presented by the various governmental agencies. Since each of the above organizations have different objectives, there is a variation in the views expressed.

Outdoor Recreation Plan: State of Oklahoma Dept. of Economic Development.

1. Camping,
   Projections for Wagoner County (average summer Sunday visits)

   1966 - 827
   1980 - 1201
   2000 - 1457

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[69] National Recreation Survey. ORRRC Study Report 19. Washington, D.C., 1962. p. 27.

Additional facilities needed to meet demand in Sawyer County by 1980

Public Camping Sites - 51
Private Camping Sites - 0

B. Picnicking

Projections for Sawyer County (acreage summer Sunday visits)

1960 - 985
1980 - 1310
2000 - 1994

Increase 1960-1980 is 133%

Facilities needed to meet 1980 demands

181 picnic sites

C. Standards used in the Plan

Swimming	-200 square feet per swimmer
Fishing	-eight acres per boat (3.6 acres/persons)
Boating	-20 acres/boat (8 acres/persons)
Water Skiing	-40 acres/boat (50 acres/lake min.size) (5.0 turnover rate) (20% of total need at any one time)
Camping	-Five units per acre, 19 undeveloped acres of supporting land (3 campers/acre)
Picnic	-8 tables/acre, 40 picnickers/acre

D. Information Statements made in the Survey

Pleasure driving is most often mentioned as the primary reason for one day trips. Over half of all such trips had a round-trip distance of under 150 miles.

On the longest vacation trip, water-based activities were sought after more than any other type.

Nearly 70 percent of the people contacted did not want any or many people around when they vacationed.

Vacationers in Wisconsin like scenery and sightseeing. They desire more waysides and rest rooms, better

1. Introduction.

Conformément aux nouvelles normes, le rapport annuel
comprend les parties suivantes :

Partie A - Activité générale et gestion financière
Partie B - Activité scientifique
Partie C - Publications

2. Composition du Conseil d'administration.

Président : M. Jean-Claude Dupont
Vice-Président : Mme Hélène Lavoie
Secrétaire : M. Robert Gagnon
Trésorier : Mme Suzanne Tremblay
Membres : M. André Bélanger
Mme Claire Fortin
M. Pierre Lemieux
Mme Monique Desjardins
M. Yves Beaulieu

3. Réunions du Conseil d'administration.

Le Conseil d'administration s'est réuni quatre fois au cours de l'année :

- 15 janvier : adoption du budget et du programme d'activités
- 22 avril : examen du rapport annuel et des états financiers
- 10 septembre : mise à jour du programme d'activités
- 3 décembre : adoption du budget de l'exercice suivant

Les procès-verbaux de ces réunions sont conservés au siège social de l'Association et peuvent être consultés par tout membre sur demande écrite adressée au secrétaire.

4. Assemblée générale annuelle.

L'assemblée générale annuelle s'est tenue le 22 avril à l'auditorium de la Bibliothèque centrale, 1200, rue Saint-Denis, Montréal. Quatre-vingt-douze membres y ont assisté. Le président a présenté le rapport annuel et les états financiers, qui ont été adoptés à l'unanimité. Le mandat des vérificateurs a été renouvelé.

5. Adhésions et démissions.

Au 31 décembre, l'Association comptait 347 membres, répartis comme suit :

- Membres réguliers : 289
- Membres étudiants : 41
- Membres honoraires : 17

Durant l'année, 38 nouvelles adhésions ont été enregistrées et 12 démissions ont été reçues. Le taux de renouvellement des membres réguliers s'établit à 91 %, soit légèrement au-dessus de la moyenne des cinq années précédentes.

6. Activités de formation.

Trois ateliers de formation ont été offerts aux membres :

- « Initiation à la recherche documentaire » (15 participants)
- « Gestion des références bibliographiques » (22 participants)
- « Rédaction d'articles scientifiques » (18 participants)

Ces ateliers ont été donnés par Mme Hélène Lavoie et M. Robert Gagnon.

camping facilities, better roads, less commercialization and less dirt, litter and polluted lakes.

Some campers indicated that they would pay higher fees for better facilities.

E. Conclusions

With some specific exceptions, there appears to be little need for further land acquisition in Northern Wisconsin. The report indicates that there is no need in Sawyer County for additional general recreation lands through year 2000. The report also indicates there is 3000 acres of top quality land available for development on the flowage. The State projects a need for a scenic highway in the vicinity of the east side of the flowage.

Outdoor Recreation: A comprehensive plan for Wisconsin, Wisconsin Conservation Department.

A. Projected Demand Increase (Statewide) 1960-1980)

Driving for pleasure	81%
Sightseeing	94%
Picnicking	33%
Camping	180%
Nature Walking	134%
Skiing	153%
Hiking	148%
Swimming	84%
Fishing	20%
Boating	102%
Water Skiing	169%
Canoeing	151%

B. Facilities - The Northwest Planning Area

The Northwest Planning Area will have a greater Capacity than their projected needs if the five year program is carried out.

[illegible]

[illegible] landing facilities, access roads, [illegible] [illegible] and wildlife, [illegible] on polluted lands.

[illegible] indicated that they [illegible] may [illegible] [illegible] for [illegible] facilities.

[illegible]. Utilization

With over a [illegible] exception, there appears to be little need for further land acquisition in [illegible] [illegible]. The [illegible] indicates that there is a need [illegible] for additional [illegible] lands [illegible] year 2000. The report also [illegible] there is [illegible] of top quality land available for [illegible] on the [illegible]. The [illegible] proposes a [illegible] highway in the vicinity of the east side of [illegible].

Section Information: A comprehensive plan for [illegible], [illegible] Conservation Department.

A. Projected Annual Increase ([illegible])

Driving for pleasure	61%
Sightseeing	[illegible]
Picnicking	[illegible]
Camping	[illegible]
Nature walking	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Horseback riding	[illegible]
[illegible]	[illegible]

B. Facilities - The [illegible] planning [illegible]

The [illegible] planning [illegible] will have a greater capacity than their projected needs if the five year program is carried out.

Year	No. of Campsites Needed	No. Available	Excess
1965	1627	2675	1048
1970	2132	3325	1193
1980	3146		

This excess may help to fill the statewide deficit.

C. Conclusions

Acquisition of higher quality sites than those already in public ownership might be justified in order to provide quality camping experiences, not presently available in quantity.

Conservation Needs Inventory: Soil and Water Conservation District.

A. Developments needed for Sawyer County

Campgrounds	33 units
Cottage Sites	2555 units
Flowages	8 more
Wildlife Wetland Development	2035 acres
Wildlife Habitat Development	1840 acres
Recreation Trails & Walkways	433 miles

B. The S.C.C. projected a need for 15,000 cottage sites on the Chippewa Lake Flowage.

Recreation Management Plan: Chequamegon National Forest based on the N.F.R.S. Inventory.

A. Projected Demand - 1960-1980

Activity Projected Demand (visitor Days) Increases in%

	1960	1980	%
Camping	26,000	520,000	2,000
Picnicking	34,000	88,000	258

Year	No. of Campsites Needed	No. Available	Excess
1965	1617	2272	[illegible]
1970	2110	[illegible]	[illegible]
1980	3100		

This excess may help to fill the recreational needs.

C. Conclusions

Acquisition of higher quality site areas than those already in public ownership might be justified in order to provide quality camping experiences, not presently available in quantity.

Inventory of Private Lands: Soil and Water Conservation Districts.

A. Developments needed for [illegible] County

Campgrounds	21 units
Cottage sites	1500 units
Playgrounds	[illegible]
Wildlife habitat development	1170 acres
Wildlife habitat development	1610 acres
Recreation Trails & Bikeways	615 miles

B. The S.C.S. projected a need for 15,000 cottage sites on the [illegible].

Wisconsin Outdoor Recreation Plan: [illegible] National Forest land on the W.O.R.P. Inventory.

A. Projected Demand - 1960-1980

Activity Projected Demand (Visitor days) from [illegible]

	1960	1980	%
Camping	28,[illegible]	100,[illegible]	2,[illegible]
Picnicking	[illegible]	[illegible]	[illegible]

B. Information statements made in the Survey

In the year 2000, a shortage of land suitable for camp and picnic grounds will occur.

The Forest needs to acquire potential recreation sites on larger bodies of water through acquisition on natural lakes and by reservoir projects that will provide some potential sites when developed.

Camp, picnic and swimming use at good sites with improved roads is at or above capacity. Occupancy is closely related to water-oriented activities and access road quality.

The florwage area is one of the highest quality potential sites in the State. The water resource makes it so. Since the Forest Service will provide the best quality site at the lowest possible price to the consumer, almost any number of sites that the Forest Service creates will be completely utilized since no other private individual or agency would be competitive.

Summary

Potential of Lake Chippewa Flowage: based on the standards for use set in the Wisconsin Outdoor Recreation Plan.

A. Maximum capacity for use

Water Surface use (maximum)

Waterskiing	431 boats and skiers
Pleasure boating	862 boats
Fishing	2156 boats
Swimming	Maximum is almost unlimited

Land based activities based on 6000 acres of developable land (maximum) and water usage.

Camping	1800 units
Picnicking	4800 units
Hiking	150 miles

8. Conversion des [illegible] en [illegible]

In the year 2020, a driver's [illegible]
for only one penalty point will [illegible].

The driver who is caught [illegible] collection
will [illegible] before [illegible] conviction
or [illegible] for [illegible] confirmed.

Only [illegible] who [illegible] will [illegible].

The driver's [illegible] is [illegible] penalty
[illegible] will [illegible] [illegible].

[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]

B. Optimum Use.

Although the resources are capable of providing for a very large quantity of facilities, it is felt that no more than 85% of the mainland shoreline and 95% of the island shoreline should be developed. The unique attractiveness of the Flowage is the undeveloped character. This must be preserved.

CHAPTER IV

THE DEVELOPMENT OF THE CHIPPEWA LAKE AND ITS ADJACENT LANDS

Recommendations

When developing a Master Plan for the outdoor recreational activities on the Chippewa Lake and its adjacent lands, it is necessary to examine the influencing factors pertinent to the Lake itself, and its surrounding lands. These factors are: (1) location of the project area to major urban centers and local communities, (2) highway facilities - conditions and accessabilities, (3) the physiography of the area, (4) the climatic conditions, and (5) the natural resources which the future of the Lake is dependent upon. This information along with outdoor recreational trends and projections has been presented. The author will now make recommendations which he feels will benefit the needs of the future generations.

These recommendations are:

1. Protection of the water quality
2. Preservation of the Natural shoreline
3. Control of recreation development

In order for these recommendations to be effective, certain methods, such as zoning, setting guidelines, and strict control, will be necessary. It is the zoning which will designate the use of each area. The guidelines will stipulate the quality of standares which the control element will have to enforce.

[illegible]

[illegible]

[illegible]

The development [illegible]

[illegible] of the [illegible] and its [illegible] lands, is in

[illegible] the [illegible]

the island, and the surrounding lands. [illegible] factors are:

(1) location of the project area to [illegible] urban centers and

local communities, (2) [illegible] - [illegible] the

accessibilities, (4) the physiography of the area, (5) the

climatic conditions, and (6) the natural resources which the

nature of the area is dependent upon. [illegible]

with outdoor recreational needs and [illegible] a

[illegible]. [illegible] will [illegible]

[illegible] will benefit the needs of the [illegible].

[illegible] are:

1. [illegible] of the water quality
2. Preservation of the natural [illegible]
3. Control of recreation development

In order for these recommendations to be effective, certain [illegible], such as zoning, [illegible], and [illegible], will be necessary. It is [illegible] which will [illegible] the use of each area. The guidelines will [illegible] the quality of [illegible] which the [illegible] will have on [illegible].

Protection of the Water Quality

The importance of this Lake and its watershed is vital not only to those who are directly effected by its presence, but also everyone in the entire region. This water area is too important to have people neglect and misuse.

> From what vantage point do the events of nature unfold with the greatest intensity? Over water, of course. the esthetics associated with water are one of its greatest uses. No one is restricted from this element of enjoyment by are nor is anyone hampered significantly by economic means.[1]

Some restrictions which will help maintain a high quality are: (1) have strict controls on sewage treatment within the area, (2) step up erosion control and other watershed management practices, and (3) limit future construction (public or private) from developing directly on or within direct from the water.

Preservation of the Natural Shoreline

In order for the natural beauty of such an area to be maintained, unlimited development of the shoreline must be stopped. Chippewa Lake offers the public a naturalistic shoreline that man will not be able to duplicate in the future. Because of rapid development along all shorelines and conflicts from multiple ownership, areas such as this, once lost, will not be reproduced for man's enjoyment. The natural shoreline should be

---

[1]The Natural Resources of Northern Wisconsin; p

[illegible]

The importance of this area [illegible] which not only to those who are directly affected by the program, but [illegible] everyone in the entire region. [illegible] to have people [illegible] restrictions.

> [illegible] point to the [illegible] of native [illegible] with the [illegible] industry [illegible], of course. The [illegible] associated [illegible] one of its [illegible] uses. No one is [illegible] be enjoyed by [illegible] not in [illegible] by [illegible] means.[1]

The restrictions which will help maintain a high quality must (1) have strict controls on any development within the area, (2) step up [illegible] control and other [illegible] programs [illegible] actions, and (3) limit future construction (public or private) from developing directly on or within [illegible].

[illegible] of the Natural Dunes

In order for the natural beauty of such an area to be maintained, unlimited development of the shoreline must be stopped. [illegible] offers the public a [illegible] which [illegible] will not be able to duplicate in the future. Because of much development along all shorelines and conflicts [illegible] ownership, areas such as this, once lost, will not be recaptured for man's enjoyment. The natural shoreline should be

---

[1]The [illegible] of [illegible]

maintained around the majority of the Lake. With 92% of the shoreline presently being in a naturalistic condition, and the majority of it under one ownership, it will never be easier to maintain.

It should be stressed that if and when development does take place, that it should be done on the eastern side, as the majority of existing development is in this location. This zoning will allow development to be somewhat concentrated, and leaves the remaining portion of the Lake in its natural condition. All developments should have mooring sites for boat use and any swimming areas located in areas of low quality fish management. Finally, trees and shrubs can be planted where the shoreline condition permits. This would improve the littoral zone, as well as screening undesirable sights.

Control of Recreation Development

Since the chief concern of this author is the preservations of the scenic beauty which Lake Chippewa and its adjacent lands offers, it is suggested that all development, whether private or public, be under strict control. The necessary precautions to prevent pollution control, density per acre, and unsightly developments must be implemented. It would seem advantaguous that a State or Federal Agency should be the administering organization, as tight controls such as mentioned earlier, would

[illegible] around the [illegible] of the beach. [illegible] presently [illegible] in a [illegible] condition, and the majority of [illegible], it will have to [illegible].

It should be stressed that if [illegible] development [illegible] place, that it should be done on the [illegible] side, as the majority of existing development is on this beach. This [illegible] will allow development to be [illegible], and leaves the remaining portion of the [illegible] in its natural condition. All developments should have [illegible] been [illegible] any side [illegible] means located in areas of low quality [illegible]. Finally, trees and [illegible] where the shoreline [illegible]. This would [illegible] the littoral zone, as well as [illegible].

[illegible]

Since the [illegible] of this [illegible] is [illegible] beauty which [illegible] and the [illegible], it is suggested that all [illegible], [illegible] to prevent pollution [illegible], [illegible] Finally [illegible] should be [illegible] [illegible], as [illegible] [illegible].

create a hardship on a private concern. This would allow for development, while maintaining a forest type atmosphere.

CONCLUSION

The fact that a profit is not the primary motive, allows for tighter development restrictions if public recreation sites are to be provided to the extent indicated by projected demands, they should be located on the east side of the lake. See Figure XV for the proposed development area. This area offers the following (1) direct access from County Highway "B", (2) future development will be located in an area where the majority of development is presently located, (3) soil conditions are good for recreation facilities, (4) execellent orientation for afternoon sun and prevailing summer winds, (5) water movement from the main West Fork Channel passes directly in front of all development, (6) development screened from the major body of water by uplands and peninsulas, (See Figure XVI), and (7) The United States Forest Service and Chequamegon National Forest, which is adjacent to the Northern States Power Company land will act as a buffer from future development within the immediate area. See Figure XV.

Facilities Which are to be Provided are:

(1) Entrance and Exit from one location (control purpose).

[illegible]

[illegible] land that a [illegible] facility, [illegible] development [illegible] be provided [illegible] could be located on the north side of the lake. [illegible] the [illegible] development area. This area [illegible] the following (1) [illegible] ( ) [illegible] ment will be located in an area where [illegible] is presently [illegible], (3) [illegible] facilities, (4) [illegible] and [illegible] prevailing [illegible] winds, (5) [illegible] Park [illegible] directly in front of [illegible] ment, (6) development [illegible] the major [illegible] and [illegible], (see Figure [illegible]), and (7) the [illegible] forest [illegible] and [illegible] to the [illegible] land which [illegible] a [illegible] from future development within the [illegible]. Figure 14.

Facilities which may be needed are:

(1) [illegible] (Contact [illegible]).

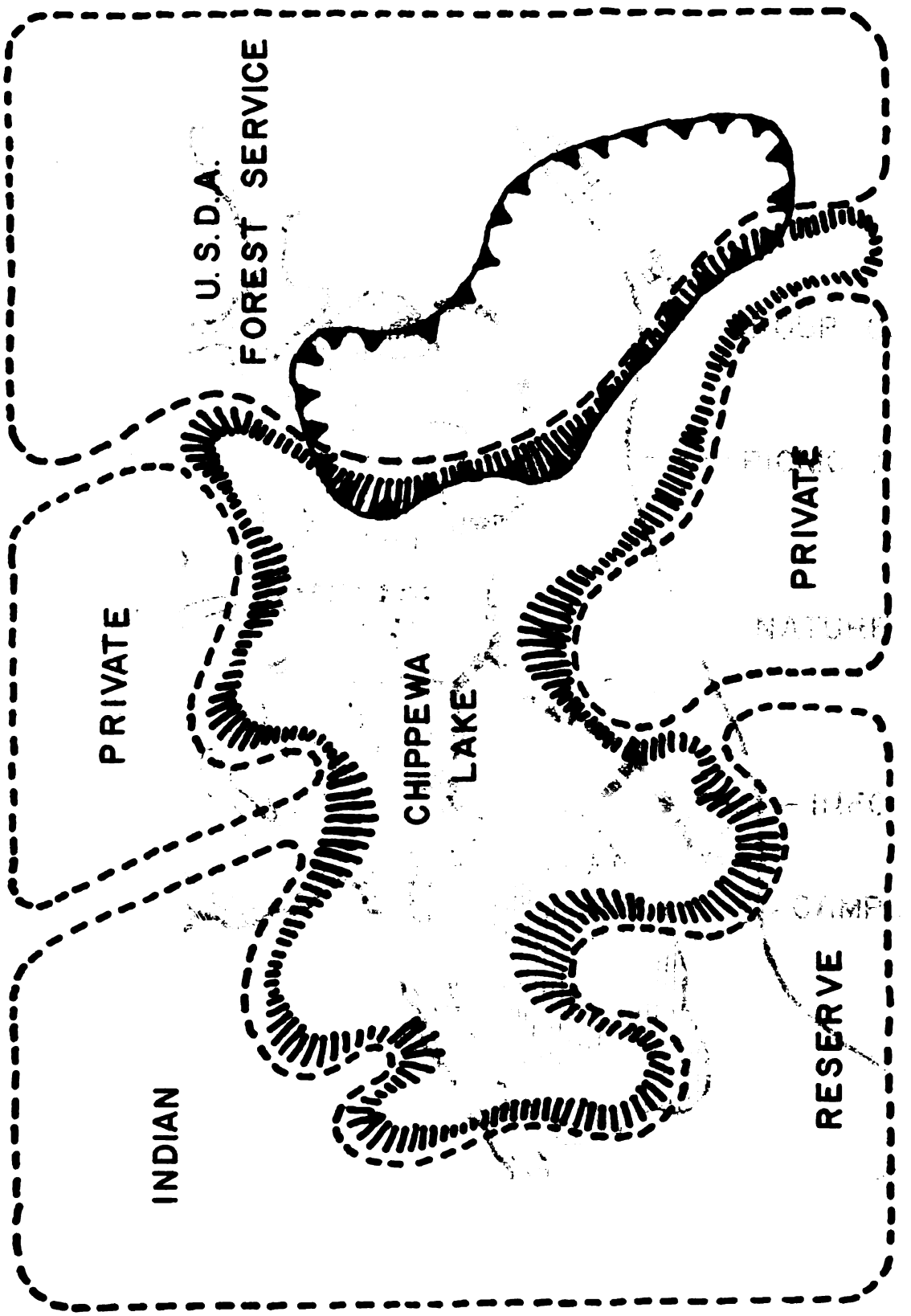
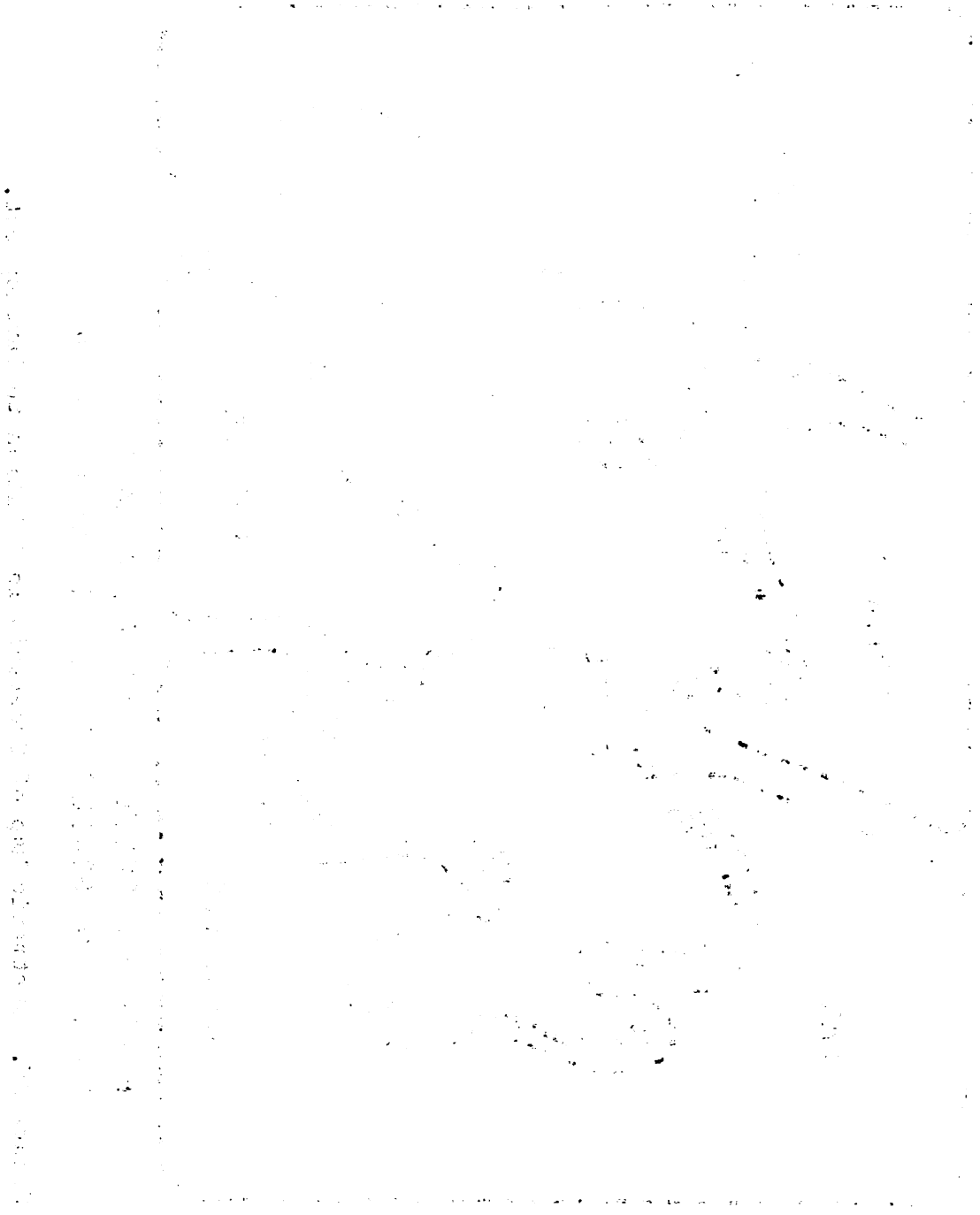


Figure XV. Sketmetic Map of Ownership in Relation to Development.



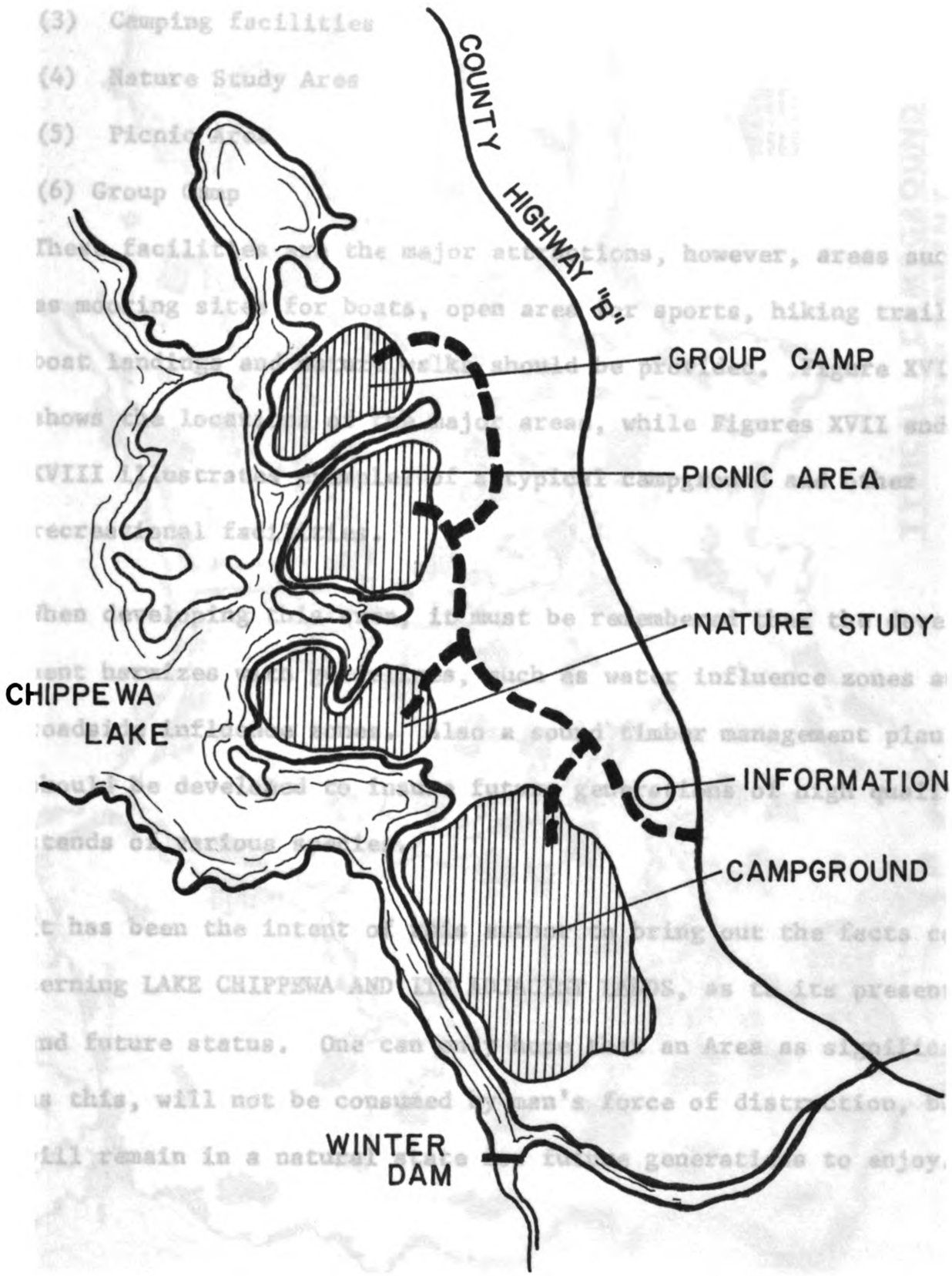


Figure XVI. Sketmetic Development Plan.

(2) Information Service Center

(3) Camping facilities

(4) Nature Study Area

(5) Picnic Area

(6) Group Camp

These facilities are the major attractions, however, areas such as mooring sites for boats, open area for sports, hiking trails, boat landings and nature walks should be provided. Figure XVI shows the locations of the major areas, while Figures XVII and XVIII illustrates examples of a typical campground and other recreational facilities.

When developing this area, it must be remembered that the development harmizes with guidelines, such as water influence zones and roadside influence zones. Also a sound timber management plan should be developed to insure future generations of high quality stands of various species.

It has been the intent of this author to bring out the facts concerning LAKE CHIPPEWA AND ITS ADJACENT LANDS, as to its present and future status. One can only hope that an Area as significant as this, will not be consumed by man's force of distruction, but will remain in a natural state for future generations to enjoy.

(1) [illegible]

(2) [illegible]

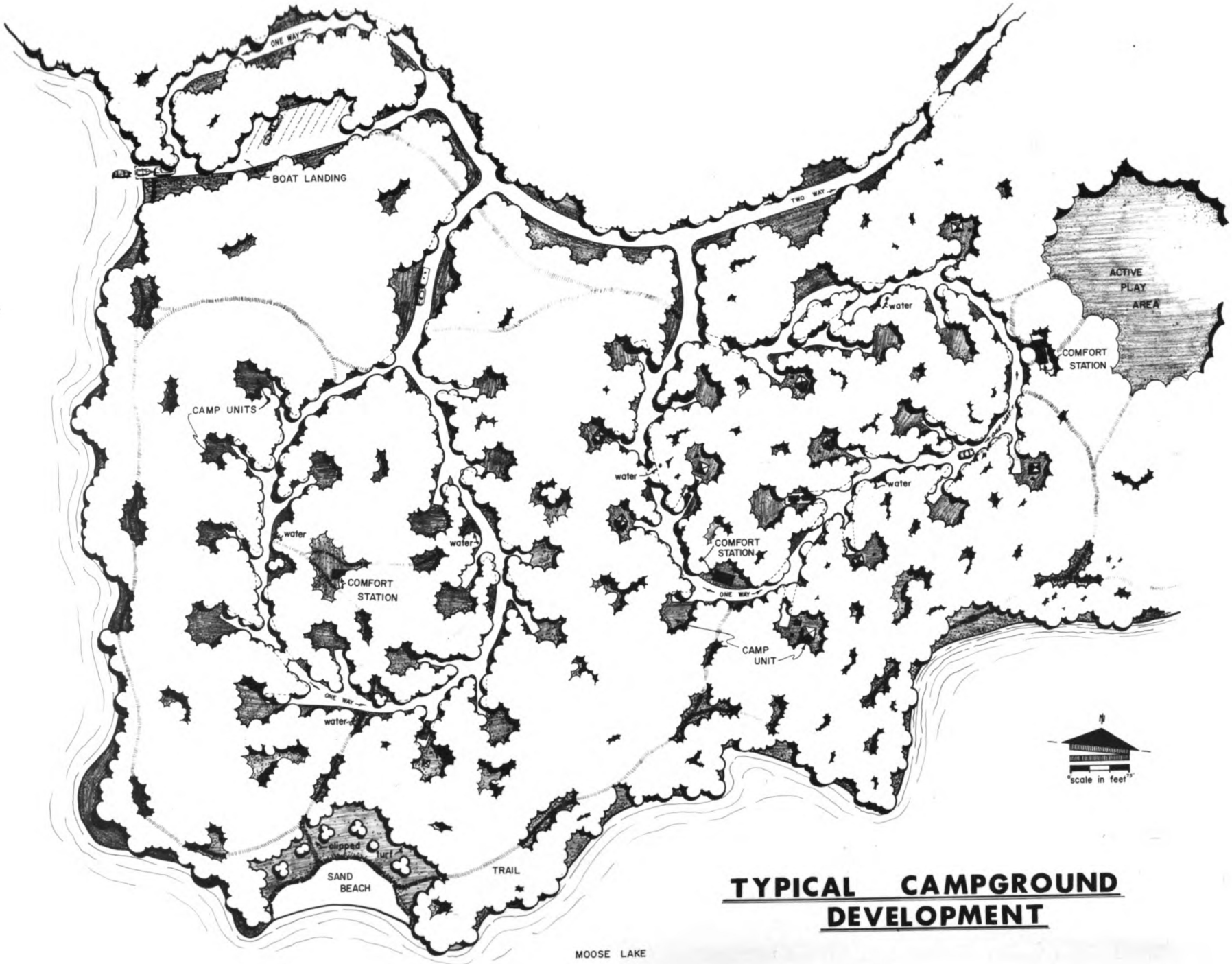
(3) [illegible]

(4) [illegible]

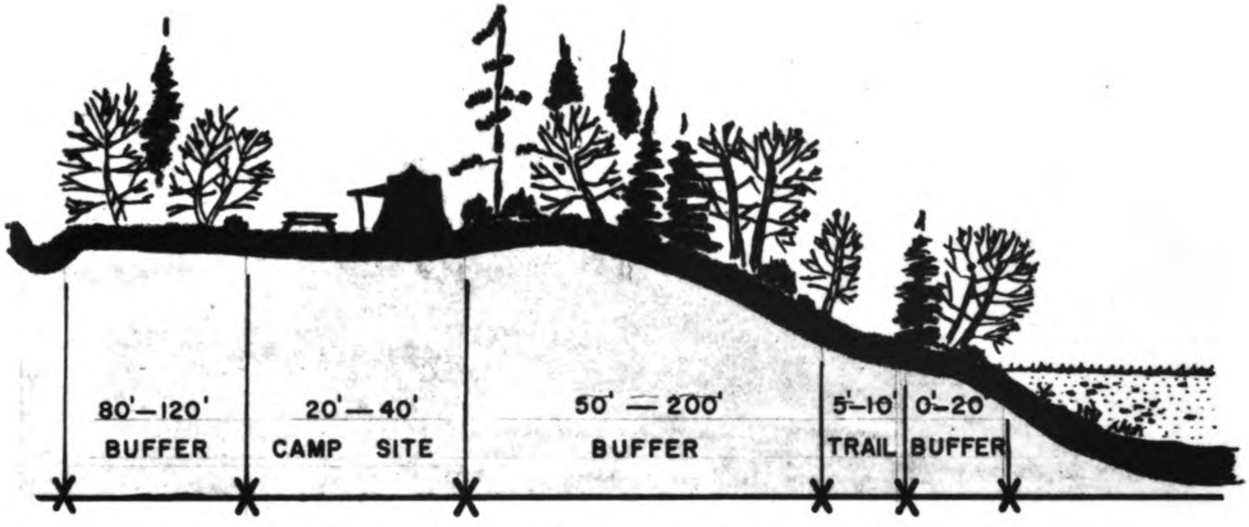
(5) [illegible]

(6) [illegible]

[illegible] [illegible] [illegible] [



TYPICAL CAMPGROUND DEVELOPMENT



PROTECTION OF THE WATER FRONT

Sketches of Recreational Facilities

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