

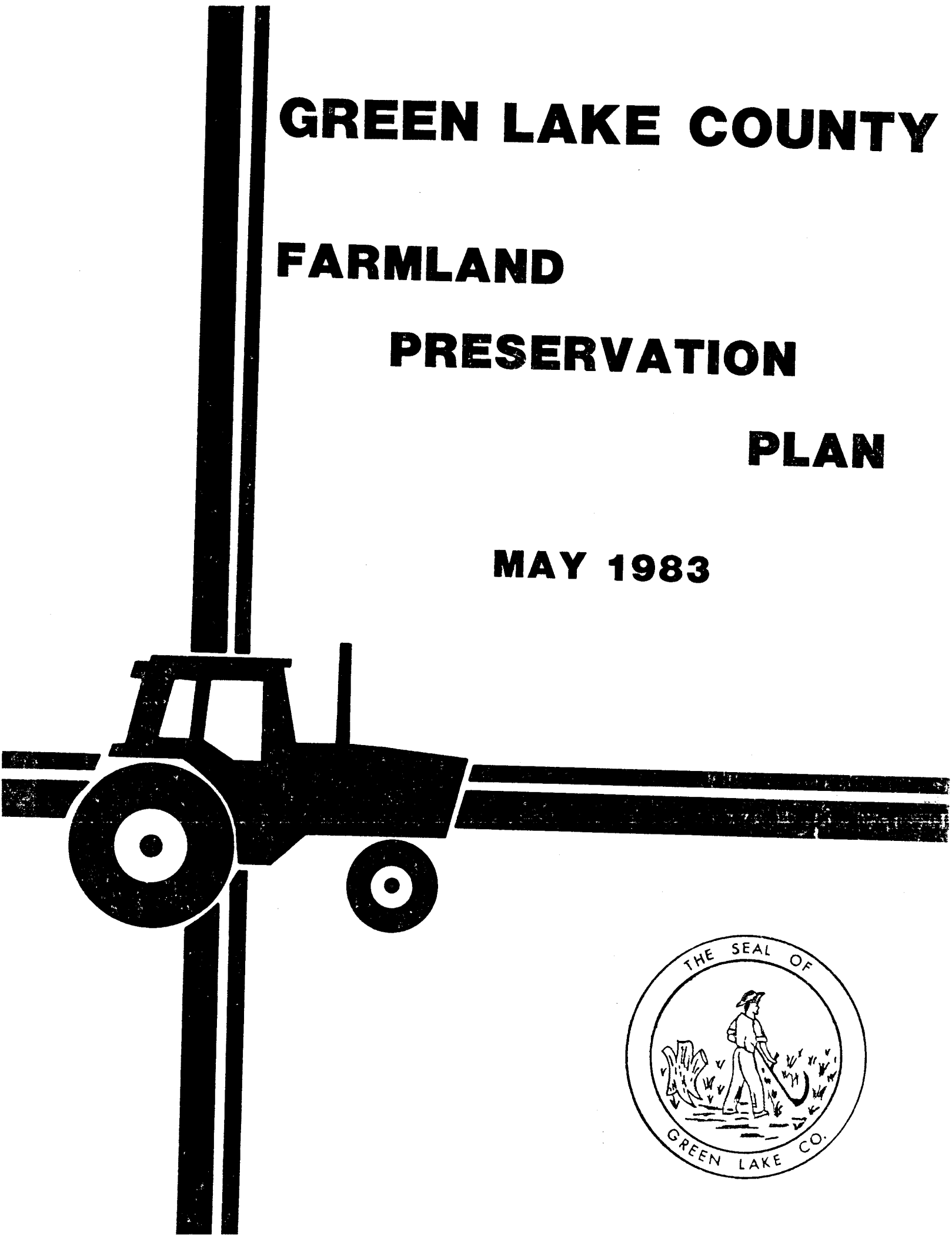
# **GREEN LAKE COUNTY**

## **FARMLAND**

## **PRESERVATION**

## **PLAN**

**MAY 1983**



GREEN LAKE COUNTY  
FARMLAND PRESERVATION PLAN

MAY, 1983

Prepared under the jurisdiction of the  
Green Lake County Board's Zoning Committee

Conrad L. Naparalla, Chairman  
Herbert A. Dahlke, Vice Chairman  
Merlyn B. Soda  
Witton W. Wilsnack  
Martin H. Priebe

Prepared by  
John C. Bluemke  
Farmland Preservation Planner

## ACKNOWLEDGEMENTS

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### GREEN LAKE COUNTY FARMLAND PRESERVATION CITIZENS ADVISORY COMMITTEE

<u>Member</u>	<u>Town</u>
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Donald Powers, Vice Chairman	Mackford
Jim Michaels, Secretary	Berlin
Enos Mantik	Brooklyn
James Fox	Green Lake
Ralph Plaginz	Kingston
Eugene Hein	Manchester
Ken Krentz	Princeton
Florian Krueger	Seneca
Kenneth Walter	St. Marie

### FARMLAND PRESERVATION TECHNICAL ADVISORY COMMITTEE

Tom Hansen	Wisconsin DNR
Patrick Hoffman	Agricultural Agent
Bernard Kasierski	Resource Agent
Rebecca Keipe	Deputy Zoning Administrator
Don Loughrin	A.S.C. Director
Stephen Prissel	S.C.S. Conservationist
Gilbert Voss	Zoning Administrator
Thomas Wallert	Land Conservation Technician

### CARTOGRAPHY

Robert Bliesath  
Dave Levine  
Dept. of Geography  
University of Wisconsin-Oshkosh

### TYPING

Susan Ertmer

## CONTENTS

Title Page .....	i
Acknowledgements .....	ii
Table of Contents .....	iii
Chapter I - INTRODUCTIONS .....	1
Scope .....	2
Purpose .....	2
Trends .....	3
Chapter II - PLANNING PROCESS .....	5
Plan Development .....	5
Goals and Objectives .....	6
Definitions .....	10
Chapter III - THE COUNTY .....	13
History .....	13
Natural Resources .....	15
Population .....	29
Housing .....	35
Agriculture .....	40
Public Facilities and Industry .....	51
Chapter IV - PLANNING AIDS .....	59
Land Use Controls .....	59
Nonregulatory Programs .....	65
Chapter V - PLAN IMPLEMENTATION .....	69
Preservation of Agricultural Lands .....	69
Urban Growth and Public Facilities .....	72
Private Waste Disposal .....	74
Preservation of Environmental, Natural, and Historical Resources .....	76
Continuation of Planning Process .....	77
APPENDICES	
Appendix A - Service Area Descriptions and Recommendations .....	80
Appendix B - Zoning Options for Towns .....	85
Appendix C - Town Maps .....	89
--Farmland Preservation	
--Soil Suitability for Agriculture	
--Soil Suitability for Septic Systems	
BIBLIOGRAPHY .....	120

## FIGURES

Figure 1 - Net Income and Production Expenses .....	46
Figure 2 - How to Claim a Tax Credit .....	88

## MAPS

Map 1 - Location of Green Lake County .....	14
Map 2 - Green Lake Priority Management Area .....	18
Map 3 - Availability of Groundwater .....	19
Map 4 - General Soil Associations .....	22
Map 5 - Wetlands .....	25
Map 6 - Population Distribution .....	30
Map 7 - Number of Housing Units in 1980 and Percent Change from 1970 .....	36
Map 8 - Distribution of County Dairy Herd .....	47
Map 9 - Landfill Locations .....	54
Map 10 - Traffic on Selected County Highways .....	55
Map 11 - Zoning Jurisdictions .....	60
Map 12 - Urban Service Areas .....	73

## TABLES

Table 1 - Land Capability Classes .....	23
Table 2 - Soil Suitability for Septic Systems .....	24
Table 3 - Acres of Woodland .....	28
Table 4 - Population History .....	31
Table 5 - Population History and Projections .....	32
Table 6 - Natural Increase and Net Migration .....	33
Table 7 - Population by Corporate Division .....	34
Table 8 - Projected Housing Units and Land Consumption .....	39
Table 9 - Acres of Farmland .....	41
Table 10 - Land in Farms by Town .....	42
Table 11 - Selected Crop Summary .....	43
Table 12 - Number of Farms and Average Farm Size .....	44
Table 13 - Distribution of Farm by Acres Harvested .....	44
Table 14 - Cash Receipts from Farm Marketing .....	45
Table 15 - Agricultural Employment Trends .....	48
Table 16 - Farm Investment and Sales .....	50
Table 17 - Water Facilities in Green Lake County .....	52
Table 18 - Sanitary Sewer Facilities in Green Lake County .....	52
Table 19 - Largest Manufacturing Employers .....	56

## CHAPTER I

### INTRODUCTION

The conversion of U.S. farmland to nonagricultural uses is being called a "crisis in the making". At a time when additional farmland must be brought into production to meet projected domestic and global food demands, 12 square miles of American farmland is converted daily to nonagricultural uses.<sup>1</sup> The amount of farmland lost during the last decade is equivalent to the combined areas of the states of Connecticut, Delaware, Massachusetts, New Hampshire, New Jersey, Rhode Island and Vermont. The conversion of farmland is also evident in Green Lake County. Since 1950, 40,000 acres of land have been removed from agricultural production. This amount is about 19 percent of the County's total land area, or an area equivalent to the combined areas of the towns of Kingston and Marquette.

Many social and economic factors have contributed to the demise of farming. The conversion of land from farm uses is a complex process that takes place over a period of many years and involves such factors as farm profitability, urban development pressure, land values, personal decisions about work, community expectations, and taxes. As development moves into the countryside, land values begin to rise. From 1975 to 1979, the average per acre value of agricultural land in the County had increased by 135.7 percent.<sup>2</sup> Subsequently, taxes have also risen. Land values and taxes are such that new farmers cannot afford to increase their holdings. At some point, the process becomes irreversible and the farm becomes developed, underutilized, or abandoned.

Development in rural areas not only removes farmland directly from production, but increases the potential for land use conflicts. Farm odors, noise, chemical spraying, trespassing, vandalism, and congestion are problems associated with merging rural and urban land uses. The growing number of complaints and law suits initiated by nonfarming rural residents poses serious problems for the farmer and his ability to make a profit while producing our food.

1. National Agricultural Lands Study, Regional Science Research Institute, 1981
2. Wisconsin Agricultural Statistics, Wisconsin Statistical Reporting Service

Wisconsin is noted as an agricultural state, and a concern over the future of farming in the state prompted the Legislature to enact the Wisconsin Farmland Preservation Act in June of 1977. The legislation is to help local governments preserve farmland through local planning and zoning and to provide tax relief to farmers who participate in local programs. During the initial phase, farmers could qualify for tax credits by voluntarily signing a contract not to develop their land for nonagricultural uses. Participation after 1982 is dependent upon the actions of local government.

In order to allow local participation in the state program and recognizing the need to protect the County's farmland and plan for new development, the County Board adopted a resolution to prepare a county-wide farmland preservation plan. This report is the result of the efforts of the County Board, various County agencies, and ultimately the citizens of Green Lake County. The adoption of this plan will allow for participation in the State Farmland Preservation Tax Credit Program. But, more importantly, it can serve as a guide in making local land use decisions and help preserve one of Green Lake County's most precious resources -- prime agricultural land.

#### SCOPE

The scope of this plan will determine the County's role in preserving its farmland over the next 20 years. The plan is designed to obtain a view of the County's present characteristics of agriculture, natural resources and open space, population, urban growth, and public facilities and to gain a perspective of what these characteristics are likely to be in the future. As such, the responsibility for the design and implementation of this plan comes under the jurisdiction of the County Board's Zoning Committee. Adoption of the complete plan is vested in the whole County Board.

The preparation of this plan has been partially funded by a state grant from the Department of Agriculture, Trade, and Consumer Protection and the Department of Development under the Farmland Preservation Program authorized by Chapter 91 of the Wisconsin Statutes of 1977 as amended. This plan has been prepared in accordance with Chapter 91 and is subject to the approval of the State Agricultural Lands Preservation Board.

#### PURPOSE

In addition to satisfying the requirements of ss 91.51 to ss 91.65, the development of this plan will be oriented toward several purposes.

1. It will serve to protect the County's agricultural land by identifying the land and describing policies that should be implemented to preserve these lands.
2. It will open the door for County farmers and local units of government who choose to participate in the Wisconsin Farmland Preservation Program and make the Program's tax credits available to eligible farmers.
3. It will strive to reduce the cost of growth to local governments and lend form to future growth by anchoring this growth to areas that have existing, or are planning for, public facilities and services.
4. It will augment other land use tools which are designed to protect significant natural resources, open space, scenic, historical, or architectural areas.
5. It will serve as a model for towns that desire to do further planning to preserve their agricultural and natural resources.

#### TRENDS

The preparation of this plan coincides with several economic, physical, and political trends which reflect the dynamics of modern agriculture. The fact that prime farmland is being converted to other uses is well documented. Food prices, economic price supports for farmers, and conflicts between agricultural and urban land uses receive constant attention. Under these conditions, the future of agriculture is more uncertain than usual and the need for planning can be appreciated. The necessity for preserving farmland is also illustrated by several other factors:

- The amount of land suitable for agriculture is finite and competition for this land is increasing.
- The cost of bringing land into agricultural production is increasing.
- The movement toward cash cropping increases the potential for soil erosion problems.
- Agricultural capital investments are increasing, but the dollar return on those investments is not keeping pace with the cost of those investments.
- Rising land taxes are placing more of an economic burden on the financial resources of farmers.



- Demand for agricultural products is growing faster than crop yield increases from technology.
- The focus of the "right to farm" issue is shifting from nuisance disputes to a concern for the environment.

These trends indicate that agriculture is entering a particularly volatile period of time. The challenge to this plan will be to preserve farmland while accommodating urban growth in an orderly manner, minimize potential conflicts caused by merging rural and urban land uses, and provide a form of financial relief to farmers.

## CHAPTER II

## PLANNING PROCESS

## PLAN DEVELOPMENT

Planning and the use of land use regulations to minimize land use conflicts is not a new concept in Green Lake County. The County began work on a county-wide zoning ordinance in 1955 which was adopted in 1963. As the County continued to grow, the ordinance was amended to meet the needs of the County. A complete revision was finished and adopted in 1976. When the Wisconsin Farmland Preservation Law was enacted, two agricultural districts in the ordinance were amended to meet state standards. The ordinance has received preliminary approval from the State Agricultural Lands Preservation Board.

Public interest caused the County to apply for state funding, and in June, 1982, work began on this plan. A Citizen Advisory Committee was established to have at least one person from each town provide regular citizen input and to review work completed by the Farmland Preservation Planner. The Technical Advisory Committee, consisting of staff personnel from County, state and federal agencies, was created to provide general assistance in preparing the planning report and to coordinate the efforts of agencies directly or indirectly involved in farmland preservation. Public meetings were held to introduce the farmland preservation program and to gain a perspective of the needs of the citizens of the County and their desires for the future. The results of the public and committee meetings were incorporated into the initial goals and objectives which established the direction of planning efforts.

Existing land uses were inventoried and definitions were developed, whereby land use could be consistently identified from town to town. Information was compiled on County demographics, land uses, soils and public facilities. When the inventory and data gathering were completed, all information was analyzed to determine the overall condition of the County in terms of the way it is now, and what it is likely to be in the future.

Using definitions established by citizens and staff personnel, maps were prepared to identify agricultural areas to be considered for preservation, environmental areas, developed areas and areas that were changing from agriculture to other land uses. The maps were shown at town meetings to explain their purpose in the overall plan framework. These meetings allowed local people to review the maps and provide local input for the planning process in general.

The preliminary plan was distributed according to ss 91.59(2). All committees involved in the development of the plan reviewed the preliminary report and copies were made available to the general public. Comments and information received from the regular Citizen Advisory Committee meetings, staff meetings, and public informational meetings were addressed to the fullest extent possible in order for the report to reflect local conditions and future desires.

The direction of this plan, as established by the goals and objectives, is similar to East Central Wisconsin Regional Planning Commission recommendations, as outlined in their 1978 report, New Directions for Growth and Development. Minor discrepancies have arisen due to the availability of more current information, and specific objectives may differ due to County objectives and policies relating more toward local conditions.

## GOALS AND OBJECTIVES

The Introduction has illustrated the problem and the Plan Development has outlined the planning process. This section will identify the goals and objectives of this plan. Goals represent common expressions of community ideas, objectives refine goals into more specific statements of what is to be accomplished, and implementation policy suggests alternatives to achieve these goals. These goals and objectives give direction to this plan and provide a continuity of purpose among subsequent plan elements.

### OVERALL GOAL

IT IS A GOAL OF GREEN LAKE COUNTY TO MAINTAIN THE INTEGRITY AND VIABILITY OF COUNTY AGRICULTURE. THIS SHOULD BE ACCOMPLISHED WITHOUT DAMAGING THE ECONOMIC AND SOCIAL ENVIRONMENT OR THE NATURAL RESOURCES WHICH PROVIDE A HIGH QUALITY OF LIFE FOR THE RESIDENTS OF THIS COUNTY.

### OBJECTIVES

To prepare in cooperation with applicable state agency(s), municipal, town, village, and other intra-governmental bodies a twenty year plan to sustain agriculture as an essential part of the economic and social structure of Green Lake County.

#### Implementation Policy:

1. Address and analyze the current status of County and town agriculture, characteristics of natural resources, current and projected population statistics, the need for urban growth and housing, and existing and projected public facilities.
2. Map farmland areas to be considered for preservation.

3. Support and compliment local, regional and state efforts to preserve farmland.
4. Provide a blueprint for action by stating the County's policy regarding the preservation of agricultural lands, urban growth, private waste disposal systems, and the protection of environmental and unique areas.
5. Prepare the plan in accordance with Chapter 91 of the Wisconsin Statutes.
6. Provide flexibility for change by establishing a systematic and continuous procedure to ascertain preferences and suggestions by citizens and to establish a procedure whereby additions, deletions, and other changes in the plan may be made as deemed necessary. The procedure will involve a five year interval of review and revision with a maximum thirty month interval for updating data and/or elements of the plan.

#### GOAL I

IT IS A GOAL OF GREEN LAKE COUNTY TO PRESERVE ITS FARMLAND BY PROTECTING THOSE LANDS FROM ENCROACHING INCOMPATIBLE LAND USES AND BY USING APPROPRIATE SOIL MANAGEMENT TECHNIQUES.

#### OBJECTIVES

To identify those lands most suitable for agricultural use.

To identify those agricultural lands most subject to soil erosion problems.

To preserve the capability of the land to provide agricultural products by maintaining soil erosion losses within acceptable soil conservation limits.

To provide continuous information to County Farmers pertaining to the financial advantages and long-range benefits of farmland preservation and soil conservation planning.

#### Implementation Policy:

1. Establish criteria to maintain consistency in the identification of agricultural land and utilize those standards to delineate areas to be considered for preservation.
2. Develop standards to rank areas with critical soil erosion problems and prepare conservation plans for these areas on a priority basis.
3. Protect identified agricultural land through an integrated application of land use regulations, local planning, farmland preservation contracts, and soil conservation plans.
4. Encourage the implementation of County agricultural land use regulations in

towns with County zoning, and town agricultural land use regulations in towns that have not adopted County zoning.

5. Use existing building and sanitary codes; shoreland, subdivision, floodplain, and conservancy regulations; and County, regional, and town plans to augment farmland planning.
6. Minimize rural and urban land use conflicts by coordinating County and town land use planning and regulations.
7. Encourage development allowed in agricultural areas to minimize the amount of land removed from production and the impact the development will have on surrounding farm operations through land use planning and the use of applicable land use regulations.
8. Encourage all farmers to utilize applicable soil conservation practices to preserve the quality of their farmland.
9. Coordinate efforts of agencies involved with farmland preservation and soil and water conservation.
10. Provide information about cost sharing programs available to assist in the application of conservation management practices.
11. Assist local governments who desire more involvement in agricultural land use planning.
12. Conduct informational meetings for agricultural organizations and the general public.

## GOAL II

IT IS A GOAL OF GREEN LAKE COUNTY TO ACCOMMODATE FUTURE URBAN AND RECREATIONAL GROWTH IN A MANNER WHICH WILL NOT STRAIN THE NATURAL OR FINANCIAL RESOURCES OF THE COUNTY OR ITS TOWNSHIPS.

## OBJECTIVES

To encourage growth in areas where it will not conflict with other land uses and is compatible with local environmental conditions.

To provide for growth by identifying those areas that are presently in agricultural use but which have characteristics which predicate future development.

To lend form to growth by anchoring development in areas that have existing, or are capable of providing public facilities and services in the future.

Implementation Policy:

1. Delineate areas capable of accomodating growth by using County and town maps, information on urban service areas and sanitary districts, the septic suitability of soils, and County and town land use plans.
2. Identify areas that are in a transition from agricultural uses to other nonfarm uses.
3. Minimize adverse environmental impact by encouraging development only in areas with soils suitable for septic tank absorption fields and subjecting proposed development to applicable land use regulations.
4. Encourage growth in suitable areas by assisting in the development of capital improvement programs designed to provide services in the most cost-effective manner.
5. Guide growth through the proper administration of County, city, and town codes, ordinances, regulations, and plans which identify public facilities and outline procedures for development.
6. Require Land Conservation Department review of all subdivision plans and supervision of the application of sediment and erosion control measures at construction sites and development areas.
7. Encourage a coordinated planning program among the County, cities, and towns.

GOAL III

IT IS A GOAL OF GREEN LAKE COUNTY TO PRESERVE THOSE ENVIRONMENTAL AND UNIQUE AREAS WHICH ENHANCE THE QUALITY OF LIFE FOR RESIDENTS OF THE COUNTY.

OBJECTIVES

To protect the significant natural resources, open space, scenic, historical, and archaeological resources of the County.

To utilize these resources in such a manner that future generations can enjoy the amenities provided by these areas.

Implementation Policy:

1. Protect sensitive environmental areas and provide recreational activities by following the program outlined in the Green Lake County, Outdoor Recreational Plan.

2. Provide information relating the importance of wetlands and woodlands to our quality of life.
3. Stimulate participation in the Big Green Lake Priority Watershed Plan.
4. Encourage soil conservation practices to reduce urban and rural nonpoint pollution.
5. Preserve small environmental areas located on farms by including these areas in farmland preservation contracts or exclusive agricultural zoning.
6. Minimize adverse environmental impact by encouraging development only in areas with soils suitable for septic tank absorption fields and subjecting development to applicable land use regulations.
7. Augment other local, regional, and state plans dealing with the preservation of environmental and unique areas.

#### DEFINITIONS

In order to prepare the maps in the Appendix of this plan, the following definitions were established to consistently identify soils, current land use patterns, and possible areas of future development in the County. Soils information come directly from the County Soil Survey. Criteria used to develop definitions for the farmland preservation maps included: land capability classification, present productivity of farms, potential productivity of soils, existing land uses, and the potential for land use change. Reproductions of the planning maps in this report will be available from the County Zoning Office.

For the purpose of the plan, the County has been divided into four basic land uses:

#### I. FARMLAND PRESERVATION DISTRICTS

- A. Land identified by the Soil Conservation Service as being in capability class I, II, or III, and other land currently in agricultural use or made suitable for agriculture by soil conservation practices.
  1. Mapped districts will be a minimum of 100 acres.
    - a. Districts may be comprised of 100 acres under common ownership or an aggregate of commonly owned parcels 35 acres or greater.

- b. Parcels less than 35 acres can be included provided the land use is compatible with agriculture and is abutting or adjoining a farmland district.
- c. Woodlands that are part of a farm operation, or being harvested under a management program and woodlands under Forest Crop or Woodland Tax Programs which are contiguous to farmland districts.
- d. Agricultural land that is in a conservancy zone, provided that it was being farmed prior to the enactment of the zoning.

## II. TRANSITIONAL AREAS

- A. Green Lake County has some agricultural areas which show a potential for conversion to nonagricultural uses. Recognizing the need to accommodate and provide for future growth, some of these areas are identified as transitional areas. Basically, transitional areas are those areas which are now predominantly in agricultural use; but, which may be needed and are suitable for future growth.
  - 1. Transition areas must be a minimum of 35 acres and can include the following areas.
    - a. Land close to urban concentrations which are capable of providing adequate service.
    - b. Land inside sanitary districts.
    - c. Land planned or zoned by the County or towns for nonagricultural uses.

## III. EXCLUDED AREAS

- A. By definition most of the rural areas fall into the two previous districts; however, land in the following categories will be excluded from the farmland districts.
  - 1. Incorporated municipalities.
  - 2. Concentrations of development (unincorporated rural centers or rural subdivisions).



3. Areas presently receiving sanitary sewer service or in planned urban service areas.
4. Land that is subdivided or platted.
5. Parcels less than 35 acres having land uses not compatible with agriculture and the majority of surrounding land is not in a farmland district.
6. Parcels of land 10 acres or larger zoned by the County ordinance for nonagricultural uses and such development has started to occur.

#### IV. ENVIRONMENTAL AREAS

A. Green Lake County has several environmental features which provide a variety of environmental, aesthetic, recreational, and educational benefits to the County. To offer some protection, smaller environmental areas that are parts of operating farms will be included in farmland districts. Larger environmental areas will be identified separately. The following list recommends those areas to be identified as environmental areas.

1. Surface water (lakes, rivers, and streams).
2. Wetlands greater than 10 acres in size rated numbers 3 to 8 by Circular 39, Wetlands of the U.S.
3. Woodlands more than 10 acres in size which are not part of farm operations or being harvested under Forest Crop and Woodland Tax Programs.
4. Historical, environmental, or archaeological areas identified in the County Outdoor Recreation Plan.
5. Land zoned conservancy by the County ordinance.

## CHAPTER III

## THE COUNTY

Named after the deepest inland lake in Wisconsin, Green Lake County is located in the southeastern part of central Wisconsin (Map 1). The County is one of the smallest counties in the state with a total of 245,374 acres. Topography ranges from expansive wetlands to steep moranic hills. Much of the land is quite productive. A population density of about 52 persons per square mile is higher than one finds in a typical agricultural county. This is a reflection of the County's recreational importance, and an indication of the growing influence of manufacturing and service industries. The products made by factories illustrate the diversification of the County's industrial base. Apparel and leather goods are stronger in Green Lake County than in most Wisconsin counties. Food and foundry products are a major part of the industrial base, and dairy farming is dominant in the agricultural sector.

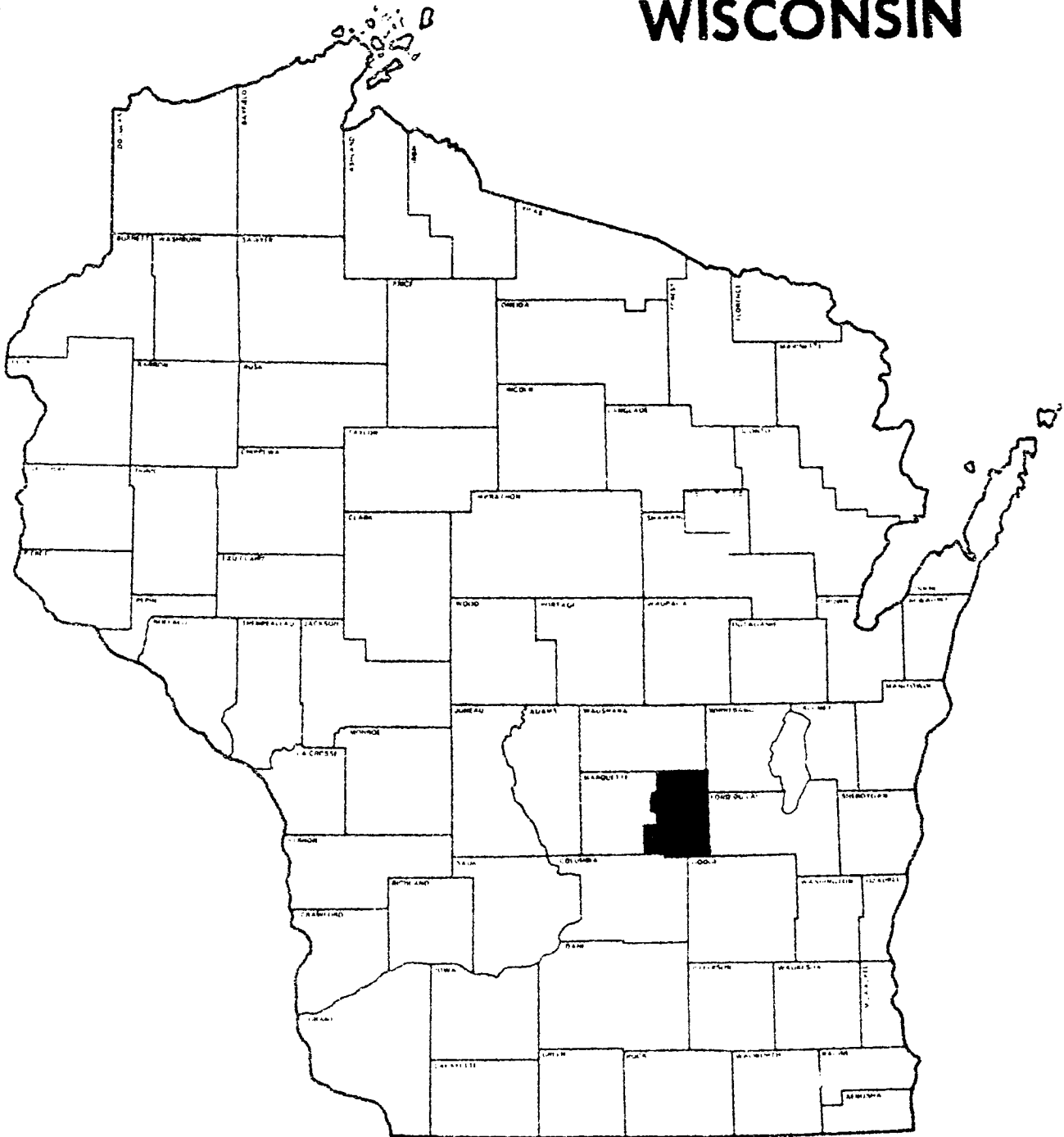
## HISTORY

Originally Green Lake County was inhabited primarily by Winnebago Indians. Due to its location on the Fox River, the County was visited by a variety of explorers, fur traders and missionaries. In 1673, Father Marquette landed and camped on the south shore of Lake Puckaway. The place was named Marquette and is located in the present Town of Marquette. It was not until 1831 that the first permanent white settlement was established in the County. Mr. Luther Gleason settled on the Fox River in an area that is now known as the Village of Marquette. More settlers followed and by 1850 the population of the area had expanded to 8,641 persons. Originally a part of Marquette County, Green Lake was separated and organized as a county in 1858 by an act of the Wisconsin Legislature.

Green Lake County was never extensively covered by forests, and consequently, its economic development began with farming. The early settlers raised crops and livestock mostly to fill their own needs. Wheat was grown for a while, but agriculture soon shifted towards general farming and the raising of livestock. Wisconsin's first commercial cranberry production began in the County around 1860. Settlers cultivated the native vines growing in marshy areas around the Berlin area. While many of the marsh areas are still used for growing specialized crops, very little cranberry acreage remains today.

## MAP 1

LOCATION OF GREEN LAKE COUNTY

**WISCONSIN**

Green Lake County Agriculture has not developed along specialized lines as some other counties. Dairy farming is the major producer of cash receipts, but the County also raises fine quality livestock and grows many vegetable crops. It ranks relatively high among Wisconsin counties in the production of hogs and stock sheep, and ranks very high in the production of vegetable crops. The County follows the state trend, in that the number of farms has been decreasing while the coverage acreage per farm has been increasing. Although the acreage in individual farms is increasing, the total amount of land in agricultural uses has been decreasing since 1945.

## NATURAL RESOURCES

### GEOLOGY

Landscape features of Green Lake County are mainly the result of glaciation. Topographic features include ground moraines in which low hills and kettles are interspaced with glacial lake beds and drainage ways. There is a limestone ridge, two to seven miles wide, which begins in the eastern part of the Town of Manchester and ends in the northeast corner of the Town of Berlin. The cuesta has a steep face or escarpment to the west and a very gentle slope to the east. Another smaller dolomite ridge is located in the Towns of Green Lake and Mackford. Due to glacial deposition, the ridges are not easily distinguished, and in some places they are so close together as to appear as one ridge.

Based on surface features, the County can be divided into three physiographic regions. The high plain, or plateau, in the southeastern part of the County has an average elevation of 1,000 feet above sea level. Nearly level or gently sloping, well drained soils are underlain by dolomite and sandstone bedrock. The second physiographic area is in the northwestern part of the County and has an average elevation ranging from 760 to 800 feet above sea level. It is an area of level or gently sloping, sandy soils or marsh, which are underlain by sandstone bedrock. The rest of the County consists of hills and valleys that have an average elevation of 800 to approximately 900 feet. This area of the County has a very complex pattern of soil drainage and ranges from very poorly drained to excessively drained.

## WATER RESOURCES

Green Lake County has abundant and readily available supplies of ground and surface water for nearly all anticipated uses. Surface waters make up approximately 7.5 per cent of the total area of the County. There are 36 lakes which cover about 17,488 acres, and the 58 streams have a surface area of 1,070 acres.<sup>3</sup> Most of the County is in the Fox-Wolf River Basin. The exception is the extreme southeast corner of the County which drains into the Rock River.

Surface water has always been a highly valuable resource that is used for drinking water, waste assimilation, transportation, and a variety of commercial and recreational activities. Occupying 7,325 acres, Green Lake is the largest lake in the County and the seventh largest lake in the state. With a depth of 237 feet, Green Lake is also the deepest inland lake in Wisconsin.

Green Lake and other smaller lakes have been, and still are, a focal point for growth and development in the County. The growth has not occurred without causing problems. Most lakes in the County have been identified as being eutrophic. (Lakes being choked with plant growth and gradually changing from a lake to a bog or marsh.) Surface water has been affected by two types of human activity - point and nonpoint pollution.

Point pollution is the most easily identified source of surface water pollution, because it is discharged from specific sites; such as municipal waste treatment plants or industrial plants. Until recently, the volume of water in the County's lakes and rivers has been able to sufficiently dilute these discharges. However, as population has increased so has the amount of discharge. Inadequate treatment of wastewater has been identified as a significant factor in the pollution of surface water.

Nonpoint pollution is difficult to identify and monitor, because it enters surface water over a wide area, and it is considered a larger problem than point pollution. Major sources of nonpoint pollution include agricultural and urban run-off, run-off from rural and urban construction, and the failure of septic systems. Pollution from these sources is typically in the form of sediments, plant nutrients, pesticides, lead and organic debris. These forms of pollution contribute to the eutrophication of the lakes and contamination of fish, resulting in threats to human health, loss of wildlife and diminishing recreational and aesthetic benefits from the County's water resources.

3. Green Lake County Resource Conservation Program. 1976

It was due to nonpoint pollution problems, that in 1980 the Green Lake Watershed was selected for participation in the Wisconsin Nonpoint Source Pollution Abatement Program. The Big Green Lake Priority Watershed Plan was developed, and now Fond du Lac and Green Lake Counties are in the process of applying the best management practices outlined in the Plan. While the entire Green Lake Watershed was selected, cost-sharing grants are available only in that portion of the watershed designated as the Priority Management Area (Map 2). It is in this area that the application of management practices will be most effective in improving water quality. While the best management practices are described for the planning area, these management techniques can achieve similar results in reducing pollution in other parts of the County.

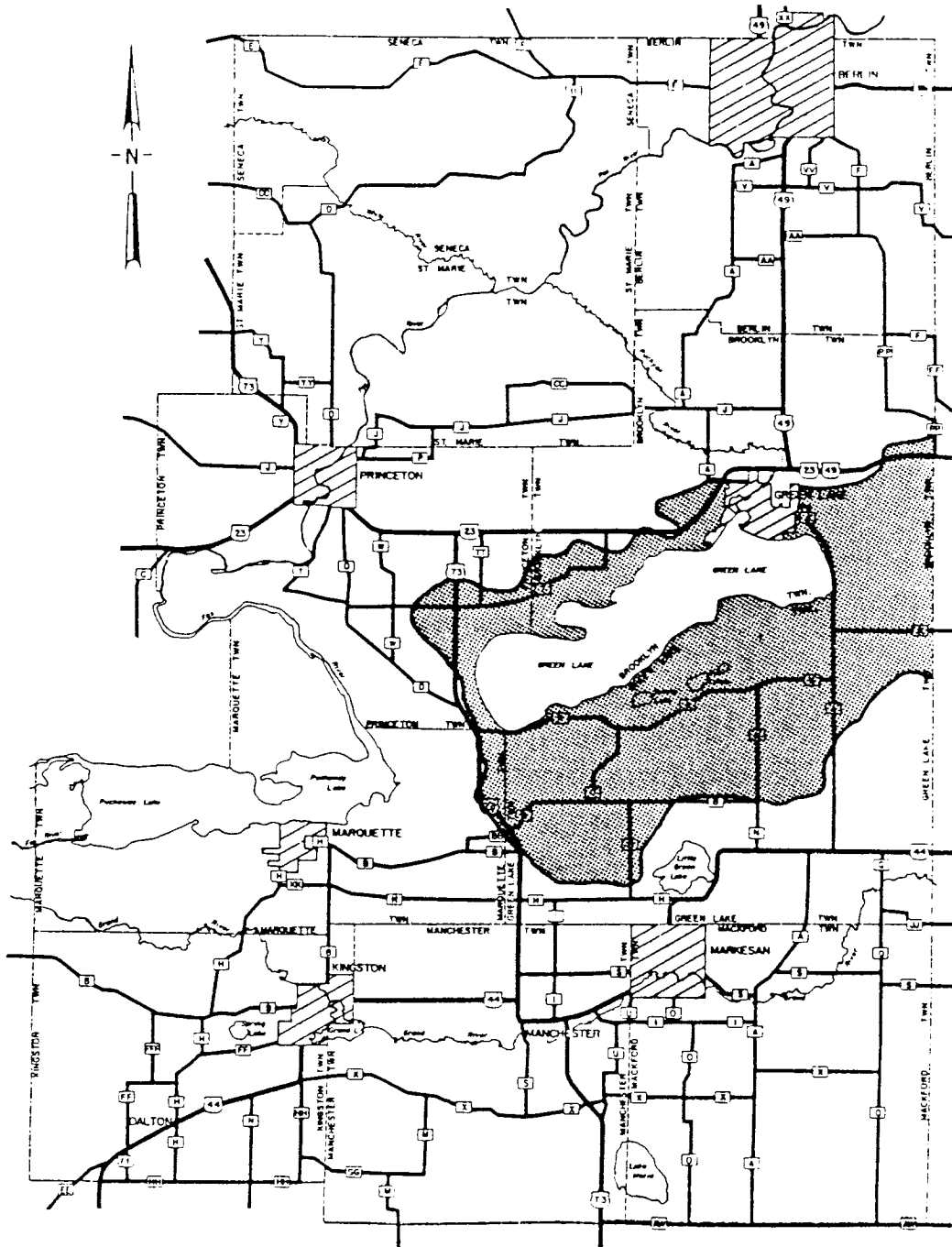
Precipitation is the principal source of water in Green Lake County. Part of the water is returned to the atmosphere through evaporation and transportation, and part of it runs off directly to streams and lakes. But, most of the water percolates downward to groundwater aquifers. Groundwater recharge is the greatest where bedrock aquifers are close to the surface. Locally, groundwater moves towards nearby rivers and streams, but the overall general movement is northwestward towards the Fox River and the large wetlands in the northwestern part of the County.

Groundwater is available in the County from glacial deposits and bedrock aquifers. The availability of water from glacial deposits is estimated at 5 to 10 gallons per minute. Northwest of a line that extends generally from the City of Berlin to the City of Princeton; and a small area that runs northeast from Lake Puckaway thru, and beyond Big Green Lake, availability is estimated at 10 to 100 gallons per minute.<sup>4</sup> Water from glacial deposits is moderately hard and locally high in iron, but generally is suitable for most domestic, municipal, and industrial uses.

Most groundwater in the County is drawn from sedimentary bedrock aquifers. Yields from properly constructed wells range from 10 to over 500 gallons per minute. Probable groundwater yields from bedrock are displayed in Map 3. Water from these aquifers is hard and iron is a problem in some places. Quality of the water is generally adequate for domestic, municipal, and industrial uses.

4. Water Resources of the Wisconsin-Fox-Wolf River Basin, Perry G. Olcott, 1968.

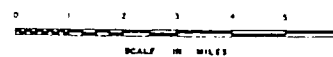
# GREEN LAKE PRIORITY MANAGEMENT AREA



## LEGEND



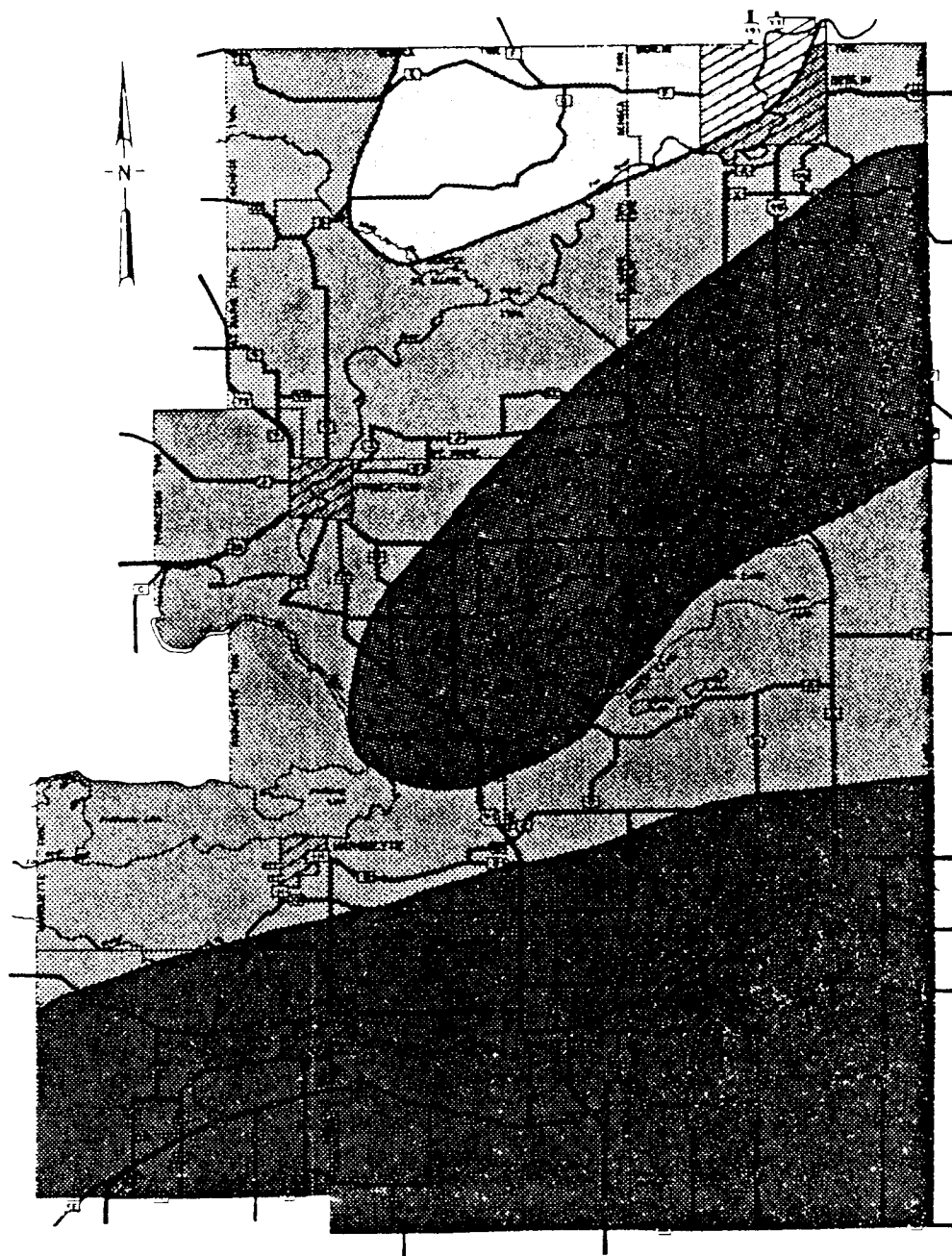
Priority Management Area



SOURCE: Big Green Lake Priority Watershed Plan, Wisconsin DNR, 1980

# PROBABLE WELL YIELDS FROM BEDROCK

## GREEN LAKE COUNTY



LEGEND: Probable Well Yields (in gallons per minute)



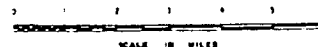
10 - 100



100 - 500



greater than 500



SOURCE: Water and Related Land Resources, Southeast Wisconsin Rivers Basin, USDA, June, 1974, 279 pp.



While there are no major groundwater problems, care must be taken to maintain the quality of this abundant resource. Potential problems include the decline of water levels between areas of closely spaced wells or areas of heavy industrial or municipal pumping, and the pollution of water in bedrock aquifers. Potential for groundwater contamination is greatest where dolomite bedrock is close to the surface or in areas where water percolates very quickly. Due to potential water quality problems, all aspects of water use should be considered in developing areas.

### CLIMATE

The climate of Green Lake County is typified by summers which are warm and occasionally humid, and winters which are long, cold and snowy. The average annual temperature at Dalton is about 46° F. Average monthly temperatures range from 18° F. in January to 71° F. in July. The average date of the last 32-degree freeze in the spring is May 13 and the first in the fall is September 26. The growing season, defined as the number of days between the last 32-degree freeze in the spring and the first in the fall, averages 136 days.<sup>5</sup>

Precipitation is usually adequate for crops. The probability for extended dry periods is greatest in the last part of July, but a severe drought affecting all crops is rare. Average annual precipitation, including moisture content of snow, is about 30 inches. Approximately 60 per cent of the precipitation usually falls from May through September, which covers the growing season of most crops.

### SOILS

#### General Soil Characteristics:

Most soils in Green Lake County are derived from parent materials that are directly or indirectly the result of glacial activity. The most common parent materials are glacial till, windblown silt, windblown sand, and lacustrine deposits. Individually or combined, these materials form many of the County's soils and influence management practices, type and intensity of agricultural operations, and potential for development.

Windblown silts and glacial till on the high plateau in the southeastern part of the County, form some of the best agricultural land in the County. Windblown sands are common in the western part of the County, and in some areas the sand mantle extends into eastern Green Lake County. Lacustrine

5. Soil Survey of Green Lake County, Wisconsin, USDA-Soil Conservation Service, 1977.

deposits in the northern part of the County are mostly sedimentary materials laid down in old glacial lakes. These areas are usually too wet for farming unless they are drained and well managed. General soil associations found in the County are displayed in Map 4.

#### Prime Agricultural Soils:

The suitability of soils for agriculture was determined by a detailed soil survey completed in 1977 by the USDA Soil Conservation. Soils were rated according to their capability for crop production based upon soil type, slope, erosion potential, and drainage characteristics. Land capability classification shows in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The numerals indicate progressively greater limitations and narrower choices for practical use. Land capability classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but have other limitations, impractical to remove, that limit their use.

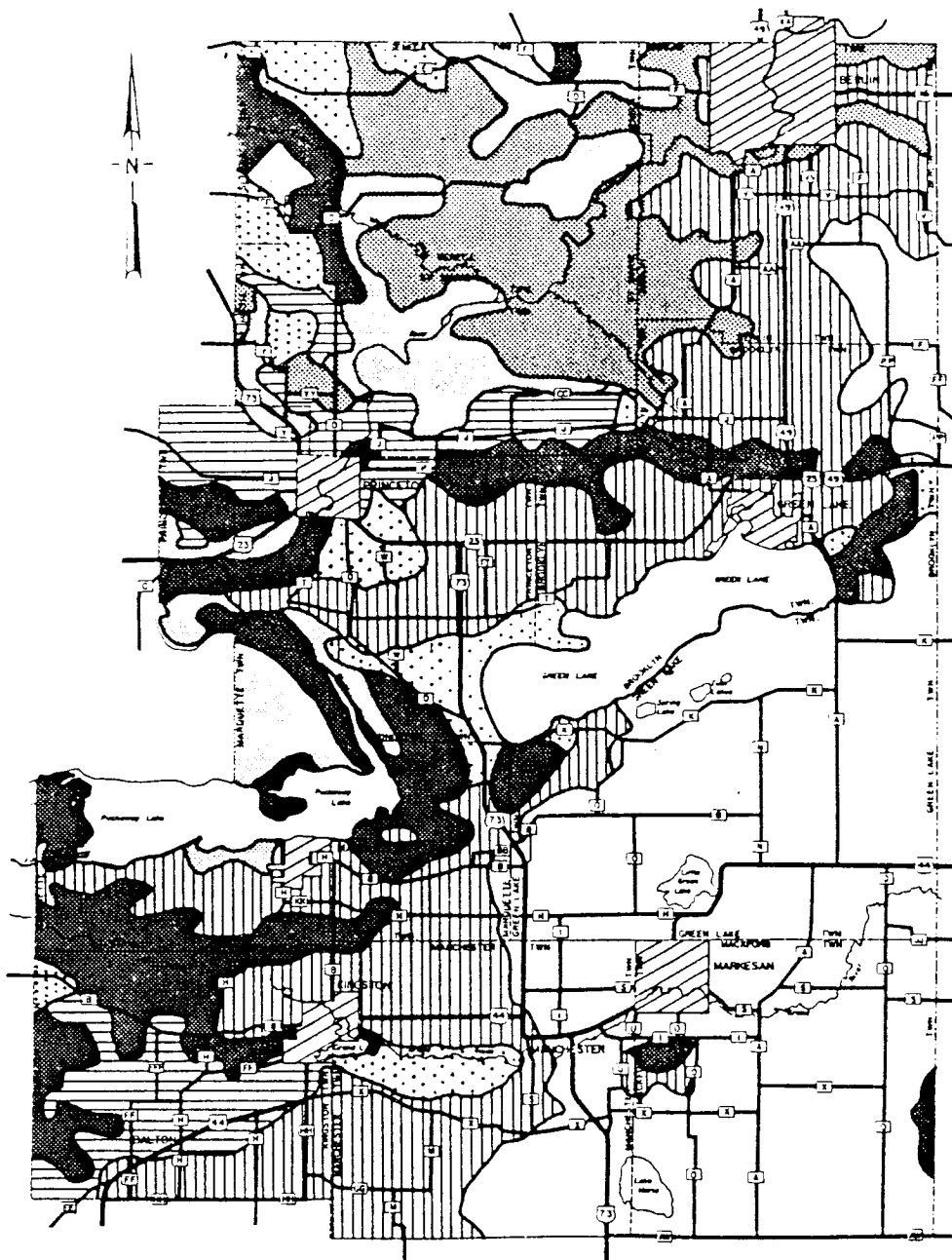
Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for agriculture.








Class VIII soils have limitations that practically preclude their use for crop production.

The number of acres and the percentage for each class are displayed in Table 1. Generally classes I, II, III are suitable for agriculture, but with slight to moderate limitations only classes I and II are considered prime agricultural soils. Table 1 indicates that soil classes I and II account for 47 per cent of the County's soils. A majority of the prime soils are associated with the Plano Mendota - St. Charles soils located in the southeastern part of the County. It should be noted that in some areas class II soils are too wet or susceptible to erosion to be prime agricultural

# GENERALIZED SOIL MAP GREEN LAKE COUNTY



LEGEND: Soil Associations

	Plano-Mendota-St. Charles		Boyer-Oshtemo-Gotham
	Kidder-Rotamer-Grellton		Willette-Poy-Poygan
	Lapeer-Mecan-Okee		Adrian-Houghton
	Oakville-Brems-Granby		

0 1 2 3 4  
SCALE - IN MILES

SOURCE: Soil Survey of Green Lake County, USDA, 1977.

soils. However, through proper management these and other lower class soils have good potential for crop production, and in many areas are already being farmed. Soil maps delineating land capability classifications for each town are included in the Appendix of this plan.

TABLE 1  
LAND CAPABILITY CLASSES IN GREEN LAKE COUNTY

<u>Class</u>	<u>Acreage</u>	<u>Percent of Total</u>
I	18,795	8.3
II	87,320	38.5
III	65,120	28.7
IV	47,355	20.9
V	870	.4
VI	4,215	1.8
VII	2,040	.9
VIII	<u>1,101</u>	<u>.5</u>
Total	226,816	100.0

Source: Soil Survey of Green Lake County,  
Wisconsin, 1977

#### Suitability of Soils for Septic Systems:

The County Soil Survey also describes a variety of soil properties significant to engineering applications. However, to remain within the scope of this report it will only deal with land use interpretations for septic tank absorption fields. Soil limitations are shown by the ratings slight through very severe. Slight means the soils are generally favorable for the installation of an absorption field. Moderate indicates soil characteristics that are unfavorable, but which can be overcome by special planning and design. Severe means the soil properties are so unfavorable that major soil reclamation and special designs are required. Very severe indicates soil properties that are so unfavorable and difficult to overcome that their use for absorption fields is nearly impossible. Maps showing the suitability of soils for septic tank absorption fields for each town are included in the Appendix of this plan.

The amount of land in each category is illustrated in Table 2. Over 50 percent of the soils have only slight or moderate limitations for the installation of septic tank absorption fields. The dilemma involving agriculture and development is illustrated by the fact that soils suitable for septic systems are also usually very productive agricultural soils.

It should be noted that these soils were rated for normal septic systems and not alternative methods such as mound systems. The maps included in this plan should be used for general reference only. More detailed information can be found in the Soil Survey or by conducting individual site tests.

TABLE 2  
SOIL SUITABILITY FOR SEPTIC TANK ABSORPTION FIELDS

<u>Limitation</u>	<u>Acres</u>	<u>Percent of Total</u>
Slight	80,675	35.6
Moderate	38,790	17.1
Severe	76,976	33.9
Very Severe	<u>30,375</u>	<u>13.4</u>
	226,816	100.0

Source: Soil Survey of Green Lake County,  
Wisconsin, 1977

#### Soil Conservation:

The supply of soils can be considered a relatively nonrenewable resource. In fact, soils can be replaced over long periods of time, but we cannot expect any significant increase in the physical quantity of soil resources during the time period in which we will operate. In general, soil scientists say that an acre of land can lose about five tons of soil per year through erosion without permanent damage. In ideal conditions, that amount is matched by the formation of new soil. This five ton limit sounds enormous, but spread over an acre of land it amounts to a layer of soil only a fraction of an inch deep. Therefore, soils should be managed so that soil resources retain their productivity for long periods of time.

Water and wind are the main contributors to erosion problems in the County. Erosion is generally a hazard on land with slopes greater than two percent. Most of the well drained and moderately well drained soils and some of the poorly drained soils are subject to erosion. Sandy soils are subject to wind erosion. A two to four hour storm with winds as slow as 12 mph can create a soil loss of about a half ton per acre. Besides actually blowing soil away, wind erosion can shred leaves and destroy plants. The hazard of erosion tends to increase with planting of row crops such as corn and soybeans. The removal of windbreaks to accommodate large

## MAP 5

# GREEN LAKE COUNTY WETLANDS



## LEGEND



Wetlands

SOURCE: "Surface Water Resources of Green Lake County", Wisconsin Department of Natural Resources, 1976

irrigation systems is also responsible for increasing erosion problems.

Loss of surface layer soils through erosion is damaging for two reasons. First, productivity is reduced as part of the subsoil is introduced into the layer where crops are grown. So far, farmers have been able to keep yields high by using hybrid seeds and applying more and more chemical fertilizers. But modern technology is not increasing yields as rapidly as in the past, and additional chemicals only compound the other problems with associated erosion. When soil erodes from fields, much of it laden with chemical fertilizers and animal wastes, it ends up in streams, rivers and lakes. This type of nonpoint pollution contributes to the problem in the County's lakes. It is costly to clean up the polluted waters for other uses. It is also expensive for the farmer who applies the fertilizer to increase productivity only to have it end up where it will not do the crops any good.

Control of erosion minimizes sediment pollution and improves quality of water for municipal use, recreation, fish and wildlife. From an agricultural standpoint, erosion control provides protective cover, reduces run-off, increases infiltration and diverts run-off from critical areas. There are many types of controls that can be adapted to specific problems and soil types. A cropping system that keeps plant cover on soil can reduce erosion losses and improve tilth. Leaving crop residue on the surface can restrain run-off and erosion. This type of conservation tillage or no tillage can be effective in sloped areas where contour tillage is not practiced.

Grassed waterways and diversions can also be used to reduce the damage caused by erosion. Contour strip-cropping and terraces are beneficial in areas with smooth uniform slopes. Maintaining windbreaks, proper tillage, or surface mulch can reduce soil blowing, and the proper placement of drain tiles can prevent crop damage in wet soils. A significant percentage of the County's soils are susceptible to erosion and other soil problems. Farmers in these areas can receive assistance from the local SCS and Land Conservation Departments in developing farm conservation plans.

Soil erosion is not limited to agricultural operations. Housing development can also add to soil problems by removing grass cover or disrupting natural watersheds. On farmland, erosion may average about four tons per acre. But in a development area, erosion may reach 100 tons per acre during the same storm. Therefore, new development should be done according to acceptable soil conservation standards. Information on conservation programs and

financial assistance is available from local offices of the Soil Conservation Service and the Land Conservation Department.

### WETLANDS

In 1938 there was an estimated 59,000 acres of wetlands in the County. However, many of these areas were diverted to other uses and today approximately 44,000 acres, or about 19 percent of the County's land area, are classified as wetlands.<sup>6</sup> Map 5 shows that the majority of the wetlands are located in the northeastern part of the County and smaller areas associated with Lake Puckaway in the southwestern part of the County. Most of the wetlands are classified as shrub and wooded swamps or bogs with some areas of shallow or deep fresh marshes.

In addition to providing habitat for game fish, waterfowl and other species of wildlife, wetlands are important for recharging groundwater aquifers and maintaining water quality. Wetlands absorb or hold vast quantities of water and help maintain and stabilize water supplies during wet and dry periods. Flood hazards are minimized as wetlands store excessive run off and reduce the speed at which water moves through the watershed. Inorganic materials are changed into organic material and sediments and nutrients from run-off are trapped as water moves through wetland vegetation. Consequently, wetlands protect downstream and off shore water resources. It has been estimated that one acre of marshland does the work of more than \$65,000 worth of water treatment equipment.<sup>7</sup> In view of the aesthetic, economic and benefits provided by wetlands, every attempt should be made to preserve the County's remaining wetlands.

### WOODLANDS

Except for areas of lowland marshes and prairie, the County was covered by a mixture of white pine, maple, basswood and oak forests. As agriculture grew in importance, much of this woodland was cleared, and today there are about 27,700 acres of woodland. This represents about 12 percent of the total land area. Woodlands are scattered throught the County, and as shown in Table 3, are dominated by deciduous hardwoods.

6. Green Lake County Resources Conservation Program. 1976

7. Environmental Characteristics. 1978. ECWRPC



TABLE 3  
ACRES OF WOODLAND BY SPECIES

<u>Conifers</u>	<u>Oak- Hickory</u>	<u>Elm, Ash Cottonwood</u>	<u>Maple- Beech- Birch</u>	<u>Aspen- White Birch</u>	<u>Non- Stocked</u>	<u>Total</u>
1,700	11,200	4,300	7,000	2,500	1,000	27,700

Source: Environmental Characteristics, ECWRPC, 1978

Forestry and forest production is not that significant, but the woodlands do provide a considerable source of timber for private use. The woodlands are also important in terms of providing habitat for various species of wildlife. More important, from an agricultural perspective, are the soil conservation benefits provided by the woodlands. Woodland conservation practices, such as field and farmstead windbreaks or shelterbelts, help reduce the amount of soil lost through soil blowing. Woodlots can also improve watershed protection. Some management techniques have been implemented, but to maintain the benefits, better timber management and proper utilization of the County's woodlands will be necessary.

#### ARCHAEOLOGICAL, HISTORICAL, AND WILDLIFE AREAS

The original inhabitants of the County had one thing in common with present residents of the County--an appreciation of the beauty of Big Green Lake. Previous inhabitation by Indians is evidenced by a large number of archaeological and historical sites found in the County. There are villages, camp sites, mounds, trails, and a variety of buried artifacts. The Wisconsin Archaeological Society has published the finding of 147 mounds located on or near Big Green Lake. While most Indian activity was around the big lake, there are other areas of historical interest scattered throughout the County. A good description of past Indian activity and the early settlers of the County can be found in A Heritage History of Beautiful Green Lake, by Robert and Emma Heiple.

Besides the archaeological and historical sites, there are many ecological and unique areas in the County. Realizing the significance of these areas, the County inventoried and outlined a program in the County, Outdoor Recreation Plan, to protect these areas.

Wildlife resources have played an important role in the history and development of the County. Before and during early settlement, hunting, fishing, and trapping were essential to human survival and the growth of the area. While much of their habitat has been reduced or polluted, the County still has an abundance of fish and wildlife. Two large wildlife areas have been established to help preserve wildlife habitat. The 5,526 acre Grand River Marsh Wildlife area is located in the southwestern part of the County, and the 9,828 acre White River Wildlife area has been established in the northwestern part of the County. These public areas, together with smaller privately owned wildlife areas are essential for the continued reproduction of fish, game and waterfowl.

## POPULATION

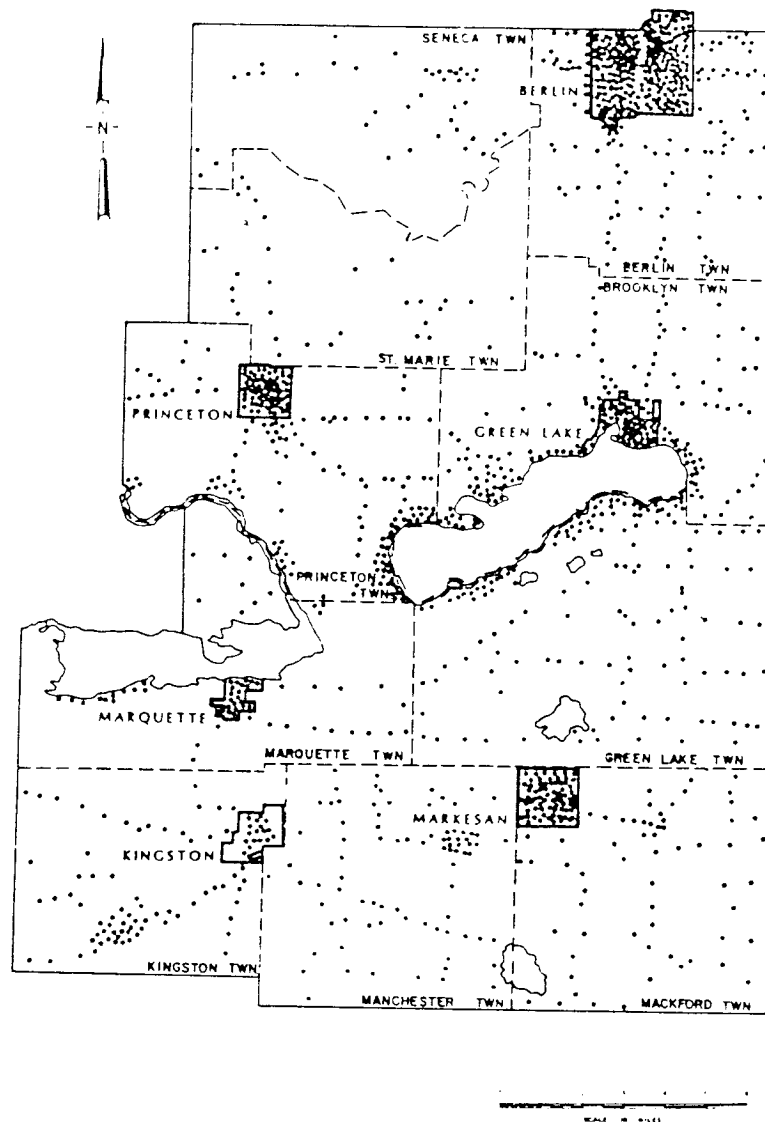
### Population Distribution

Green Lake County is primarily a rural county with four cities, two villages, and ten towns. In 1980, 54.7 percent of the people lived in incorporated areas and the remaining 45.3 percent in unincorporated areas. This represents a 4.3 percent increase in the number of people living in incorporated areas and 14.7 percent increase in the unincorporated areas since 1970. However, only one city, Berlin, meets one of the census criteria for urbanized areas<sup>8</sup>, so the remaining incorporated areas are considered part of the rural population. Using the census definition, the County population is about 70 percent rural and has been that way since 1900. Population density averages 51 persons per square mile, but the actual distribution is heavily influenced by the Fox River and Green Lake (Map 6).

Located on the Fox River, the County's two largest cities, Berlin and Princeton, contain 37.4 percent of the total population. Historically, Green Lake has been the prime attraction for growth in the County. In 1940, including the incorporated areas within their boundaries, the four towns of Berlin, Brooklyn, Green Lake, and Princeton accounted for about 67 percent of the County's population. During the past 40 years, the number of persons in this area grew by 39 percent; and the area now accounts for 72 percent of the total population. With the exception of Berlin, the towns all have shoreline on Green Lake.

8. Incorporated places of more than 2,500 inhabitants.

## POPULATION OF GREEN LAKE COUNTY 1980



LEGEND: One Dot Equals 10 People

URBAN AREAS: One Dot Equals 20 People

SOURCE: 1980 Census of Population and Housing, U.S. Dept. of Commerce, Bureau of Census, 1981

Three smaller population centers are located in the southern part of the County. The city of Markesan is situated in the middle of the County's best farmland. The third largest city, Markesan owes its existence to agriculturally related industries. Two small villages, Marquette and Kingston, are located near the Grand River Marsh Wildlife Area and Lake Puckaway. Both are known primarily for the recreational activities provided by their local environment. The remaining population is distributed throughout the rural townships.

### Population Trends

The trends in the total population of Green Lake County has been up, then down, and now up again. During the first 30 years of settlement the population grew rapidly, and by 1860 there were 12,663 county residents. Table 4 indicates that the population increased slowly until the first decade of the 1900's when the population began to decrease. The decline lasted until the 1940's when a period of growth began which resulted in a 30 percent increase from 1940 to 1980. Population information for the County and its minor civil divisions are displayed in Table 5.

TABLE 4  
POPULATION HISTORY

<u>Year</u>	<u>Population</u>
1860	12,663
1870	13,195
1880	14,483
1890	15,163
1900	15,797
1910	15,491
1920	14,875
1930	13,913
1940	14,092

Source: U.S. Census

Population trends are the result of two inter-related factors, the rate of natural increase and net migration. Natural increase is the difference between the number of births and deaths. Net migration is the number of people moving into an area and the number of people moving out.

Historically, migration patterns have significantly influenced population trends in the County. During the early years, growth was primarily due to

TABLE 5  
GREEN LAKE COUNTY POPULATION HISTORY AND PROJECTIONS

Community	U.S. Census					ECWRPC Projections				% Changes 1980 -2000
	1950	1960	1970	1980	% Changes 1970-1980	1985	1990	1995	2000	
Town of Berlin	729	766	882	1065	20.7	1137	1209	1271	1331	25.0
Town of Brooklyn	951	1056	1262	1431	13.4	1510	1588	1654	1714	19.8
Town of Green Lake	977	1018	1162	1307	12.5	1390	1472	1543	1610	23.2
Town of Kingston	545	550	556	708	27.3	757	807	850	892	26.0
Town of Mackford	656	649	650	622	-4.4	618	610	596	578	-7.1
Town of Manchester	821	793	777	812	4.5	826	836	838	837	3.2
Town of Marquette	547	336	310	393	26.8	417	441	461	480	22.1
Town of Princeton	704	732	952	1287	35.2	1415	1546	1668	1788	38.9
Town of St. Marie	317	285	320	310	-3.1	313	314	312	308	-.6
Town of Seneca	399	413	366	383	4.6	385	386	383	378	-1.3
Total Unincorporated Areas	6646	6598	7237	8318	14.9	8768	9209	9576	9916	20.3
City of Berlin (pt.)	4660	4793	5297	5387	1.7	5499	5592	5630	5643	4.8
City of Green Lake	728	953	1109	1208	8.9	1260	1311	1350	1384	14.6
City of Markesan	1010	1060	1285	1446	12.5	1508	1566	1612	1652	14.2
City of Princeton	1371	1509	1446	1479	2.3	1491	1497	1487	1470	-.6
Village of Kingston	334	343	343	328	-4.4	326	322	314	304	-7.3
Village of Marquette	--	162	161	204	26.7	218	231	243	255	25.0
Total Incorporated Areas	8103	8820	9641	10,052	4.3	10,302	10,519	10,636	10,708	6.5
County	14,749	15,418	16,878	18,370	8.8	19,070	19,728	20,212	20,624	12.3

the influx of agricultural immigrants, many coming from foreign countries. Combining in-migration with natural increases the population continued to grow until 1900. However, between 1900 and 1940 the gains, due to natural increases, were more than offset by losses due to out-migration. During this period the population declined by approximately 11 percent.

The pattern of net out-migration continued through the 1950's, but at a decreasing rate. Table 6 indicates the natural increases were more than out-migration and the County population began to grow again. A change in net

TABLE 6

## NATURAL INCREASE AND NET MIGRATION, GREEN LAKE COUNTY, 1950-1980

<u>Years</u>	<u>Natural Increase</u>		<u>Net Migration</u>		<u>Total Growth</u>	
	<u>Population Change</u>	<u>% Change/Total Population</u>	<u>Population Change</u>	<u>% Change/Total Population</u>	<u>Population Change</u>	<u>Percent Change</u>
1950-1960	1407	9.0	-738	-5.0	669	4.5
1960-1970	912	5.9	548	3.6	1460	9.5
1970-1980	413	2.4	1079	6.4	1492	8.8

Sources: The Population of East Central Wisconsin, ECWRPC, 1977; and Population Services, Applied Population Lab - University of Wisconsin-Madison

migration became apparent in the 1960's when the trend of out-migration was reversed and more people began moving into the County than out. The change became more visible during the decade of the 70's when net migration accounted for 72 percent of the population increase. The number of persons in the age distributions of 25 to 44 rose by 76 percent while the number of people over 65 increased by 31 percent. Not only in Green Lake County, but nationwide, the trend was for the population of urban areas moving to rural areas. In Green Lake County, urban dwellers arrived from throughout Wisconsin and Illinois in search of the "good life" offered by rural communities. This trend combined with an increasing percentage of the population in the childbearing age bracket, seem to indicate continued growth in the County.

#### Population Growth and Projections

A movement towards rural areas was illustrated in Table 5. All towns, except Mackford and St. Marie, and all municipalities, except Kingston, experienced population growth during the 1970's. The most significant increases in the actual number of people occurred in the Town of Berlin, and those towns surrounding Green Lake. High percentage increases also occurred in the Towns of Kingston

and Marquette, while populations in St. Marie and Mackford decreased slightly. All cities continued the stable growth patterns shown during the past decades. Located on Lake Puckaway, the Village of Marquette encountered notable growth while its neighboring village to the south, Kingston, experienced a decline in population.

Population projections to the year 2000 were displayed in Table 5. The projections assume a pattern and rate of growth similar to that of the last decade. Total population is expected to increase by 2,254 persons, or 12.3 percent. Table 7 indicates the expected rate and pattern of growth will continue to shift population to the unincorporated areas of the County. The attraction of Green Lake is again shown as projections for population increases are generally greater for those towns surrounding the lake. Significant increases are also expected for the towns of Berlin, Kingston and Marquette.

TABLE 7  
POPULATION BY CORPORATE DIVISION

<u>Year</u>	<u>Unincorporated</u>		<u>Incorporated</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
1940	6,762	48.0	7,330	52.0
1960	6,598	45.1	8,103	54.9
1980	8,318	45.3	10,052	54.7
2000*	9,916	48.1	10,708	51.9

\*Based on ECWRPC projections.

Source: U.S. Census

By the year 2000 it appears the populations of the two northwestern towns of Seneca and St. Marie will have stabilized. Located in the southeast, the town of Mackford is expected to have a decrease in population.

Incorporated areas, with the exception of the City of Princeton and the Village of Kingston, are anticipated to continue growing. According to projections, Princeton's population will grow slowly until 1990 and then gradually decrease; while Kingston's population will continue to decline. Steady growth is expected for the remaining incorporated areas.

## HOUSING

According to 1980 Census information, there are 8,319 housing units<sup>9</sup> in Green Lake County. This represents an increase of 21.3 percent. 50.6 percent of the housing units are located in the incorporated areas. Increases in housing units follow patterns established by population growth. Since 1970, housing units in the towns increased by 25.4 percent while housing units in the incorporated areas increased by 17.5 percent. Percent increases and the number of housing units for incorporated and unincorporated areas of the County are displayed in Map 7.

PAST BUSINESS TRENDS

The type and number of structures added to the housing stock in previous years reflect housing preferences, local needs, and the economy in general. In Green Lake County single-family units accounted for about 65 percent of total units added between 1960 and 1975. Duplexes accounted for approximately 8 percent, multifamily units 15 percent, and mobile homes 12 percent.<sup>10</sup> The mixture of housing stock in the County is typical of rural areas, in that smaller populations don't require as many types of dwellings to accommodate the housing needs of their residents. Information from the County Zoning Office and projections from the Regional Planning Commission seem to indicate that future building trends will be similar to those trends of the past.

In 1980, the U.S. Census counted 86.5 percent of the County's 8,319 housing units as year-round units. 6.5 percent of the 7,199 year-round units were vacant and 20.4 percent of the vacant units had been vacant for more than six months. 1,519 or 22.6 percent of the year-round housing units were renter occupied with a mean rent asked of \$141.00.

DEMAND FOR HOUSING

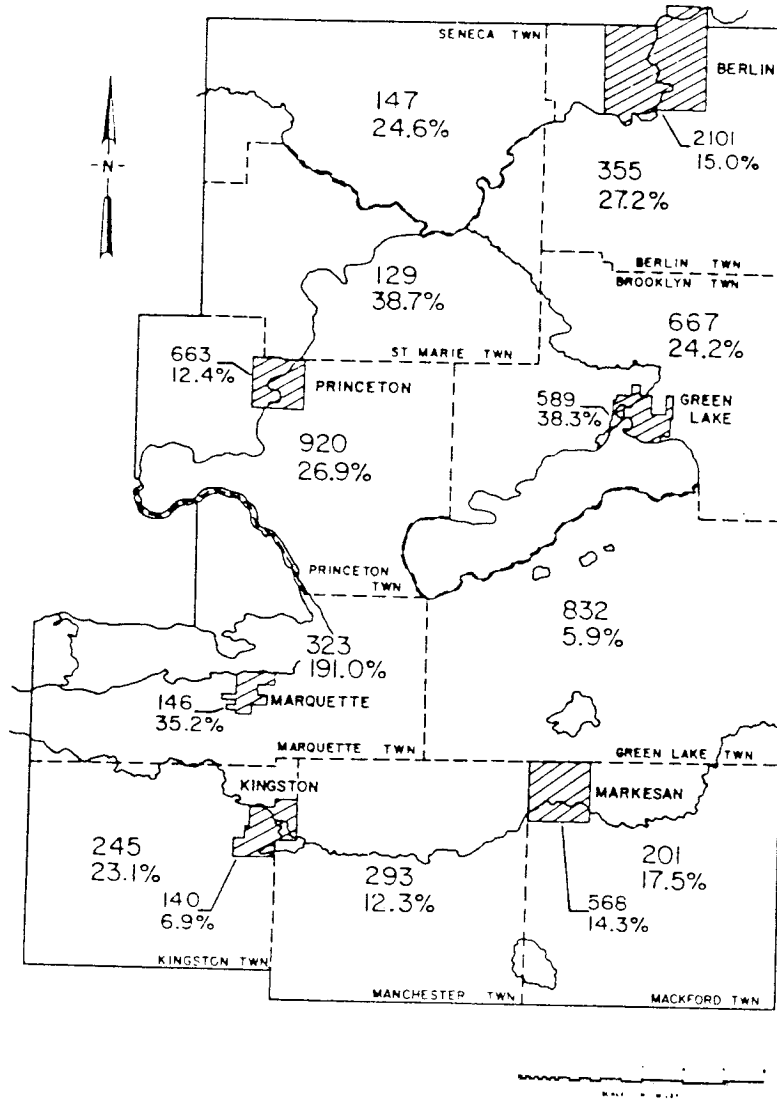
Housing demand is affected by factors at both the national and local levels; however, this report will only focus on local factors that will affect future housing needs in Green Lake County. Demographic characteristics,

9. Census information describes a housing unit as a house, or apartment, a group of rooms, or a single room occupied or intended for occupancy as possible living quarters.

10. New Housing, East Central Wisconsin Regional Planning Commission, 1978.



# **NUMBER OF HOUSING UNITS IN 1980 AND PERCENT CHANGE FROM 1970 GREEN LAKE COUNTY**



SOURCE: 1980 Census of Population and Housing, U.S. Department of Commerce, BUREAU OF THE CENSUS, 1981

housing preferences, and costs will have major impacts on the demand for future housing.

Housing increases for the County during the past ten years have resulted from population immigration, increases in certain age groups, and a decrease in average household size. Net migration was discussed earlier in this section and illustrated in Table 6. The numbers of persons in the age distributions of 25 to 34 and 35 to 44 rose by 75.9 percent during the past decade. It is persons in these age segments who purchase or build the majority of new housing. Projections are that increases in the 25 to 34 age group will occur until 1990 and increases in the 35 to 44 age segment will continue until 2000.<sup>11</sup> Population per household fell from 3.08 in 1970 to 2.69 in 1980, indicating more houses with fewer people. It is projected that this average will remain relatively stable. Due to these reasons, the number of additional housing units will be high in relation to the increase in population.

Persons in the middle age groups account for the highest percentage of households raising children and have usually preferred single-family homes. This trend is expected to continue in the County. Single-family units are projected to account for an estimated 65 percent of all units in the County. Apartment units will represent about 15 percent of the total units and mobile homes and multifamily units the remaining 20 percent. It is expected that the majority of apartments and multiple family units will be built in the cities.

The County has an average vacancy rate of 6 percent. A vacancy rate of 5.1 percent for renter occupied units is less than the 6.3 percent rate for owner occupied units. The County's rate is somewhat higher than the minimum of 3 to 4 percent suggested for a stable housing market. However, there is some variation of rates between different areas and the high overall rate is influenced by areas with many seasonal or part-time homes.

A number of housing units will be removed from the housing supply either through conversion to other uses, storms or other natural occurrences, or obsolescence. This will affect the housing supply. Increases in certain age segments of the population, immigration and lower household size suggest a housing supply which will need additional units to accommodate future housing demands. Based on the population projections for each community, and on average

11. New Housing, East Central Wisconsin Regional Planning Commission, 1978.

household size of 2.69 persons per household, approximately 868 new housing units will be needed in Green Lake County by the year 2000.

Past trends of rural residential development indicate an average density of one housing unit per two acres of land. In incorporated areas of rural counties, the lot size for a house has been about a third of an acre. Using these assumptions and a stable average household size, Table 8 gives a rough estimate of residential land needs for each community in the County. The Regional Planning Commission estimates that 239 acres of the residential development will occur in urban service areas. Descriptions and projections of the urban service areas are included in the Appendix of this report and are illustrated on Map 12. According to these projections, about 80 percent of the projected residential land consumption will take place in the more developed parts of the County; and the remaining 20 percent, or 266 acres, will be developed in the more rural parts of the County. In addition to land consumed for residential use, this development is likely to result in significant increases in associated land uses, thereby removing more land from agricultural production. This unplanned development can also result in increasing financial costs as these new developments request additional facilities and services.

TABLE 8

PROJECTED NEW HOUSING UNITS AND RESIDENTIAL  
LAND CONSUMPTION IN GREEN LAKE COUNTY, 1980-2000

<u>Town</u>	<u>Total Units Needed*</u>	<u>Residential Land Consumption in Acres**</u>
Berlin	99	198
Brooklyn	105	210
Green Lake	112	224
Kingston	68	136
Mackford	0	0
Manchester	22	44
Marquette	32	64
Princeton	186	372
St. Marie	0	0
Seneca	<u>0</u>	<u>0</u>
Town Total	624	1248
<u>Cities and Villages</u>		
Berlin	95	32
Green Lake	65	22
Markesan	62	21
Princeton	3	1
Kingston	0	0
Marquette	<u>19</u>	<u>7</u>
City and Village Total	<u>244</u>	<u>83</u>
County Total	868	1331

\*assuming household of 2.69 persons per household in year 2000

\*\*assuming estimated average of two acres per housing unit in towns and three housing units per acre in incorporated areas.

## AGRICULTURE

Since its inception in the 1840's, agriculture in Green Lake County has gone through three major changes. At first crops and livestock were grown for personal consumption, but soon many farmers began growing wheat for sale on the agriculture market. Wheat production reached its peak in 1870 when over 50,000 acres of wheat were grown in the County. The decline of wheat production brought about the second change in agriculture as farmers moved towards general farming and the raising of livestock. By 1880 there were 1,716 farms and 214,093 acres or 94 percent of the County's land area was in agricultural production. In 1900 the nature of agriculture began to change again as dairy farming began to emerge as the dominant form of agriculture. Today dairy farming remains the most important segment of agriculture in the County.

The number of farmers reached its peak in 1900 when there were 1,753 farms in the County. Since then, the number of farms has been steadily declining; but the average size of a County farm has been increasing. The rural population as a whole began to decline as high wages and the amenities of city life began to attract many rural people to urbanized areas. In order to cope with the shortage of farm labor, farmers began to increase the use of mechanized equipment. Advances in agricultural technology brought about increased yields and allowed fewer farmers to produce more farm products.

By 1950 the farm population had fallen to about 35 percent of the total population and a new problem began to appear in some of the County's agricultural areas. While farm populations were declining the total population of many unincorporated areas began to rise; however, the new residents were not farmers but people who desired "country living". Houses began to appear in fields previously used for crops and many acres of prime farmland were converted to nonagricultural uses. To many new rural residents, country living did not include the noise, odors, and dust associated with agricultural operations and land use conflicts were inevitable. The problems associated with conflicting land uses combined with increasing competition for farmland, increasing size of agricultural operations, and rising land taxes and capital costs reflect the dynamic environment of agriculture in Green Lake County.

LAND USE TRENDS

Green Lake County has a total area of 245,374 acres or about 383 square miles, however, 18,558 acres of water reduces the total land area to 226,816

acres. The dominant land use during the past century has been and still remains agriculture, but during the past 35 years the amount of land in agriculture has been decreasing. During the latter part of the 19th century and the early part of the 20th century, the amount of land committed to farming varied between 90 and 95 percent of the total land area. The acreage of land in farms reached its highest point in 1945 when 216,568 acres of land was in production.

Since 1945 the amount of land devoted to agriculture has been decreasing and now only 73 percent of the County's land area remains in agricultural use. The amount of land removed from agricultural production totals about 40,000 acres or about 17.5 percent of the County's total land area (Table 9). The table indicates that farmland is still the major land use in the County, but the acreage in crops and pasture has been decreasing as more land is developed.

TABLE 9  
ACRES OF FARMLAND IN GREEN LAKE COUNTY, 1950-1980

	<u>Year</u>	<u>Acres</u>	<u>Percent of Total land</u>
	1950	205,516	91.3
	1959	172,540	76.1
	1969	169,423	74.7
	1980	165,800	73.1
Net Changes	1950-1980	-39,716	
Percent Changes		19.3	

Source: U.S. Census of the Agriculture, Wisconsin Agriculture Statistics,  
Wisconsin Agriculture Reporting Service.

In 1982 the County Soil Conservation Service estimated that 13,348 acres of the County were urban or built-up land. This represents about a 43 percent increase from a 1977 total of 9,335 acres of built-up land.

The amount and reason for the loss of farmland varies from each town. Table 10 illustrates the loss of farmland in each town since 1950. The difference between the totals of Tables 9 and 10 are due to different methods of assessments used by the individual towns. But the information confirms the loss of farmland. Towns with high population increases also

TABLE 10  
LAND IN FARMS BY TOWNS, GREEN LAKE COUNTY

<u>Town</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	Net Change 1950-1980
Berlin	21,119	15,120	13,285	12,845	-8,274
Brooklyn	20,786	17,132	17,460	11,607	-9,179
Green Lake	27,112	26,950	26,048	29,146	2,034
Kingston	17,300	11,421	11,130	10,285	-7,015
Mackford	20,773	20,057	19,806	16,775	-3,998
Manchester	22,583	22,800	21,857	19,405	-3,178
Marquette	15,852	11,564	10,086	9,539	-6,313
Princeton	21,832	20,413	15,243	11,786	-10,046
St. Marie	18,538	15,280	13,840	10,698	-7,840
Seneca	<u>17,812</u>	<u>14,968</u>	<u>12,427</u>	<u>7,199</u>	<u>-10,613</u>
Total	203,707	175,105	161,182	139,285	-64,422

Source: Wisconsin Assessor Farm Statistics

show high losses of farmland. The exception is the Town of Green Lake which had an increase in the amount of land in farms; but while there may be some actual increase, some of the increase is due to changes in assessments. Towns with small populations but high losses of farmland have had many areas of marginal land bought by the Department of Natural Resources.

Table 11 illustrates that most of the farmland in 1980 was used for crops associated with the dairy industry. Corn for grain and silage, alfalfa, and oats represent 85.2 percent of the crop summary. Since 1969 the amount of corn for grain has increased by 20 percent, while corn for silage has decreased about 20 percent. Acreage devoted to alfalfa has increased slightly, but the amount of oats harvested fell by 50 percent. Table 11 also indicates that speciality crops are an important part of the County's agricultural economy and considering the size of the County, the state ranking for these crops is even more significant. Information from Wisconsin Assessor Farm Statistics indicates that the speciality crops may become more prominent. In the past decade the production of sweet corn has remained relatively stable, but production of sweet peas has increased by 26 percent; and the amount of snap beans grown has increased by 183 percent. Actual acres of the various field and speciality

crops planted and harvested per may fluctuate with market demand, but the state rankings have remained relatively stable.

TABLE 11  
SELECTED CROP SUMMARY, GREEN LAKE COUNTY, 1980

<u>Field Crop</u>	<u>Acres Harvested/ State Rank for Quantity Produced</u>	
Corn for Grain	40,600	35
Corn for Silage	10,000	34
Oats	7,500	46
All Wheat	1,050	25
Soy Beans	700	43
Alfalfa Hay	27,200	45
<u>Speciality Crops</u>		
Green Peas	5,500	6
Sweet Corn	6,200	6
Snap Beans	1,500	9

Source: 1981 Wisconsin Agricultural Statistics, Wisconsin Agricultural Reporting Service

#### FARM CONSOLIDATION

The number of farms in the County has been decreasing although there has been an increase in the number of acres per farm (Table 12). Early decline in the number of farms was in part due to the mechanization of the farm itself and partly due to the high wages offered by new industries in urbanized areas. During the period from 1950 to 1980, the number of farms fell by 487 farms or 37.8 percent; and the average size of a farm increased by 48 acres or about 30 percent. The consolidation of smaller farms is also shown in Table 13. In 1964 there were 94 farms greater than 200 acres; however, by 1978 the number of farms 200 acres or greater had increased by 85 percent up to 174 farms. These farms accounted for 58 percent of the harvested croplands.

Besides consolidating smaller farms into larger farms, farmers have been increasing the size of their operations by renting land. It is estimated that 50 percent of the County's farmers rent additional land. The renting of agricultural land to expand operations rather than buying land is partially



TABLE 12

## NUMBER OF FARMS AND AVERAGE FARM SIZE, 1950-1980

	<u>Year</u>	<u>Number of Farms</u>	<u>Average Acres Per Farm</u>
	1950	1,271	161.7
	1960	1,043	180.9
	1969	877	193.1
	1980	790	209.9
Net Changes	1950-1980	-487	48.2
Percent Changes	1950-1980	-37.8	29.8

Source: Wisconsin Agricultural Statistics, U.S. Census of Agriculture

TABLE 13

## DISTRIBUTION OF FARMS BY ACRES HARVESTED, 1964 and 1978

<u>Acres Harvested</u>	<u>Farms</u>	<u>1964</u>	<u>Farms</u>	<u>1978</u>
		<u>Percent of Farms</u>		<u>Percent of Farms</u>
1- 49	233	25.6	103	14.8
50- 99	281	30.9	227	32.5
100-199	302	33.2	194	27.8
200-499	93	10.2	154	22.1
500+	<u>1</u>	<u>.1</u>	<u>20</u>	<u>2.8</u>
	910	100.0	698	100.0

Source: U.S. Census of Agriculture

the result of increasing cost of farmland. From 1974 to 1979 the price of land sold for farm use rose by 151 percent from \$454.00 to \$1,143.00.<sup>12</sup> County agricultural land sold for all purposes in 1979 averaged \$1,173 per acre which is about 10 percent higher than the state average and 34 percent higher than the average for counties in the west central district of Wisconsin. This high cost of land, combined with increasing capital costs for buildings and equipment, is making it very difficult for young farmers to own their own farms, and is affecting the way farms are organized.

Increased consolidation of farm operations is also indicated by farm organization. In farms with sales of \$2,500 or more, individual or family

12. Wisconsin Agricultural Statistics, Wisconsin Agricultural Reporting Service.

type farms decreased by 7.2 percent from 1974 to 1978. During the same period farms organized into partnerships increased by 27.6 percent, and farms organized into corporations increased by 142.8 percent. The acreage of land owned by full and part owners also indicates a change in farm organization. From 1974 to 1978 the number of full owners dropped by 82 farmers and the number of acres fell by 11 percent. However, the number of part owners increased by 27 farmers and the acres held by part owners increased by 22.5 percent.

#### AGRICULTURAL MARKETING AND INCOME

The relative importance of various types of agricultural operations can be illustrated by the sale of farm products. Between 1965 and 1979 cash receipts from farm products in Green Lake County rose from \$11.4 million to \$43.6 million (Table 14). This increase of 282 percent was higher than average 239 percent

TABLE 14

#### CASH RECEIPTS FROM FARM MARKETING, 1965-1979

<u>Year</u>	<u>All Commodities</u>	<u>Dairy Products</u>	<u>Meat Animals</u>	<u>Field Crops</u>	<u>All Vegetables</u>	<u>Other Crops &amp; Livestock</u>
(\$1,000)						
1965	11,399	4,916	3,863	569	1,042	1,036
1970	14,599	6,940	4,385	1,027	1,592	1,655
1974	24,139	11,330	5,368	3,014	3,408	1,019
1979	43,584	20,178	12,213	5,873	4,291	3,237
Percent Increase						
1965-1979	282.3	310.5	216.1	932.6	311.8	212.5
Source:	<u>Wisconsin Agricultural Statistics, Wisconsin Statistical Reporting Service</u>					

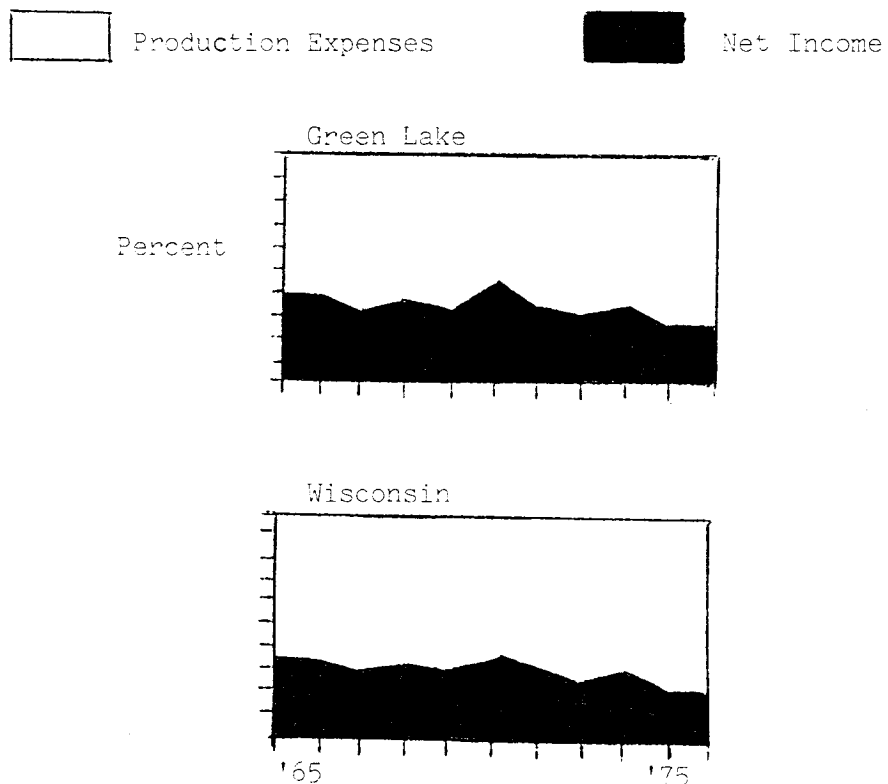
for the state during the same period. The table illustrates that dairy farming remains the dominant producer of cash receipts. In terms of a percent of total cash receipts, dairy products have remained relatively stable at about 46 percent of the total. This percentage shows the County to be different from the rest of the state, because during the same time period the average for state dairy products have been increasing as a percentage of cash receipts. Since 1950, the number of milk cows in the County has decreased by 15.6 percent to where there were 14,600 dairy cattle in 1980. But, total milk has increased by 36 percent, or 46 million pounds of milk. Production per cow has risen

by 66.2 percent, or 4,500 pounds of milk per cow. 63.6 percent of the County's dairy herd are Grade A Herds compared to a state average of 54 percent. The distribution of the County dairy herd is shown in Map 2.

In terms of a percentage of total cash receipts, dairy products, vegetables and other crops and livestock have remained stable. Meat animals fell from 34 percent of the total to 28 percent of the total cash receipts. Field crops, which rose from 5 percent to 13.5 percent, is the only commodity which increased in percentage relative to total cash receipts. Overall farm marketing in the County compares favorably to state-wide trends. While there has been some variation in the commodities contribution to cash receipts, the County's total cash receipts have remained relatively stable in relation to the state's total cash receipts for farm marketing.

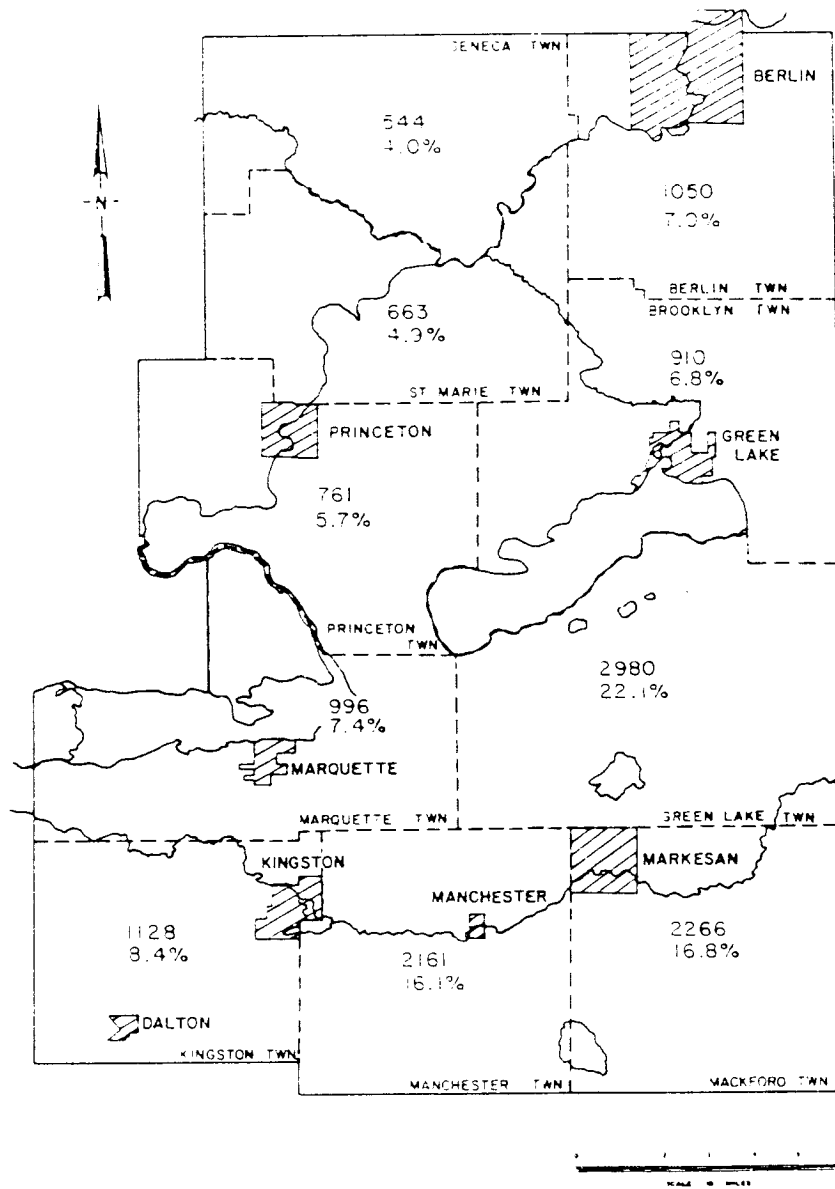
Net income, cash receipts minus production expenses, can also provide an indicator of the financial viability of the County's agricultural sector. Figure 1 illustrates the proportion of total cash receipts from farm product sales which were represented by production expenses and net income for the County and the state during the period from 1965 to 1975.

FIGURE 1



## MAP 8

# **NUMBER OF DAIRY COWS AND PERCENT OF COUNTY DAIRY HERD GREEN LAKE COUNTY**



SOURCE: 1980 Wisconsin Assessor Farm Statistics

Although the proportion varied somewhat for individual years during this period, this is a recognizable trend towards more sales dollars being devoted to production expenses as opposed to net income. In 1965, net income represented about 37 percent of sales dollars, but by 1975 net income represented about 25 percent of the sales dollar. The increasing amount of sales going into production costs is an indication of a higher per unit cost for production and a decline in the margin of profit. To maintain their profits, many farmers are increasing their volume of production which again illustrates the trend toward fewer, but larger farms.

#### AGRICULTURAL EMPLOYMENT

The percentage of persons employed in agriculture in 1940 was almost half of the County's total employment (Table 15). Since 1940, the percentage decline in farm employment of 41.1 percent has been close to the state average. However, the table also indicates that agricultural employment in the County as a whole

TABLE 15

#### AGRICULTURAL EMPLOYMENT TRENDS GREEN LAKE COUNTY AND STATE OF WISCONSIN, 1940-1975

Year	Total Employment		Agricultural Employment			
	Number		Number		Percent of Total	
	Co.	Wis.	Co.	Wis.	Co.	Wis.
1940	4,969	1,060,758	2,301	279,170	46.3	26.3
1950	5,637	1,357,646	1,925	258,490	34.1	19.0
1960	6,147	1,437,870	1,361	173,400	22.1	11.8
1970	7,100	1,749,396	1,318	152,995	18.6	8.7
1975	7,564	1,889,274	1,357	161,145	17.9	8.5
Percent Change						
1940-1975	52.2%	78.1%	41.0%	42.3%		

Source: Bureau of Economic Analysis, U.S. Department of Commerce, and ECWRPC

represented and still accounts for a higher percentage of employment than the state average. The table also suggests that agricultural employment appears to be stabilizing in the County.

It should be noted that the percentage probably does not reflect the true impact of agriculture on employment in the County. Employment opportunities in food processing, equipment sales and service, and other trade and service establishments are supported by the agricultural sector.

#### AGRICULTURAL INVESTMENT

Modern agriculture is becoming a more capital intensive industry. Capital investment for land, machinery, and technology is essential to enhance production efficiency and to compete in the agricultural market. A relatively low rate of investment would suggest that farmers have been, or will in the future, lose their competitive edge in the agricultural market. A low level of investment would indicate that farmers are either financially unable to invest because of a lack of confidence in their ability to make a reasonable return because of the agricultural market or, in some cases, because of the uncertainty caused by such things as development. On the other hand, a high rate of investment can be indicative of confidence in the agricultural economy.

In Green Lake County, the market value of agricultural land and buildings was about \$167 million in 1978, a 117 percent increase from 1974 (Table 16). The market value of machinery and equipment rose by 70.5 percent to about \$35 million. Together, these fixed assets represent over a \$202 million investment in agriculture. Between 1974 and 1978, total Green Lake County investment increased by 107 percent which is about 12 points higher than the state average.

Fixed assets per farm grew from \$124,000 in 1974 to \$274,589 in 1978, a 121 percent increase. The fact that per farm assets are increasing at a faster rate is another indication of fewer but larger farms. Investment on a per acre basis averaged \$1,268 compared to a state average of \$1,047 per acre. Agricultural land value in the County, which in 1978 was 16 percent higher than the state average, most likely attributes to the County's higher per acre investment. Inflation must be considered in the increasing values of assets, but from the table it is still apparent that County farmers are making investments in agriculture.

With respect to sales, the same relationships exist between total sales, sales per farm, and sales per acre; that is, sales per farm increased at a higher rate than total sales or sales per acre. However, sales in the County didn't increase at the same rate as the state. Also, the sales per \$1,000 of fixed assets is lower than the state average. Lower sales can probably be attributed to the County's higher than average involvement in meat animals and vegetables, both of which are susceptible to volatile price fluctuations in the market.

TABLE 16

## FARM INVESTMENT AND SALES, 1974 and 1978

	<u>Year</u>	<u>Land and Building (\$000)</u>	<u>Machinery and Equipment (\$000)</u>	<u>Total Fixed Assets (\$000)</u>	<u>Fixed Assets Per Farm (\$)</u>	<u>Fixed Assets Per Acre (\$)</u>	<u>Total Sales (\$000)</u>	<u>Sales Per Farm (\$)</u>	<u>Sales Per Acre (\$)</u>	<u>Sales Per \$1,000 of Fixed Assets</u>
Green Lake	1974	77,058	20,743	97,801	124,000	633	22,882	29,112	148	234
	1978	167,003	35,369	202,372	274,589	1,268	32,341	43,882	203	160
	Percent Change	116.7%	70.5%	106.9%	121.4%	100.3%	41.3%	50.7%	37.2%	-31.6%
Wisconsin	1974	7,655,823	2,074,183	9,730,006	108,741	552	2,352,996	26,297	133.5	242
	1978	15,436,001	3,511,869	18,947,800	210,661	1,046	3,467,821	38,555	191.5	183
	Percent Change	101.6%	69.3%	94.7%	93.7%	89.0%	47.0%	46.0%	43.0%	-24.0%

Source: U.S. Census of Agriculture

Overall, the data suggests that the County's agricultural economy is reasonably healthy and that farmers are willing to make the investments necessary to compete in the dynamic agricultural market.

#### PUBLIC FACILITIES AND INDUSTRY

Patterns of growth can place a burden on the County's agricultural, environmental, and financial resources. Green Lake County farmland preservation objectives connote more compact, contiguous development and discourage development on farm and environmental land. However, the County also wants to accommodate growth, and a highly developed infra-structure of community facilities is essential to economic development. Although development encompasses many types of commercial, industrial, and residential enterprises, all types share a common need for basic services and facilities, such as water and sewer facilities, solid waste disposal sites, and transportation.

#### WATER SERVICE

Water service is basic to economic growth and development to the extent that the capacity to provide water is directly tied to the capacity for economic expansion. Water is in abundant supply in the County, so the only growth constraints are the capabilities of the communities water plants. While there are some local problems, such as hardness, generally these problems are remedied at the local plants and the quality of water and service are rated as being good. According to the 1980 Census, a public system is the source of water for 3,844 housing units in the County.

Since it is beyond the scope of this report to do a complete analysis of individual water systems, it will attempt to identify potential problems by using generally accepted standards relating to water supply and storage capabilities. Because of the possibility of a well malfunction, contamination or other problems, it is often suggested that communities have at least two developed sources of water. Sufficient water storage is also an important aspect of a community water system. A very general standard is that a community should have storage capabilities equal to the average amount of water pumped per day. This standard is particularly significant to smaller systems which don't have the flexibility or capacity of larger systems. Table 17 lists the communities with public systems, the number of wells, average daily pumping, and storage.



TABLE 17  
WATER FACILITIES IN GREEN LAKE COUNTY

<u>Community</u>	<u>Wells</u>		<u>Averages Pumped Per Day*</u>	<u>Storage*</u>	
	<u>Active</u>	<u>Standby</u>		<u>Reservoir</u>	<u>Elevated Tank</u>
Berlin	1	2	.977	.837	.0
Green Lake	2	0	.150	.0	.050
Markesan	2	0	.180	.0	.200
Princeton	2	0	.156	.100	.060

\*Recorded in millions of gallons

Source: Community Facilities in East Central Wisconsin, 1979, ECWRPC

#### SANITARY SEWER FACILITIES

All major communities in the County have waste water treatment facilities which are generally capable of providing adequate service to their present populations. Only one community, Green Lake, has a system with deficiencies which can limit sewer extention, but the community is in the process of planning or designing new facilities to remedy the problems. General sewer problems in the County consist of substandard treatment of sewage or inadequate capacity to handle existing or increased waste loads. Also, there is a need for rehabilitating existing systems. Approximately 3,729 year-round housing units are served by public sewer. The facilities are listed in Table 18.

TABLE 18  
SANITARY SEWER FACILITIES IN GREEN LAKE COUNTY

<u>Community</u>	<u>Type of Treatment</u>	<u>Sewer Extention Limitations</u>	
Berlin	Trickling Filter	None <sup>1</sup>	New treatment facility and sewer system rehabilitation and expansion
Green Lake	Activated Sludge	None	New Treatment facility under construction
Markesan	Trickling Filter	None <sup>1</sup>	New treatment facility and sewer system rehabilitation and expansion
Princeton	Primary	None <sup>1</sup>	New Treatment facility <sup>2</sup> and sewer system expansion <sup>2</sup>

1. Sewer extensions will be granted because the community has passed a resolution obligating itself to make necessary system improvements regardless of the

availability of federal and state grants.

2. Facilities plan completed, awaiting plan approval or construction funding.
3. Facilities plan in progress.

Source: Wisconsin Department of Natural Resources, ECWRPC.

Besides the treatment facilities in the cities, two sanitary districts have been established in rural areas with locally dense residential development. The largest sanitary district is the 5,293 acre Green Lake District, which surrounds Green Lake. Presently the district is about 28 percent developed and does not provide sewer service. The other district is the 734 acre Little Green Lake District which surrounds Little Green Lake. The district is about 23 percent developed and it also doesn't provide sewer service.

#### SOLID WASTE MANAGEMENT

Solid waste disposal used to be a simple matter of hauling waste materials to local dumps. However, changes in the types of material disposed and the quantity disposed have aroused concern for the effect solid waste is having on the environmental and financial resources of local communities.

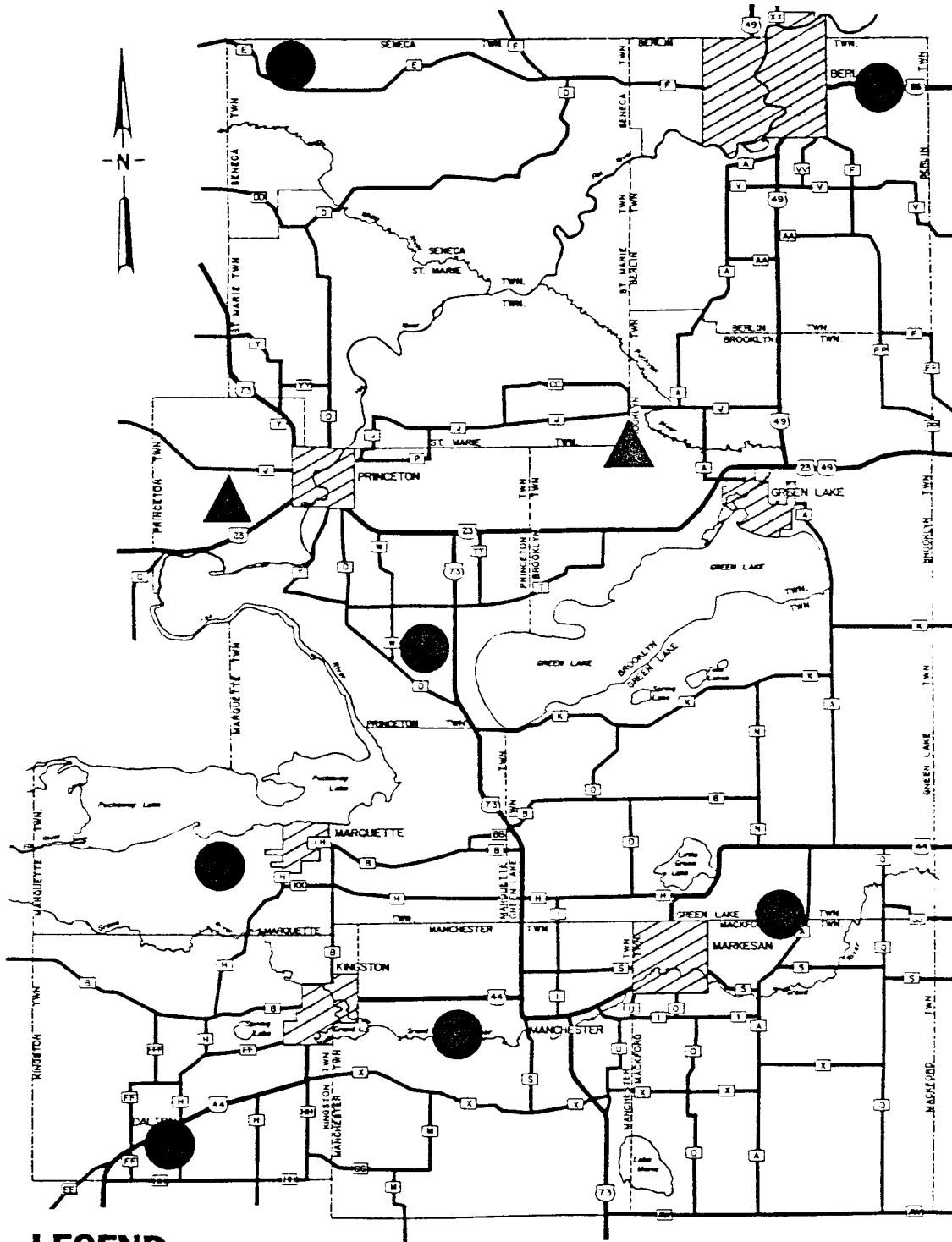
Presently, there are 9 solid waste disposal sites distributed throughout the County (Map 9). Most of the landfills are operated on a township basis and are licensed as modified landfills. Generally, modified landfills have operational requirements which are less stringent than those landfills licensed as sanitary landfills. New state and federal regulations are placing further fiscal and administrative burdens on small locally managed disposal sites. In the future, many landfills which serve a small area, such as a single town or village, will find it prohibitively expensive to meet new requirements. As such the County should begin an effort to identify problem areas and recommend solutions for future solid waste management in the County.

#### TRANSPORTATION

Transportation systems have been and will continue to be a major influence on growth patterns in Green Lake County. The County has an excellent highway system. Five state highways, and a well maintained network of paved County roads provide good access to all parts of the County. State highways 23 and 44 are the primary routes for traffic moving east and west, and state highways 49 and 73 are major arterials for north and south traffic. Average daily traffic counts illustrated in Map 10 show Highway 23 from the County line to the City

# LOCATION OF LANDFILLS

## GREEN LAKE COUNTY



### LEGEND

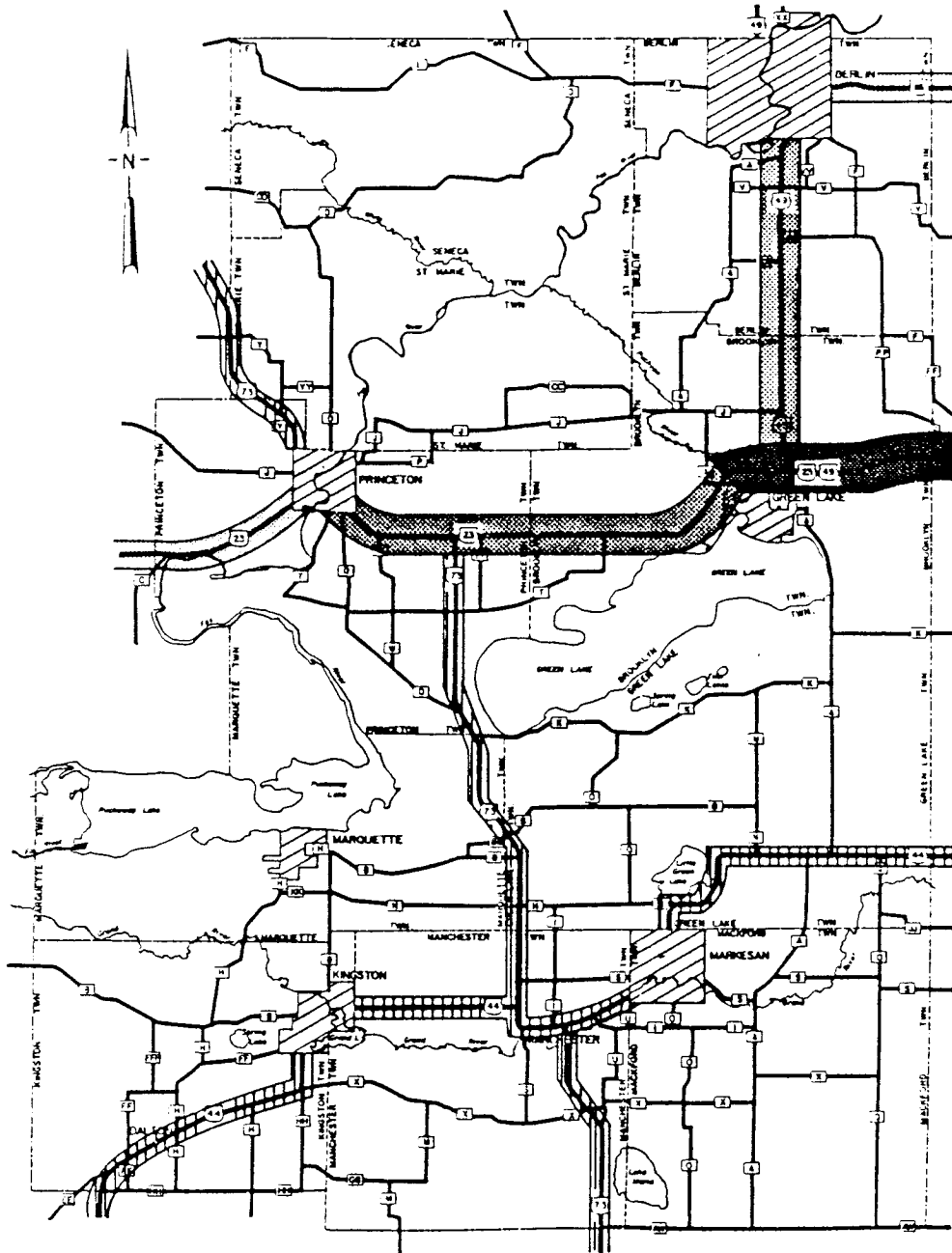


Sanitary Landfills

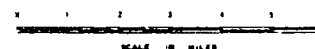
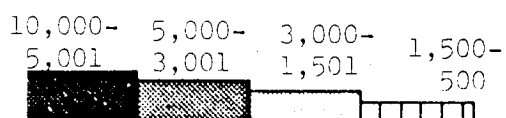


Modifies or Other

# **AVERAGE DAILY TRAFFIC ON NON-URBAN HIGHWAYS GREEN LAKE COUNTY**



LEGEND: Average Daily Traffic



SOURCE: 1976 Highway Traffic, WDOT 1976

of Princeton, and Highway 49 from the Highway 23 intersection to the City of Berlin to be the most used routes in the County. As of 1980, it is estimated that the total mileage of highways was 623 miles.

Rail service is provided by the Chicago & Northwestern and by the Chicago, Milwaukee, St. Paul, and Pacific Railroads, but future service is uncertain. Bus service is also available in the County. Green Lake County is accessible by air, but there are no paved runways and the closest airport served by an air carrier airlines is located about 25 miles northeast in Oshkosh.

### INDUSTRY

For some years, Green Lake County has made relative gains in manufacturing over the rest of the state. From 1965 to 1975 the number of jobs about doubled and peaked at approximately 2,700 in 1975. Most of the growth was in existing firms. In 1978 the County averaged 149 factory jobs per 1,000 population compared to a state average of 124. Manufacturing accounts for 30 percent of all County employment, compared to a 25 percent average for the state. The County has a current labor force of 8,767.

County factories produce a variety of products. Apparel and leather goods are much stronger here than in most Wisconsin counties, but the production of foundry products employs the most people. Food groups are also a major part of the industrial base. Table 19 lists the County's eight largest employers in 1975. The table also illustrates that most industry is concentrated in or near the City of Berlin. It should be noted that some unnamed plants may have higher seasonal employment than some listed in the table (e.g. canning).

TABLE 19  
LARGEST MANUFACTURING EMPLOYERS

<u>Name</u>	<u>Location</u>	<u>Product or Business</u>	<u>Employment</u>
Perfex Cast Metals	Berlin	Gray iron castings, etc.	600-699
Realist, Inc.	Berlin	Optical instruments, projectors	350-399
Medalist Industries	Berlin	Athletic Uniforms	250-299
Berlin Glove Co.	Berlin	Gloves, leather specialities	100-149
Fabriko, Inc.	Green Lake	Misc. advertising specialities	100-149
Precision Metalsmith, Inc.	Markesan	Investment castings	100-149
The Sager Glove Corp.	Berlin	Safety Apparel, gloves	50-69
Del Monte Corp.	Markesan	Canned vegetables	50-69

Source: Wisconsin Department of Business Development

## PUBLIC FINANCING

Like businesses, communities have substantial and continuing investments. The whole infra-structure of a community's facilities and services requires capital expenditures for maintenance of existing facilities and for expansion to accommodate future growth. Three major forms of financing are available to local governments. Public facilities may be financed in conjunction with one of the federal and state aid programs, through the tax levy, or by incurring debt against the tax base.

### Aid Programs:

Among the most significant aid programs are federal and state revenue sharing, state school aids, federal and state aids for streets and highways, grants for sewerage systems, and Farmers Home Administration grants for a variety of public facilities. Until recently, communities made extensive use of those aid programs to help finance their improvement needs. However, many of these aid programs are now being reduced and a larger share of the financial burden is being shifted back to local governments.

### Tax Resources:

The ability of local governments to finance improvements through taxation is related to the wealth of the government unit in terms of the tax base and income. Generally, smaller sized towns with very little, if any, manufacturing, have lower equalized values. In contrast, the City of Berlin has a larger tax base due to industrial activity. A small tax levy to finance public projects could result in relatively high rates and raising taxes is a volatile issue. Also, statutory provisions limit increases in tax rates to increase the community's equalized valuation.

In a general sense, the average tax rate is indicative of an overall tax effort and would normally reflect the level of public facilities and services. For the most part, tax rates are lower in the townships and higher in the cities. The fact that some towns have small tax bases and relatively low amounts of taxes to be collected, is a reflection of the effects of revenue sharing and school aid programs. These programs have been instrumental in keeping down the total tax levy. However, many of these programs are being cut or reduced and the loss of these programs could mean higher taxes without expanding services.

### Debt Financing:

Local governments can also finance public facilities and improvements by incurring debt. Normally, this is done by borrowing against the tax base, usually in the form of issuing general obligation bonds and pledging the full faith and credit of the community to retire the bonds. Wisconsin law limits the debt to no more than 5 percent of the community's equalized valuation, but the debt limit applies to each government unit capable of bonding. Therefore, the municipality, county and school district may each incur debts up to 5 percent of the area's equalized valuation which could result in a substantial overlap of debt.

Although most governments have a margin for future indebtedness, for the rural towns, the total amount of indebtedness that can be incurred is quite small in relation to the expense of extending facilities and services. Therefore, the objectives of this plan to encourage more compact and contiguous development not only preserve land, but can reduce the costs of providing public services to town residents. Planning allows local governments to establish capital improvement programs and keep costs within the financial capacity of the individual community.

## CHAPTER IV

## PLANNING AIDS

Protecting and preserving agricultural and natural resources while accommodating growth represents a difficult task. Formidable as this task may be, there are a variety of land use regulations as well as nonregulatory programs that can be used to aid in the effort to provide for future development without putting more pressure on prime agricultural areas in the County. This chapter will briefly describe some of the primary tools that can be utilized to implement this plan and recommend alternatives to improve these tools and the overall implementation program.

## LAND USE CONTROLS

Regulatory control, utilizing the police powers of local government, is not land use planning, but is a tool that can be used to implement a plan. This control can directly affect land use and therefore can be very effective in aiding efforts to achieve the goals of this plan. Land use controls which can have a major impact on the implementation of this plan include zoning, subdivision ordinances, and sanitary ordinances.

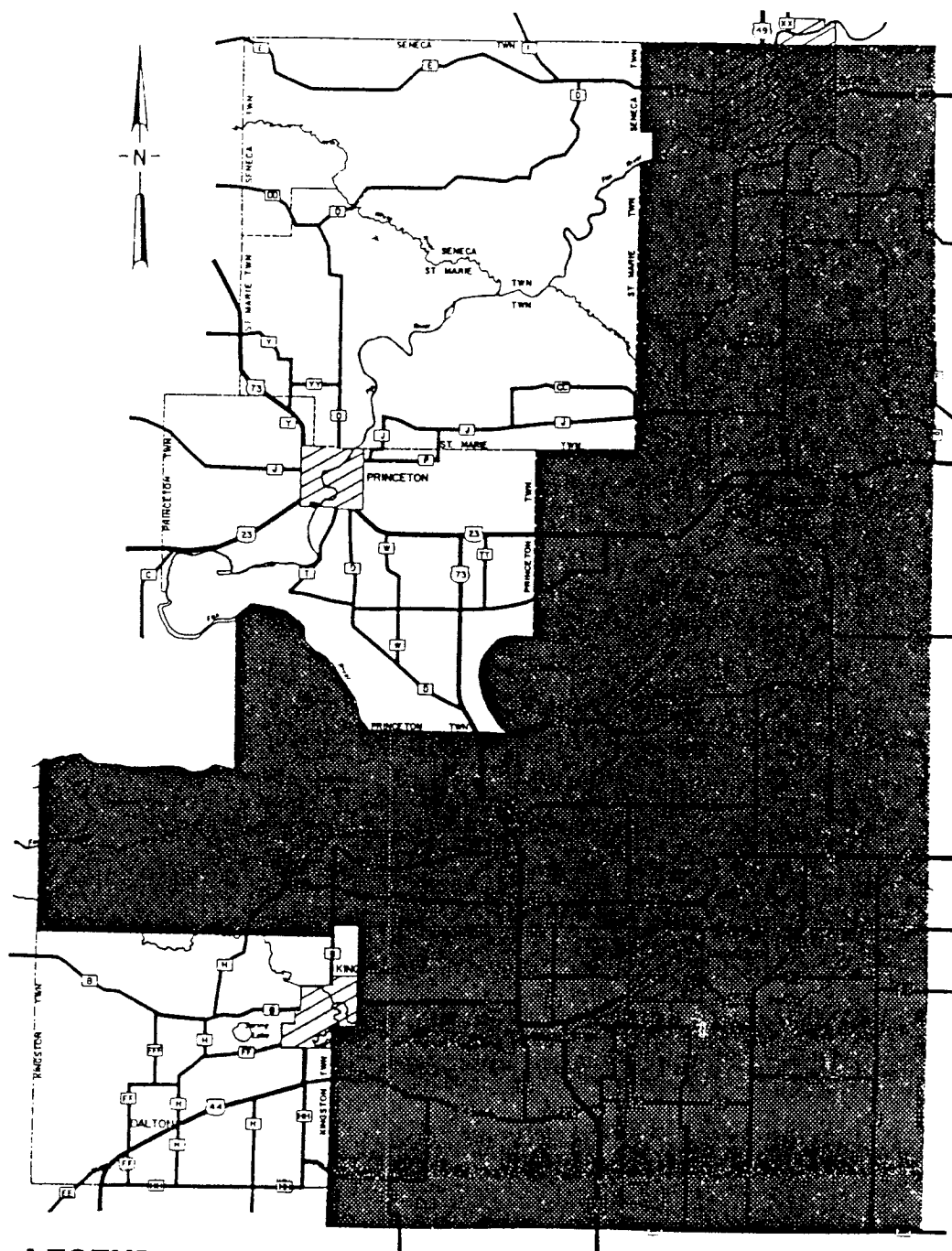
ZONING ORDINANCE, GREEN LAKE COUNTY, WISCONSIN

This ordinance was adopted in May 1976. The purpose of this ordinance is to "promote the comfort, health, safety, morals, prosperity, aesthetics, and general welfare" of the County. Current zoning districts in the ordinance include five agricultural districts, three residential districts, three industrial districts, two commercial districts, a recreational district, and a natural conservency district. These zoning districts seek to confine certain land uses to those areas which are suited to such uses, thereby encouraging the most appropriate use of the land. The ordinance, at the time of this writing, has been adopted by six townships. (Map 11)



The agricultural districts are of particular importance to the implementation of this plan. Two of the five districts, Ag-1 FP, and Ag-2 FP, meet the requirements of the Wisconsin Farmland Preservation Law. The purpose of these districts is to maintain, preserve, and enhance agricultural lands utilized for crop production. Farmers in those districts, provided they meet other criteria,



# ZONING JURISDICTIONS IN GREEN LAKE COUNTY



## LEGEND

-  Town Without County Zoning
-  Town With County Zoning

SOURCE: Green Lake County Zoning Office, 1980

would be eligible for farmland preservation tax credits. Farms in Ag-1, Ag-2, and Ag-3 agricultural districts don't qualify for tax credits. Maps showing the boundaries of all the zoning districts are located in the County Zoning Office.

The County Zoning Ordinance is complimented by a Flood Plain Ordinance and Shoreland Protection Ordinance. These ordinances are applicable County wide regardless if the ordinances have been adopted by the towns. The jurisdiction of shoreland districts includes shorelands of navigable waters defined by Wisconsin Statutes as follows:

1. One thousand feet from the normal high water elevation of lakes, ponds, or flowages.
2. Three hundred feet from the normal high water elevation of a river or stream or to the landward side of the floodplain, whichever is greater.

Floodplain districts encompass both floodway and floodfringe areas. The jurisdictional limits of these areas are shown on maps in the County Zoning Office. Conservancy zoning is utilized in conjunction with floodplain/shoreland delineations to protect both the flood storage area and the wildlife food and cover associated with these wetlands. Development in these areas is strictly regulated or prohibited entirely.

#### Recommendations:

The largest percentages of the County's population lives in or around identified developed areas. These developments are located on good agricultural land and have many operating farms on their perimeters. Some of this farmland has been identified as areas where future development is likely to occur. In order to help provide for orderly and compact growth patterns, it is recommended that the Ag-3, Agricultural Holding District, be amended to meet the requirements of the Farmland Preservation Law.

Land included in this district should be predominately in agricultural use, located near existing urban development or in sanitary districts, and likely to be needed for uses other than agricultural during the horizon of this plan. This need should be documented in an adopted County, local, or municipal land use plan and the inclusion of this land should be compatible with the goals and objectives of the County Farmland Preservation Plan. The permitted and conditional uses of this district would be the same as exclusive agricultural districts. Due to changes that are assumed to take place in these districts, the districts should be reviewed: a) a minimum of every five years;

b) upon the completion or revision of a planning report which affects lands in the district; or c) when public services such as sewer and water are extended to the district. Properly administered, this district can provide for the orderly and most cost-effective transition of agricultural land needed for other planned uses, while offering farmers in these areas protection from hazardous development.

In accordance with the Wisconsin Farmland Preservation Law, the County decisions to rezone areas zoned Ag-1 FP and Ag-2 FP should be based on findings which consider the following: 1) adequate public facilities to serve the development are present or will be provided; 2) provision of these facilities to serve the development will not be an unreasonable burden to local government; 3) the land is suitable for development; and 4) development will not cause unreasonable air and water pollution, soil erosion, or adverse effects on rare or irreplaceable natural areas.

In order to consider the effect of the rezoning on nearby farmers, the agricultural land base of the area, and the potential for land use conflicts, it is recommended that decisions on rezoning any agricultural district also be based on findings which consider the following:

1. Is the proposed use compatible with the surrounding agricultural area (potential for land use conflict)?
2. Is there a need for the proposed development in the agricultural area?
3. Is the proposed development on soils in agricultural capability class I or II?
4. Are alternative locations available which are not in the agricultural district?
5. Does the proposed development minimize the amount of agricultural land to be converted? If so, how?

Ideally, it is recommended that towns adopt the County ordinance. If towns choose not to adopt the County ordinance, they should adopt their own zoning ordinance. Exclusive and transitional agricultural districts should be included as well as the rezoning standard outlined above. The town's zoning ordinance and map should be certified by the state Agricultural Lands Preservation Board. This would help to protect the town farmer's ability to produce now and in the future. A more detailed discussion of zoning options for towns under the

Farmland Preservation Law is included in the Appendix of this plan.

#### LAND DIVISION AND SUBDIVISION REGULATIONS, GREEN LAKE COUNTY, WISCONSIN

The subdivision ordinance was adopted in 1976. It is the intent of the ordinance to promote the public health, safety, general welfare and to further the orderly layout and use of the land in Green Lake County. The subdivision ordinance has county-wide jurisdiction.

Subdivision ordinances are designed to regulate the subdivision of land into smaller parcels, especially for development uses, so that the dividing of land is done efficiently and logically. These division should be in response to a demonstrated or planned need and should be within the environmental capabilities of the proposed site. Subdivision ordinances can set standards for site design and building and may require that streets, lights, sewer, water, etc., be installed before approval is granted for the subdivision.

In Green Lake County developments subject to this are defined as either land divisions or subdivisions. Land divisions include the creation of not more than four parcels or building sites, each of which is five acres or less; and no more than four parcels can be created by this method within any five year period. A subdivision creates five or more parcels or building sites of five acres or less in an area created one at a time or by successive divisions within a five year period. A plat is required for subdivisions and a certified survey map is required of land divisions.

In addition to acreage requirements of the ordinance, other features can be utilized for plan implementation. The ordinance states that dividing of land shall be in accordance with other County and state regulations, official maps, and comprehensive plan or plan component. Also, land should not be divided that is unsuitable for reason of flooding or potential flooding, soil limitations, inadequate drainage, incompatible surrounding land use, or any other feature likely to be harmful to the general welfare to the community or the County.

#### Recommendations:

Due to its county-wide jurisdiction, this ordinance can be an effective tool to aid in the implementation of this plan. Subdivisions are required to have plots approved before they are developed. Presently, Land Conservation Committee (LCC) personnel provide technical advice only when it is requested. This plan recommends that a cooperative agreement be arranged between local

subdivision plat approval authorities and the local LCC. The agreement should provide for a LCC review of all proposed subdivisions thereby enabling the LCC to provide recommendations relating to the control of run-off, erosion, and sedimentation at construction sites. The review should begin prior to beginning construction, continue during construction, and after the project is completed. This would allow the LCC to provide advice to the developer that could prevent future problems and insure that recommended controls are being followed and maintained. The review and comment procedure should be supplemented by putting control requirements or performance standards in the County ordinance. Again, the LCC and other agencies could provide technical and educational assistance in preparing the ordinance. The assistance may include, but not be limited to:

1. Provide standards and specifications for soil erosion, sedimentation, and run-off control practices.
2. Provide technical and professional advice for establishing erosion and sediment control provisions in local ordinances.
3. Assist in developing educational programs to increase public awareness of erosion problems on construction sites.
4. Provide training programs for builders and developers on construction site erosion control practices and local policies.

Also, a procedure should be established whereby land divisions created by certified survey maps be reviewed by the LCC. Procedures and provisions could be similar to those developed for subdivisions. This type of review would be of particular importance for construction occurring in priority watersheds, sloped areas, or on prime agricultural soils.

#### PRIVATE SEWAGE SYSTEM ORDINANCE, GREEN LAKE COUNTY, WISCONSIN

The County's sanitary ordinance was adopted in May, 1980, and is in compliance with the requirements of Wisconsin Statutes and administrative codes. These regulations seek to provide for the safe construction and maintenance of private water supplies and sewage disposal systems.

The ordinance requires a land owner to hold a valid sanitary permit before installing a private sewage system. Also, a retailer may not sell a septic tank for installation unless the purchaser holds a valid sanitary permit.

Sanitary permits are based on an evaluation of soil conditions, properties, and permeability, depth to bedrock, landscape position, set back requirements, and the potential for flooding. Maps illustrating the general suitability of soils for septic drainage fields are located in the Appendix of this plan. Site specific information can be found by referring to maps in the Soil Survey of Green Lake County, Wisconsin, or by conducting individual site tests.

#### Recommendations:

A new mound septic system is now being used to allow for on-site disposal in areas not suitable for normal septic tank drainage fields. It is recommended that this system be used to take some development pressure off of farmland by developing rougher sites that are not suitable for farming rather than building on productive agricultural land. Also, it is suggested that setback requirements be used to position approved systems so that effluent from the drainage field will not enter farm fields and cause problems of wetness or unstable fertility in the soils.

### NONREGULATORY PROGRAMS

Regulatory controls can be used effectively in land use planning; however, there are also a variety of nonregulatory planning tools that can be used in implementing programs. The following is not a complete list of available implementation tools nor is it an exhaustive discussion of any particular tool, but it does introduce other facets of a total implementation program.

#### FISCAL TOOLS

The power of government to tax has an important impact on when and where land development takes place. Taxation policies are very complex and must be dealt with at several levels of government. Most of the responsibility for regulating tax activity pertaining to farmland preservation lies at the state level. But, relative to the implementation of this plan, local government action can affect farmland preservation tax credits. Specifically, local government actions determine the eligibility of farmers for tax credits and, if eligible, what percentage of the tax credit the farmer will receive.

The authority of local governments to make capital expenditures for public facilities can affect farmland preservation planning. Decisions of where and when to locate public facilities can have a major impact on land use. Public

facilities such as sewers and water systems are installed at the discretion of the towns and cities and usually don't directly involve the County. County funds do affect the development and maintenance of roads, bridges, and recreational facilities. The County also provides financial assistance for industrial development in the County.

#### Recommendations:

Local capital expenditures are made each year and these expenditures for public facilities should be analyzed to assure their compatibility with this plan. Long-range capital improvement programming, both at the County and town levels, should be consistent with the goals and objectives of farmland preservation planning. A sound program of capital improvements can act as a catalyst to encourage growth in areas where the needed services and facilities will not tax a local government's financial or natural resources.

It is a goal of this plan not only to preserve the quantity of farmland, but also the quality of the County's farmland. In order to prevent future soil losses through erosion, more conservation programs will have to be implemented on County farms. To aid in providing financial assistance for farmers who want to apply needed soil conservation practices, it is recommended that the County establish an organization that can provide economic assistance to County farmers. The new organization should be developed in conjunction with the LCC or could be a function of the existing committee. Financial assistance could be provided either by cost sharing programs or low interest loans. Not only would assistance of this type help to preserve farmland, but would help reduce water pollution from nonpoint sources.

#### COORDINATION OF PROGRAMS AND EDUCATION

Several agencies have programs that are directly or indirectly related to the concept of farmland preservation. The following is a list and description of agencies that can provide valuable assistance in the effort to implement this plan.

##### Agricultural Stabilization and Conservation Service:

ASCS administers federal cost sharing programs established to promote soil and water conservation practices designed to prevent and control soil erosion and improve water quality through abatement of identified nonpoint sources of pollution.

#### East Central Wisconsin Regional Planning Commission:

ECWRPC furnishes information and data on subjects relating to farmland preservation and provides guidance to assure this plan is consistent with regional planning objectives.

#### Farmers Home Administration:

FmHA administers programs for credit consultation and loans to promote and support desirable land uses, resource enterprise adjustments, and economic and social development.

#### Soil Conservation Service:

SCS provides personnel, equipment, and technical services to implement and further support resource conservation programs including soil surveys, detailed resource inventories, conservation planning, and application of approved soil and water conservation practices.

#### Land Conservation Committee:

LCC provides technical and educational assistance in relation to the conservation and management of soil and water resources, land use planning, watershed protection, flood prevention, and basic environmental quality.

#### University of Wisconsin-Extension:

UWEX provides educational and public informational services, helping to inform the public through demonstrations, meetings, publications, and other media resources. UWEX services relevant to this plan are programs related to agricultural production and resources conservation and management.

#### Wisconsin Department of Natural Resources:

Wisconsin DNR can provide advice and assistance on the development, protection, management, and utilization of forest and wetland resources. The DNR also assists in programs regarding wildlife habitat and surface water management activities.

#### Recommendations:

In all probability, the greatest opportunity to effectively implement this plan lies in coordinating the efforts of various agencies, citizens, and



government units to achieve the goals of this plan and to improve the public's education regarding farmland preservation planning. Most of the agencies mentioned have a representative on the Technical Advisory Group that assisted the development of this plan. Now it will take the cooperation of this group to coordinate the elements of their programs relating to farmland preservation into a cohesive effort aimed at achieving the goals of this plan. To aid in this task, it is recommended that certain staff members of the Technical Advisory group be combined with representatives of the Citizens Advisory Committee to form a Farmland Preservation Advisory Committee. This committee would be responsible for continuing the efforts that went into the development of this plan. It would also allow the plan to be kept current with changes in the state program and the needs of the citizens of Green Lake County.

The development of this plan has initiated a dialogue between different units of government and local citizens. This educational process has worked in both ways as the County has made the towns aware of the benefits of farmland preservation and the towns have made the County conscious of their needs. It is imperative that the educational process continues because of the lack of cooperation and knowledge probably pose the greatest threat to the implementation of this plan.

## CHAPTER V

## PLAN IMPLEMENTATION

This plan has identified agricultural, environmental, and developing or urbanized areas in the County. Studies in this plan and other reports have indicated a loss of County farmland through development and erosion, and have illustrated the problems associated with incompatible rural land uses. Goals have been formulated and policies outlined that seek to retain certain agricultural and environmental lands while accommodating the future growth needs of the County. But in order for this plan to achieve the goals and objectives, it must be implemented. The Green Lake County Board is primarily responsible for determining County actions to implement this plan, but it will require the cooperation of all levels of government as well as the citizens of the County.

Some of the major implementation tools that can be used were described in the last chapter. This chapter will outline an implementation strategy. The strategy is meant to describe what steps should be taken to turn policy into action. While actions will be described as they relate to specific goals, it should be noted that this plan is designed to assemble land use regulations as well as nonregulatory planning tools into an integrated implementation program.

PRESERVATION OF AGRICULTURAL LANDS

The analysis and studies presented in this report indicate that serious consideration should be given to the preservation of the County's remaining farmland. Economic analysis in Chapter III illustrated that agriculture has a significant impact on the overall economy of Green Lake County. Studies in Chapter III have also shown that County farmers have been, and are willing to, invest in the future of agriculture. However, the information also indicates that the County will continue to lose prime farmland to nonagricultural uses. Concerned about the consequences associated with the continued loss of farmland, this plan recommends the following actions be taken to preserve the farmland identified in the plan.

### Exclusive Agricultural Zoning:

Exclusive agricultural zoning should be applied to those areas in the plan identified as suitable for preservation. The adoption of County exclusive agricultural zoning can provide a higher degree of protection for County farmers and make them eligible for 100 percent of state income tax credits under the Farmland Preservation Act. These tax credits can help reduce the farmers financial burden caused by increasing property tax assessments. In addition, farms in exclusive agricultural districts are protected from special tax assessments for sewer, water, and other public services.

It is no longer unusual for farmers to be taken to court by neighbors who consider their agricultural activities to be a "nuisance". With exclusive agricultural zoning, farmers could be confident that they can conduct their agricultural activities without interference from nonfarm land uses. This type of zoning would help protect the significant investments of the farmers and help maintain the potential for efficiency in farm operations by preserving large blocks of land for agricultural uses. The ability to expand operations is important if County farmers are to remain competitive within the agricultural economy. Also, large areas zoned for farm use would be more effective in protecting farmland than a voluntary program which would encourage only piecemeal participation. Restrictive agricultural zoning can protect large blocks of farmland because extensive development can occur only if approved by local zoning authorities.

### Agricultural Land Holding Zoning:

Several areas in the County have been identified where the character of the areas is changing or is planned to change from agriculture to more urban type uses. It is in these areas that Ag-3 zoning should be applied. The adoption of an amended and certified Ag-3 district would not only provide protection for farmers, but could also provide for the orderly development of agricultural land needed for other uses. Tax assessments in these areas are usually higher than in the more rural areas and tax credits available in this district may allow a farmer to stay in farming rather than being forced to sell out because of an excessive tax burden. However, as the name implies, the area is not an exclusive agricultural district, but an area which can be developed as the land is needed. This district can be used to defer development until local governments determine if public services and facilities are within their financial capabilities and if such development is compatible with local plans and policies.

#### Farmland Preservation Contracts:

In areas not protected by exclusive agricultural zoning, farmers should consider signing individual farmland preservation contracts. In return for agreeing not to develop their land, farmers are eligible for 70 percent of the available farmland preservation tax credits. Farms under these contracts are also exempt from special assessments to provide public services such as sewer and water. These contracts follow the land, even if the land is sold, and range in length from 10 to 25 years. Information on these contracts is available at the County Zoning Office.

#### Land Division Regulations and Erosion Controls:

Subdivision ordinances are intended to provide for the safe and orderly development within unincorporated areas. Location, design, and site requirements are all parts of the ordinance that can be used to influence the impact of development allowed in rural areas. These controls should be used to minimize the amount of land removed from agricultural production by encouraging the infilling of existing subdivisions. When new land divisions are approved, site requirements should be designed to minimize the impact development has on surrounding agricultural areas.

Prime farmland can also be preserved by applying soil and water conservation management practices. It is recommended that the County Land Conservation Committee (LCC) in conjunction with its Resource Conservation Program or as a separate program identify areas in the County with existing or potential erosion problems. A policy should then be developed whereby individual farm conservation plans be prepared on a priority basis based on the severity of erosion problems. Included in the policy should be arrangements whereby farmers in low priority areas who request plans, but have not received assistance, can still be eligible for tax credits available through farmland preservation contracts.

It is highly recommended that farmers who have not implemented farm conservation plans contact the LCC or SCS. These agencies can provide technical, professional, and in some cases, financial assistance for farmers desiring to apply prescribed soil management practices.

In erosion prone areas where voluntary controls are not working, local government should consider land use regulations to control cropland soil loss. Such regulations could be applied either through zoning or Chapter 92 erosion control programs.

#### Informational Programs:

Both the LCC and the local UW-Extension Office offer programs illustrating the problems which accompany development on prime agricultural land. These programs

should be expanded to include options and alternatives to minimize land use problems made available through the Farmland Preservation Program. People need to be made aware of the benefits of a sound land resource planning program. Informational and educational programs are critical for future farmland preservation efforts.

#### URBAN GROWTH AND PUBLIC FACILITIES

A variety of reports have shown that past growth patterns have been a notable factor in the loss of County farmland. Scattered and unplanned growth not only removes agricultural land from production, but can cause financial problems for local governments when urban services must be provided to the sprawling developments. Planned developments can not only reduce the amount of farmland being lost, but will allow local governments to locate and time development within the limits of their natural and financial resources. The following controls and programs are recommended for use by local governments to accommodate future growth in the County.

##### Urban Service Areas:

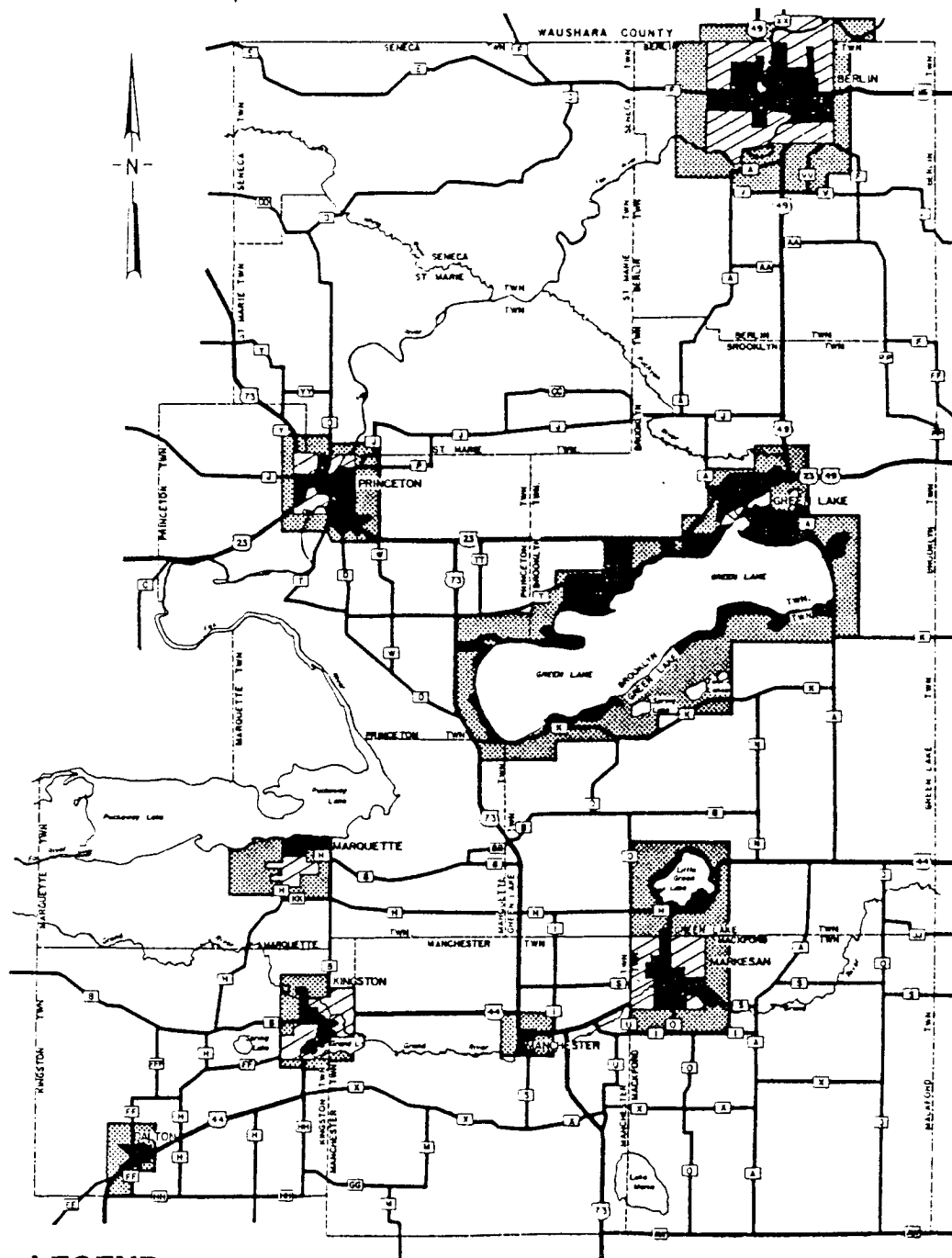
Green Lake County participated in land use studies conducted by ECWRPC to assure that growth projected for the County can be accommodated with minimal costs to the County's agricultural, environmental and financial resources. The studies involved the delineation of planning areas and urban service areas in the County. Planning areas include all possible options for where growth might occur up to the year 2000. Generally, planning area boundaries include all sanitary districts and other areas which could potentially be developed. Urban service areas reflect a narrowing of growth options to include those areas best suited and actually needed for development by the year 2000. Both planning areas and urban service areas are shown in Map 12.

The urban service areas are intended to help communities assess future public facilities and service needs. In most cases, service areas were established in areas where public facilities can be expanded in an efficient manner. The urban service areas are updated by ECWRPC every five years or when changes in land use or population indicate a need for an amendment. Timing and location of expanded facilities and public services to serve new developments should be based on urban service area delineations. Descriptions and specific recommendations for each of the urban service areas are included in the Appendix of this plan.

##### Land Use Regulations:

Zoning and subdivision regulations can be very effective in establishing patterns for future area developments. While a zoning ordinance can be a hard document to understand, the concept of zoning is not that complicated. Zoning

# URBAN SERVICE AND PLANNING AREAS GREEN LAKE COUNTY



## LEGEND



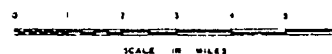
Corporate Area



Planning Area



Urban Service Area



SOURCE: New Directions for Growth and Development,  
ECWRPC, 1978

is simply the division of land into districts within which various regulations and restrictions apply concerning the use of the land. In many cases, zoning is thought of only as a tool to separate land uses and not enough attention is given to zoning as an instrument for planning orderly community growth. County and town zoning authorities should have an idea of how much land is needed for different land uses and how much land is zoned for a particular purpose. Zoning too little or too much land for a particular purpose can have undesirable results when planning for urban growth. For the best results, zoning should be tied to plans which are geared to a thorough and continuing study of the resources, goals, and potentialities of the community.

Some of the most perplexing land use problems of inefficient land use patterns, congestion, high public maintenance costs, and constant improvements are directly traceable to poorly planned subdivisions. Communities suffer from uncontrolled subdividing when they find themselves compelled to provide a vast array of public services for substandard or partially developed subdivisions that offer little promise of providing sufficient tax revenue to pay for the cost of the services.

The subdivision ordinance can and should be used to insure that new subdivisions are developed to facilitate adequate provisions for public facilities and services. Serious consideration should be given to an amendment allowing new major subdivisions to be permitted only in urban service areas until these existing service areas are filled in. This type of growth policy would achieve more efficient land use and allow local governments to provide public services in a timely and cost-effective manner.

#### PRIVATE WASTE DISPOSAL

Soil characteristics greatly influence the location and installation of private waste disposal systems. All soils in the County have been rated by the Soil Conservation Service (SCS) according to their limitations for septic drainage field systems. Maps of these individual soil groups are available from the SCS. Maps showing the general limitations of the suitability of soils for septic drainage fields are also included in the Appendix of this plan.

Information from the SCS indicates that about 47 percent, Table 2, have severe limitations for septic systems. Acceptable sites may be found in some of the mapped areas, but the high percentage of severe limitations shows that much of the County may not be optimally suitable for normal septic drainage field systems. A dichotomy exists with the remaining land suitable for drain

field systems, in that most of the land is also very productive agricultural land.

Once installed, septic absorption fields are thought of as permanent facilities, but all absorption fields are destined to fail eventually. The average life of a properly designed absorption field is broadly 20 years, after which time the field must be replaced with a new one. The life of an absorption field will be drastically shortened if the system is not operated and maintained correctly. Due to these conditions, it is recommended that the following programs be used to control the installation and maintenance of private waste disposal systems.

#### Private Sewage System Ordinance:

The private Sewage System Ordinance controls the installation of septic systems within the County. The ordinance should continue to be enforced to assure new conventional septic systems are located in areas capable of supporting the system. In areas where soils are not suitable for conventional septic systems, the approval of an alternative system, such as a holding tank or mound system, must take into consideration the potential effect the system may have on the local environment. Besides meeting sanitary code requirements, the location of alternate systems in areas identified as flood fringes have to meet the requirements of County floodplain zoning, the Department of Industry, Labor, and Human Relations, and receive the approval of the DNR for placing fill material in a floodplain. The installation of new private sewage systems is prohibited in areas zoned conservancy or identified as a floodway.

#### Wisconsin Fund:

Given time, private septic systems are bound to fail due to age, poor design, lack of maintenance, or other reasons. The Wisconsin Fund has been established to provide financial assistance to property owners with failing septic systems. A property owner may receive a grant to cover 60 percent of the cost, \$3,000 maximum, to replace or rehabilitate a failing septic system. To be eligible, the property must have been occupied at least 51 percent of the year before July 1, 1978. Seasonal homes and small businesses with a daily wastewater load of more than 2,100 gallons are not eligible.

Green Lake County presently doesn't participate in this phase of the Wisconsin Fund. To make these funds available, the County should pass a resolution to participate in the Fund.



## PRESERVATION OF ENVIRONMENTAL, NATURAL, AND HISTORICAL RESOURCES

Green Lake County contains a variety of environmental resources and places of historical significance. The County has approximately 44,000 acres of wetlands; 27,700 acres of woodlands, 18,560 acres of surface water; 16,000 acres of active recreational land; and a variety of archaeological, architectural and historical sites. The economic, recreational, and health benefits that result from these resources are a major influence on the quality of life in the County. Sprawling growth and poor resource management are major factors in the deterioration of these environmental and historical areas. Since much of the effort in protecting environmental quality relates land use to these resources, local land use planning and regulations have the greatest potential to protect these environmental resources. It is recommended that the following programs and ordinances be integrated into a program of environmental protection and management.

### Green Lake County Outdoor Recreational Plan:

This plan inventoried the County's outdoor recreation areas, archaeological sites, nature study areas, environmental areas, and landmark structures. These areas were then evaluated in terms of needs for the existing and future population, improvements needed to make them available for public use, and the preservation and protection of these areas. The report has its own implementation program which outlines priorities and methods of protection and acquisition. That program is consistent with the goals of this farmland preservation plan and can be a major factor in an effort to preserve the County's natural resources and areas of significant interest.

### Land Use Regulations:

Land use regulations such as zoning, sanitary, and subdivision ordinances can compliment programs that lack the legal powers to protect environmental or special areas. Zoning districts of particular importance for the preservation of the County's natural resources are listed below.

- Exclusive agricultural districts limit land uses to agricultural uses. Agriculture is broadly defined and includes fish and fur farming and forestry and game management. Therefore, land suitable for these activities can be protected by zoning. This district could also be very useful in protecting smaller environmental or archaeological areas that

are a part of an operating farm.

- Conservancy, floodplain, and shoreland districts limit or preclude development within their boundaries. Due to large amounts of surface water and wetlands in the County, these districts are very important in preserving natural areas either as self-contained units or as they relate to an environmental corridor system.

Subdivision ordinances require drainage plans and can require erosion controls for developments to help reduce the amount of sedimentation that enters the County's rivers and lakes. Sanitary regulations can preclude development in environmentally sensitive areas or require the placement and installation of private water disposal systems so as to decrease the chances of effluent entering water systems.

#### Land Conservation Committee Resource Conservation Program:

The Committee promotes awareness of the environmental benefits that can be achieved through the application of soil and water conservation practices. This program combines public information with technical and financial assistance. The continuation and expansion of this program is very important to the implementation of this plan.

#### Woodland Tax and Forest Crop Tax Laws:

The intent of these laws was to encourage sound long-term forestry and woodland management practices. In return for enrolling their land in the program, the owners only pay a tax of 40 cents per acre per year. A new annual tax per acre will be computed in 1982 for the succeeding ten years. Sound woodland management not only can improve production of forest products, but contributes to soil and water conservation and the protection of wildlife habitat.

#### CONTINUATION OF PLANNING PROCESS

Studies in this report have shown that the County has lost a significant amount of farmland. Also illustrated were the problems of land use conflicts which occur when urban development takes place in agricultural areas. By implementing this plan, the County is striving to preserve its agricultural resource base while meeting the needs of growing communities. As an approved plan, it will make tax credits available for some farmers and insure the

opportunity for future participation in the Wisconsin Farmland Preservation Program.

Recognizing that information used to prepare this report will change, procedures have been established to provide for the periodic review of this plan to insure a consistency with local planning or land use changes that may occur. Therefore, the completion of this plan should not be viewed as the end of the planning effort, but rather as a starting point. Problems associated with sprawling development and the loss of farmland did not appear overnight and they will not go away by writing a planning report. It will take a continual and cooperative effort on the part of rural and urban communities, local governments, and citizens in general if the goals of this plan are to be achieved.

## APPENDICES

Appendix A - Service Area Descriptions  
and Recommendations

Appendix B - Zoning Options for Towns

Appendix C - Town Maps  
-Farmland Preservation  
-Suitability of Soils for Agriculture  
-Suitability of Soils for Septic Systems

APPENDIX A  
SERVICE AREA DESCRIPTIONS AND RECOMMENDATIONS

The following service area descriptions are taken from the ECWRPC report, "New Directions For Growth and Development", 1978. It should be noted that while some projections are outdated, the descriptions and recommendation are basically still applicable to these areas.

GREEN LAKE COUNTY

BERLIN - City of Berlin and Towns of Aurora and Berlin

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	5755	5721	5819	5944	6039	6070	6055
Residential Land Demand	33 acres						
Total Land Demand	49 acres						

Berlin is located on the Fox River in northeastern Green Lake County on STH 49 and 116. The City straddles the Green Lake - Waushara County line; however in 1970 the Waushara County portion of the city had only 41 residents. The projection indicates relative stability through the planning period. The service area delineation anticipates residential growth primarily in the northwestern portion of the community. The city has an industrial park on the east side, south of STH 116 which should prove adequate through the planning period.

DALTON - Town of Kingston

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	233	240	244	250	253	255	254
Residential Land Demand	3 acres						
Total Land Demand	7 acres						

Dalton is an unincorporated community located on STH 44 in the southwest part of the County. The CNW mainline passes through the community and at one time had substantial facilities there. The water system in the community has been inherited in part from the railroad and upgraded and expanded by the community. Because the growth projection is minimal, the existing development pattern of the community should be able to accommodate any development which does occur during the planning period. No sewerage system exists in the community and while the public water supply removes one of the potential hazards

of failing septic systems, it does not counteract all the hazards. Therefore it is recommended that this service area be monitored on a periodic basis to determine the adequacy of individual septic systems by the State Division of Health.

GREEN LAKE - City of Green Lake, Towns of Brooklyn, Green Lake, Marquette and Princeton, and Green Lake Sanitary District

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	1959	2163	2344	2556	2735	2895	3049

Residential Land Demand	120 acres
Total Land Demand	651 acres

The City of Green Lake is located on the northeast shore of Green Lake in the central part of the County near the intersection of STH 23 and 49. The city and the American Baptist Assembly are the only two areas with sewerage systems at the present time. The balance of the subdivision and shoreline development around Green Lake is served by individual septic systems. The residential land demand figure noted above is for permanent year-round housing only. Second homes used seasonally or on weekends are included in the total land demand figure only, explaining one reason for the disparity above. Another is the existing American Baptist Assembly, golf courses and several camping facilities using extensive acreage that may not be duplicated in future development; therefore, the past trends projection of total land demand is probably somewhat overstated.

Future residential growth in the city will primarily be concentrated to the east, south and west of CTH A, and to north within the STH 23 bypass. Some filling in of development will occur to the west along the Green Lake shoreline, although it will be offshore development. Green Lake Station is included in the city's service area. The service area delineation for the balance of Green Lake is based to a large extent on the existing shoreline development areas and the several subdivision developments on the north shore of the Silver Creek inlet. These areas should prove adequate to accommodate future permanent and second home development including both the filling in of shoreline areas and offshore development. It is expected that non-residential development will follow the existing pattern of non-residential development in the area.

The City of Green Lake is preparing plans to upgrade its sewerage treatment system and is giving consideration to the feasibility of serving lake development outside of the city west to the Baptist Assembly and the eastern end of the lake. At a minimum it is recommended that those portions of the entire Green Lake urban service area that are not now served by public sewer should be given high priority for monitoring on a periodic basis to determine the adequacy of individual septic systems by the State Division of Health.

KINGSTON - Village of Kingston and Town of Kingston

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	343	363	372	383	393	397	401

Residential Land Demand	6 acres
Total Land Demand	7 acres

Kingston is located on STH 44 on the west side of Grand Lake in the south central part of the County. New residential growth is expected to follow the existing residential pattern with some development extending westward along CTH B and a second growth area extending southward on the southeast side of STH 44. Development to the north and southwest between STH 44 and CTH B is restricted by wetlands and high watertable. Non-residential development should likewise follow the existing non-residential development pattern. Kingston does not have a sewerage system at present, but is preparing facilities plans to determine its feasibility. It is suspected that some septic systems are failing; therefore, it is recommended that this service area receive high priority for the monitoring of individual septic systems to determine their adequacy by the State Division of Health. Local officials have recognized that the community would have difficulty accommodating any growth without a municipal sewer and as a result are exploring it at this time.

MANCHESTER - Town of Manchester

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	194	192	190	189	187	1982	176

Residential Land Demand	0 acres
Total Land Demand	0 acres

Manchester is an unincorporated community located on STH 44-73 and the Grand River in the south central part of the County. Manchester has no sewerage

or water facilities at this time; however, it has been included as part of the Markesan facilities planning study. Since the projected population is declining, the service area has been delineated to closely follow the existing development pattern. It is recommended that the service area be monitored on a periodic basis to determine the adequacy of individual septic systems by the State Division of Health.

MARKESAN - City of Markesan, Towns of Green Lake and Mackford, and Little Green Lake Sanitary District

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	1915	2071	2183	2308	2427	2531	2620

Residential Land Demand	68 acres
Total Land Demand	170 acres

Markesan is located on STH 44 and the Grand River in southeastern Green Lake County. Little Green Lake is located one and one-half miles due north of the city. The urban service area anticipates some future residential growth to be located on the south side of the city with principal growth to the west of existing development north of the river. Non-residential growth is expected to expand in the two principal areas of existing non-residential development along CTH S to the east and along STH 44 to the north. A portion of the total land demand projection is for continued second home development at Little Green Lake. The lake area is presently unsewered and shoreline property has been fully utilized so that any future development will have to be of a second tier, off-the-lake nature. Demand for this type of development is difficult to predict although some has already been developed at Little Green Lake. It is recommended that the Little Green Lake portion of the service area be given high priority for monitoring of the individual septic systems to determine their adequacy by the State Division of Health.

MARQUETTE - Village of Marquette and Town of Marquette

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	192	229	232	246	261	275	285

Residential Land Demand	9 acres
Total Land Demand	21 acres

Marquette is located on CTH H on the south shore of Lake Puckaway. Marquette is projected to receive substantial growth relatively, although local officials



do not feel that there will be a surge of growth because of their stable population in the past. The community does have a number of second homes some of which have been converted to retirement homes in the past several years. Residential growth can easily be accommodated within the existing development pattern, since the community is spread out over a large area and intermittently developed. A good portion of the total land demand is due to the second homes and whether that past land use ratio will be maintained in future development is questionable due to the recent trend of converting the second home to year-round housing. They do not have sewerage or water facilities and local officials indicated that, because of good soils, they have experienced no difficulties in developing with septic systems. However, some shoreline development with high ground water table has experienced difficulties. It is recommended that the service area be monitored on a periodic basis to determine the adequacy of individual septic systems by the State Division of Health.

PRINCETON - City of Princeton and Towns of Princeton and St. Marie

Population	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	1662	1592	1579	1571	1553	1514	1465
Residential Land Demand	0 acres						
Total Land Demand	0 acres						

Princeton is located in the west central part of the County on the Fox River and STH 23-73. Because projections have indicated a decline in population, the urban service area has been drawn along the lines of the existing development pattern and should easily accommodate any developmental changes occurring during the planning period. The city has completed its facilities planning for upgrading its sewerage treatment system and is awaiting its construction grant.

## APPENDIX B

## ZONING OPTIONS FOR TOWNS

Zoning is a primary implementation tool for the Wisconsin Farmland Preservation Program. Exclusive agricultural zoning is not required for Green Lake County farmers to receive tax credits. However, zoning can help preserve farmland and it can increase tax credits for farmers who participate in the program. The relationship between counties and towns in Wisconsin's zoning law is complicated. When the planning and zoning provisions of the Farmland Preservation Act are added to existing zoning law, many planning and zoning options become available to local units of government. This Appendix will briefly summarize the options towns have under the Farmland Preservation Law. For further details on town options, citizens and local officials should consult their local legal advisor or the staff of the Farmland Preservation Program.

Options discussed in this Appendix depend on the action of the Green Lake County Board. The adoption of the County Farmland Preservation Plan is vested in the County Board and the plan is also subject to certification by the State Agricultural Lands Preservation Board (ALPB). If the plan is not adopted by the County Board, farmers can not sign contracts and towns not under County zoning could not make town farmers eligible through town zoning. Therefore, the following options are discussed assuming the plan has been approved.

Towns With County Zoning

In towns that have adopted the County zoning ordinance, the options are relatively simple. First, the decision to use exclusive agricultural zoning is still up to the town government. If the decision is made to zone, the town must prepare a zoning map and submit the map to the ALPB. Major factors for approval are the preservation of the majority of the town's farmland and the town's zoning map should be similar to the town's farmland preservation map. Assistance in preparing the zoning map is available from the County Zoning Office and the State's farmland preservation staff. County zoning combined with this plan make tax credits available at the 100 percent level and there is a minimum tax credit available. To claim a tax credit, a farmer would follow the steps outlined in Figure 2. The only information the County needs is the parcel number from the tax receipt which can be given in person or over the telephone. This option would be available without adopting the plan, but tax credits would then be at the 70 percent level.

### Towns with Town Zoning

Assuming the town has prepared their ordinance according to state law, the decision to participate in the Farmland Preservation Program is up to the local government. They can choose not to participate by simply taking no action. If and when a town decides to participate, the following steps are required:

1. The ordinance must include an exclusive agricultural district that is consistent with the Farmland Preservation Law. Minimum standards and procedural guidelines are set out in the law; however, there are different ways of complying with the law and local governments should choose the alternatives that fit local circumstances.
2. The town ordinance must be approved by the County Board and the ALPB.
3. A town zoning map must be prepared and approved by the ALPB. This should be done while working on the ordinance, but can be completed at a later date. A prime concern of the ALPB is the preservation of the majority of the town's farmland and a similarity between the zoning map and the town's farmland preservation map.

The town government is responsible for preparing and submitting their ordinance and map to the ALPB, and should consult their legal advisor to assure consistency with state zoning laws. Also, the County Zoning Office will assist the town upon request and the State's farmland preservation staff will review the ordinance and map prior to meeting with the ALPB. This review would allow the staff to check whether the town's proposal is consistent with the Farmland Preservation Law and generally in line with the past actions of the ALPB. The staff can be contacted at the Department of Agriculture, Trade and Consumer Protection, 801 West Badger Road, Madison, WI 53717.

Upon receiving approval of the ordinance and map, land in exclusive agricultural areas will be eligible for tax credits at the 70 percent level and the minimum tax credit would be available. The procedure to claim credits is shown in Figure 2.

### Towns Without Zoning

If the town decides to implement exclusive agricultural zoning to participate in the Farmland Preservation Program, it can be accomplished in one of two ways. First, they can make town farmers eligible by adopting the

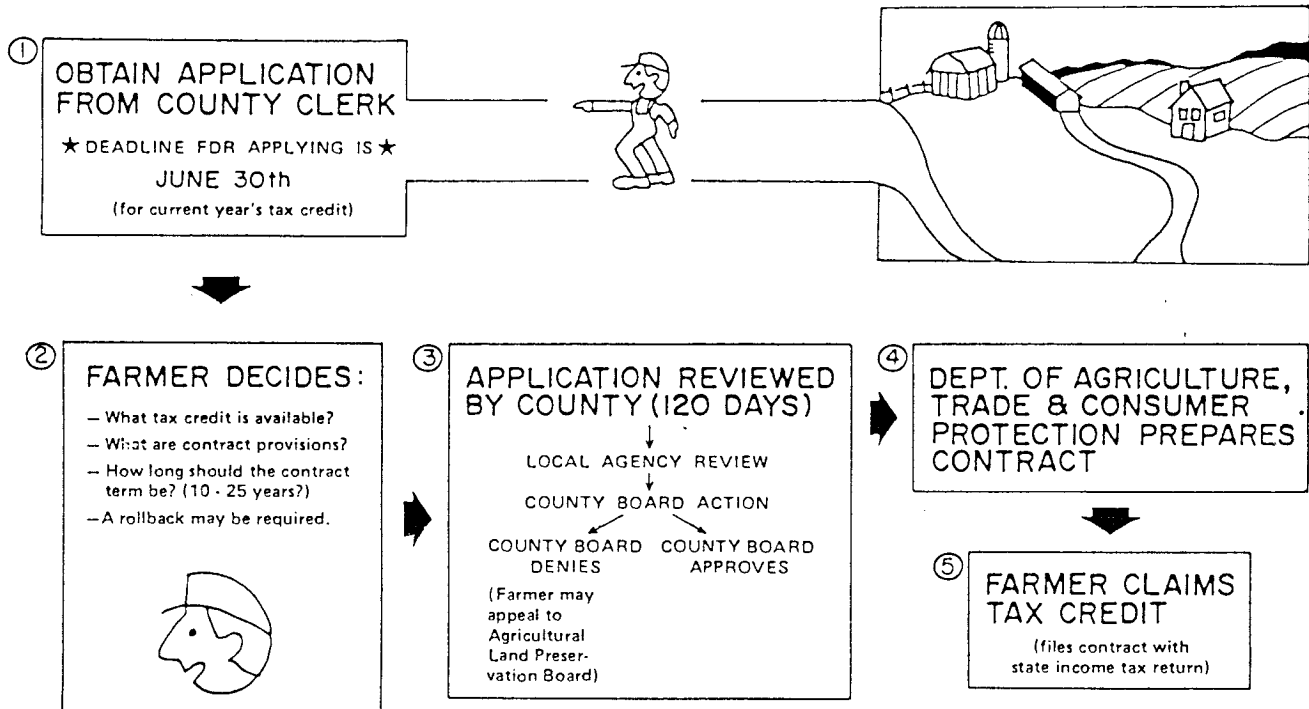
County zoning ordinance and submitting a zoning map to the ALPB for approval. Farmers in exclusive agricultural districts could then claim tax credits at the 100 percent level or the minimum credit by following the procedure outlined in Figure 2.

The second way to make town farmers eligible through zoning would be to adopt their own town zoning ordinance. The town should consult their legal advisor to insure the adoption of their ordinance is in compliance with state zoning laws. Once this has been accomplished, the town would follow the steps outlined for "Towns With Town Zoning".

FIGURE 2

## WISCONSIN FARMLAND PRESERVATION PROGRAM

### Application Process for Farmland Preservation Agreements



*(For more information, contact your County Extension Office, Planning or Zoning Office, Clerk's Office, Soil & Water Conservation District, or Dept. of Agriculture, Trade & Consumer Protection at 801 West Badger Road, Madison, WI 53708)*

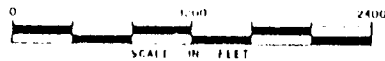
*Farmland Preservation Unit  
Department of Agriculture,  
Trade & Consumer Protection*

## APPENDIX C





### Town Maps

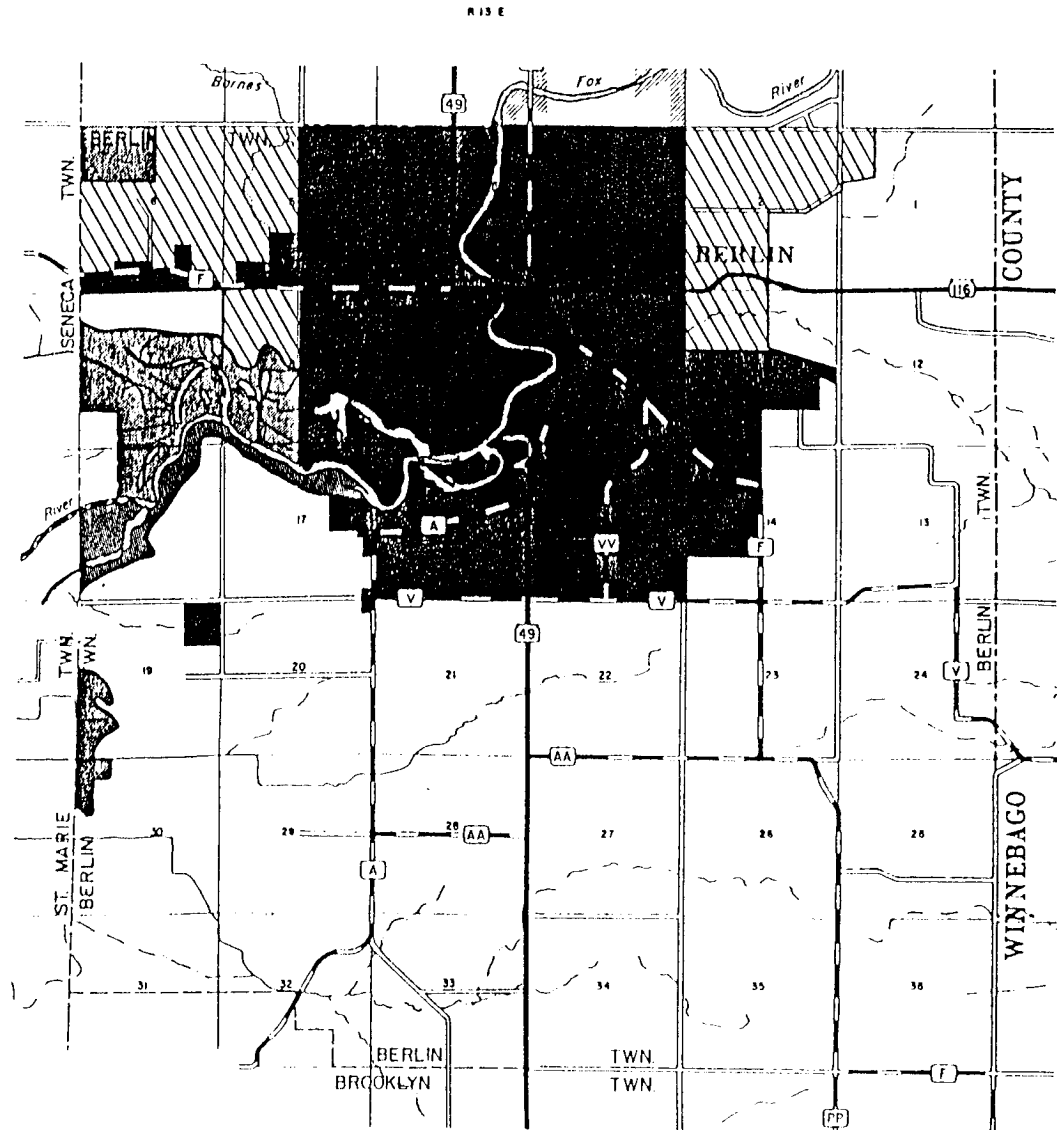
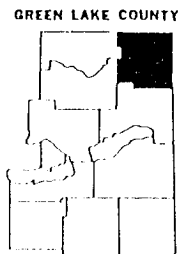
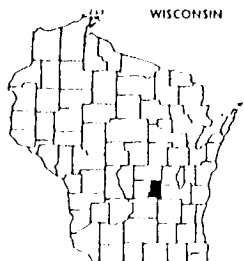
- Farmland Preservation
- Soil Suitability for Agriculture
- Soil Suitability for Septic Systems

# TOWN OF BERLIN FARMLAND PRESERVATION PLAN

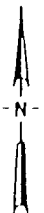


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-  TRANSITIONAL AREA
-  ENVIRONMENTAL AREA
-  EXCLUDED AREA

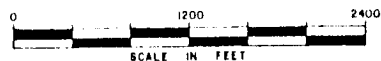


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T 17 W



T 17 N  
T 16 W

# TOWN OF BERLIN SOIL SUITABILITY FOR AGRICULTURE



## LEGEND



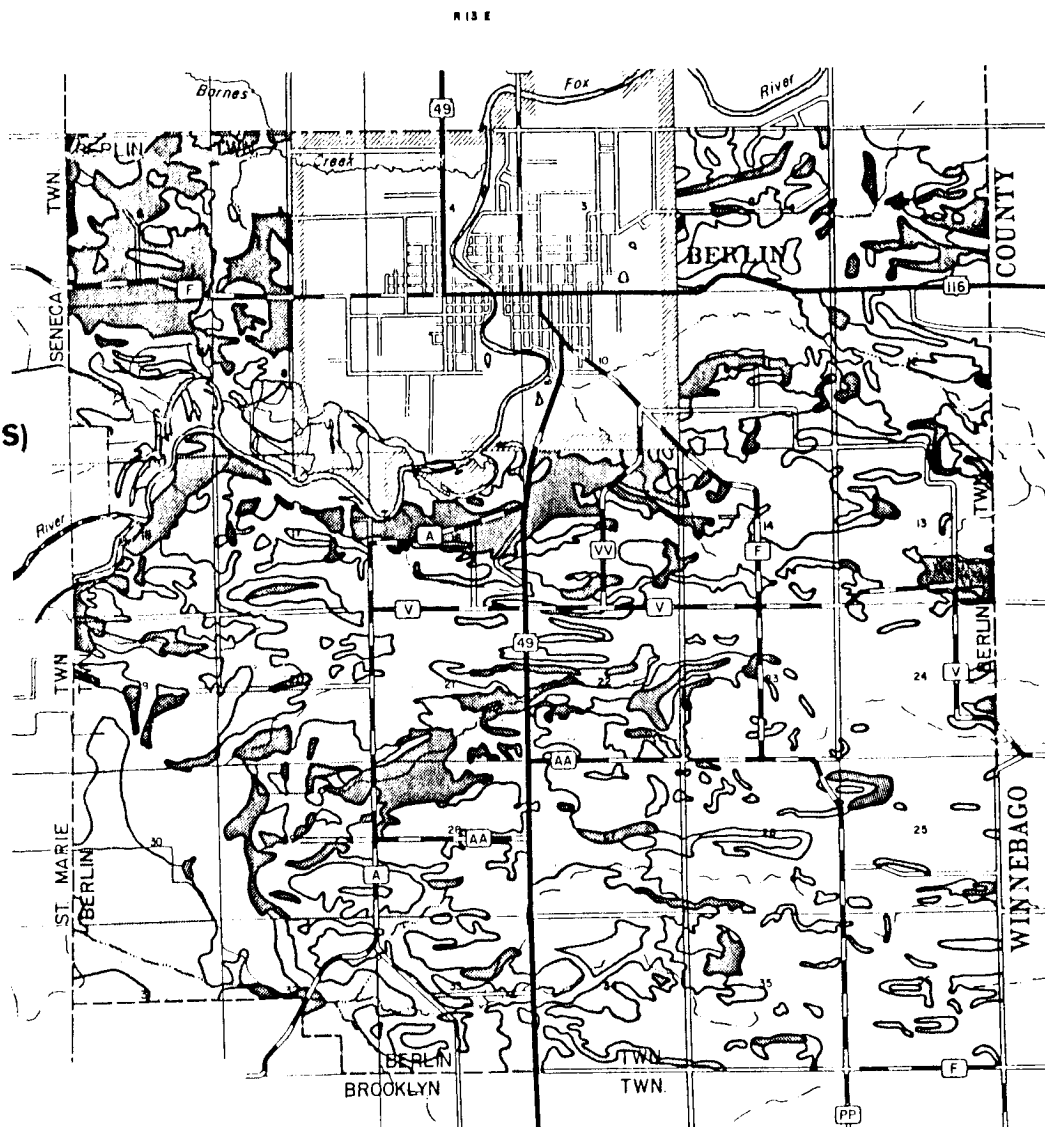
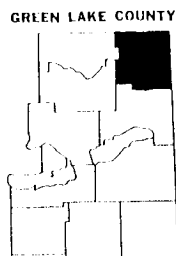
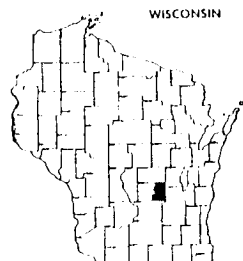
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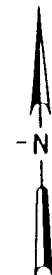
**CLASS III AGRICULTURAL SOILS  
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**CLASS IV-VIII AGRICULTURAL SOILS  
(VERY SEVERE LIMITATIONS)**



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T17N

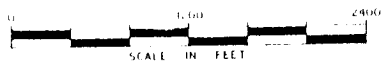


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T16N



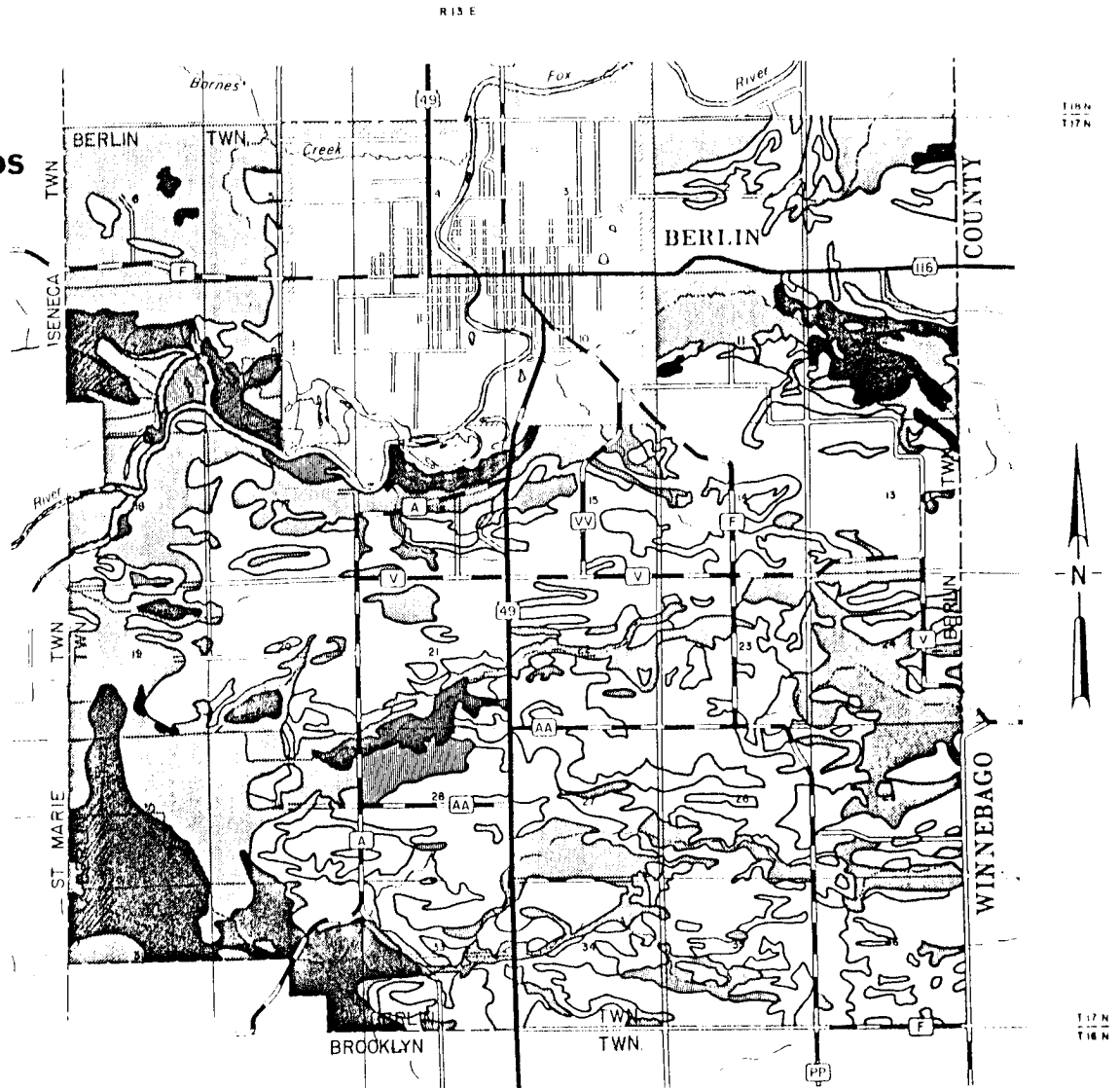
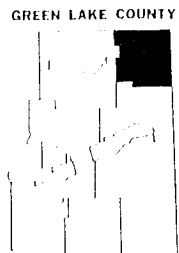
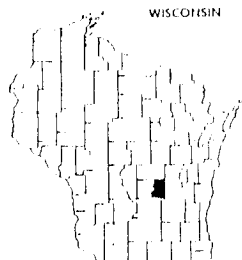
# TOWN OF BERLIN

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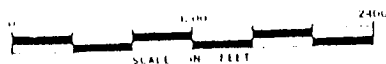


### LEGEND





- SLIGHT LIMITATIONS
- MODERATE LIMITATIONS
- SEVERE LIMITATIONS
- VERY SEVERE LIMITATIONS

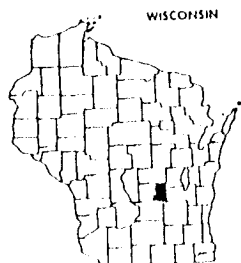
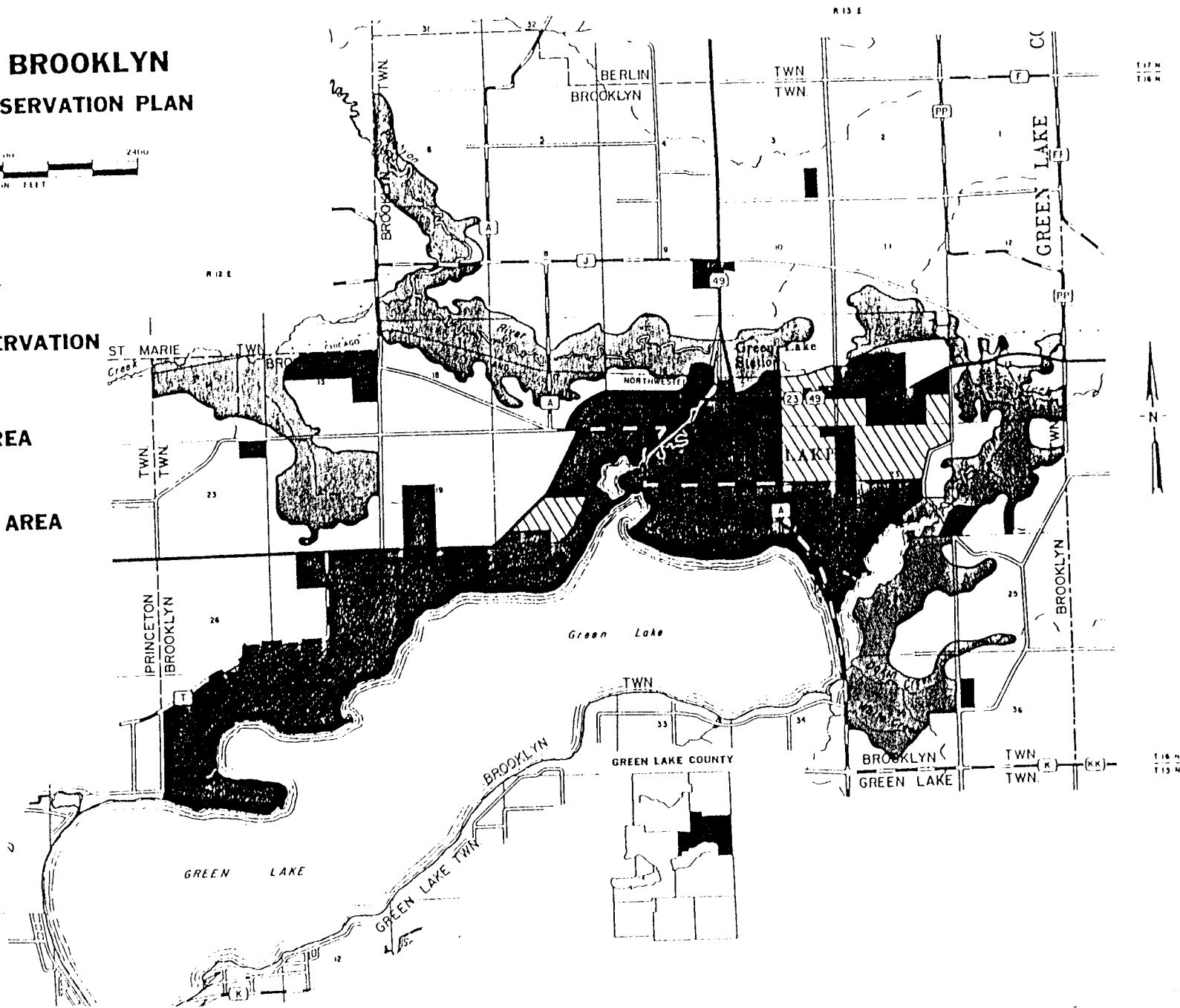


# TOWN OF BROOKLYN FARMLAND PRESERVATION PLAN



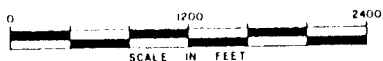
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-  ENVIRONMENTAL AREA
-  EXCLUDED AREA




# TOWN OF BROOKLYN

## SOIL SUITABILITY FOR AGRICULTURE



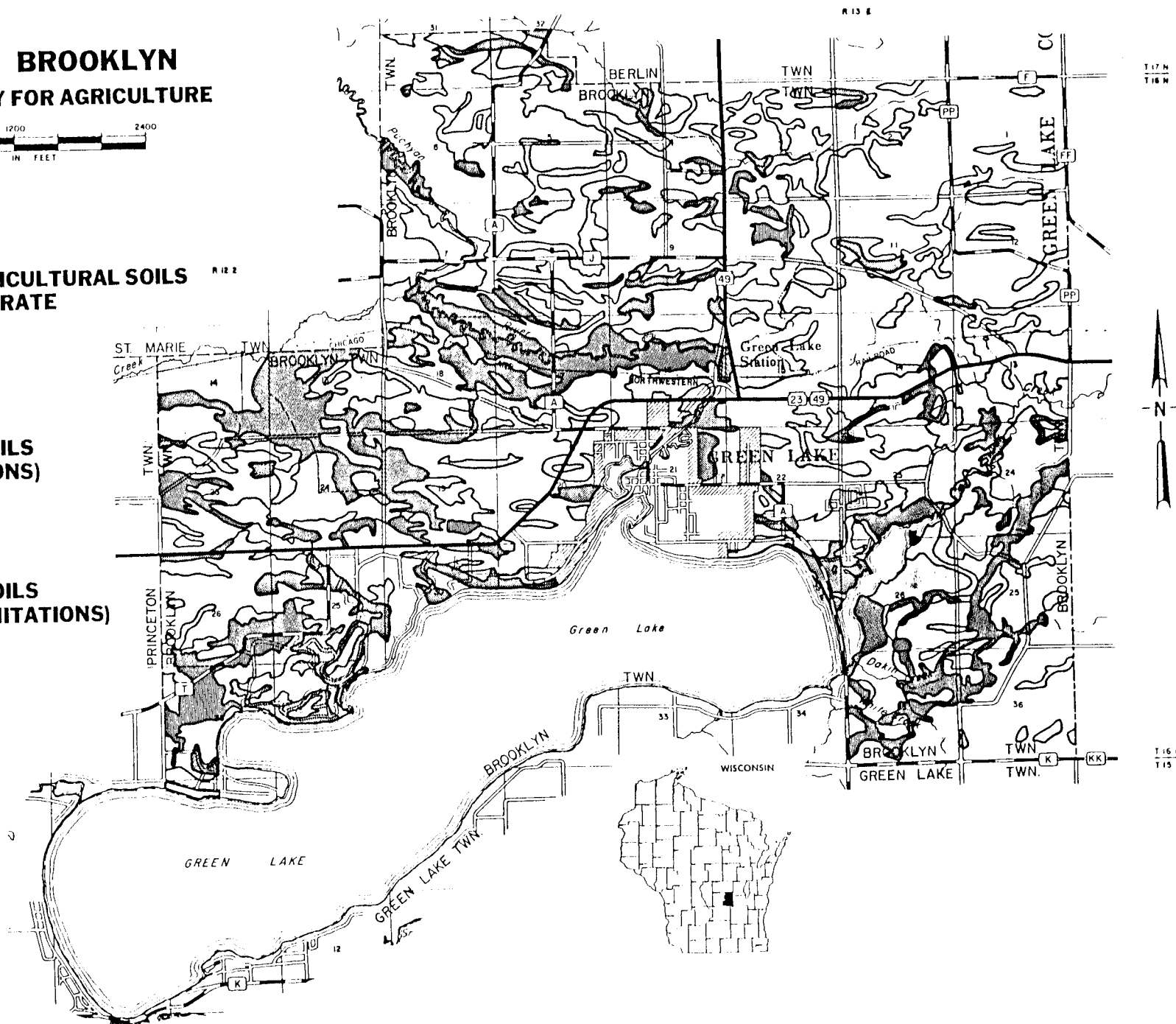
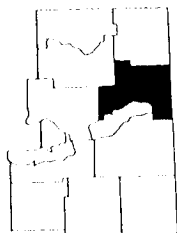
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(SLIGHT AND MODERATE LIMITATIONS)

 CLASS III AGRICULTURAL SOILS  
(SEVERE LIMITATIONS)

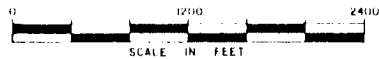
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GREEN LAKE COUNTY







# TOWN OF BROOKLYN

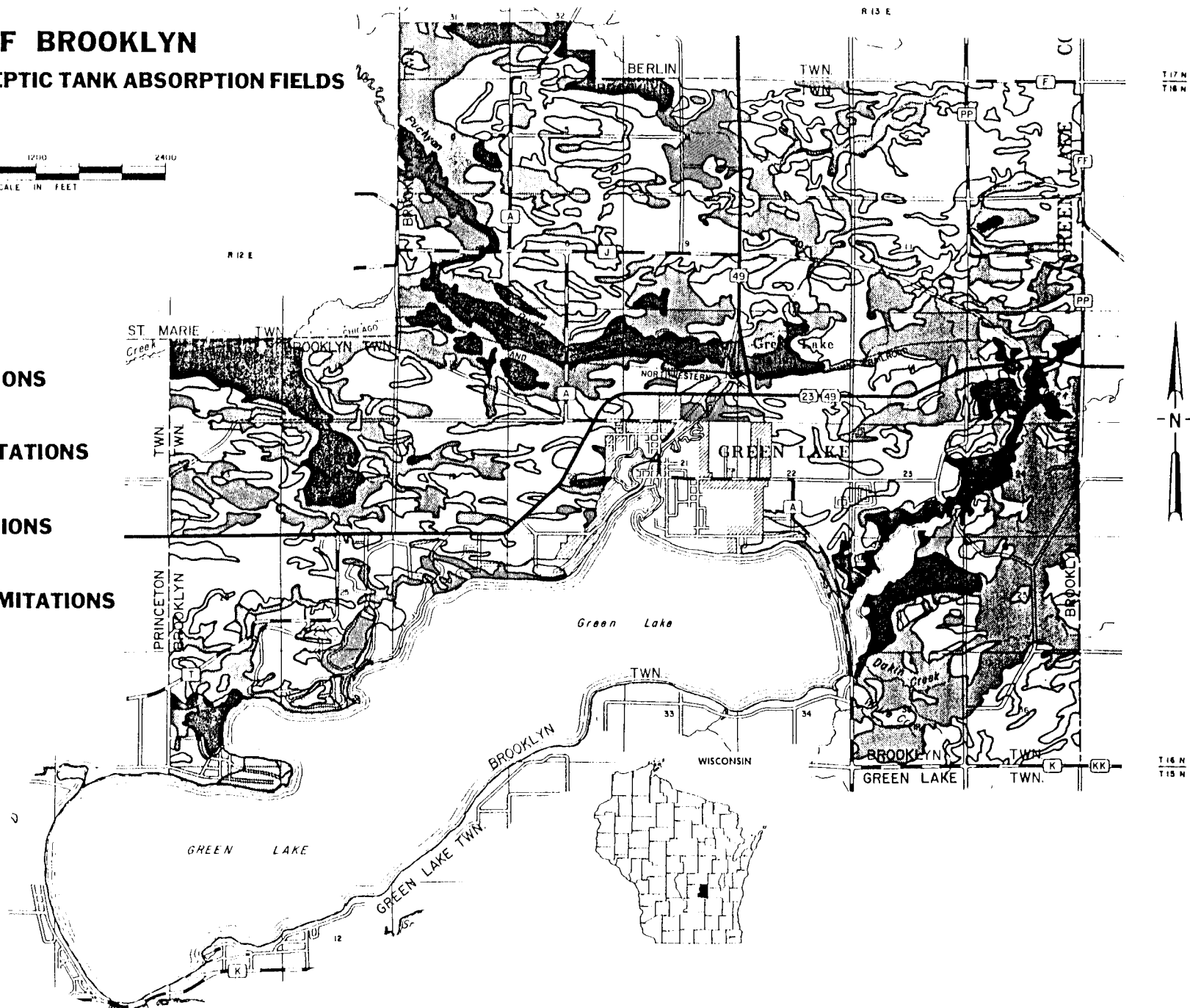
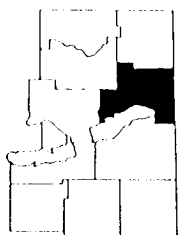
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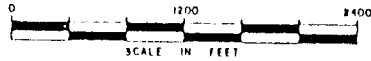
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-  MODERATE LIMITATIONS
-  SEVERE LIMITATIONS
-  VERY SEVERE LIMITATIONS




### GREEN LAKE COUNTY

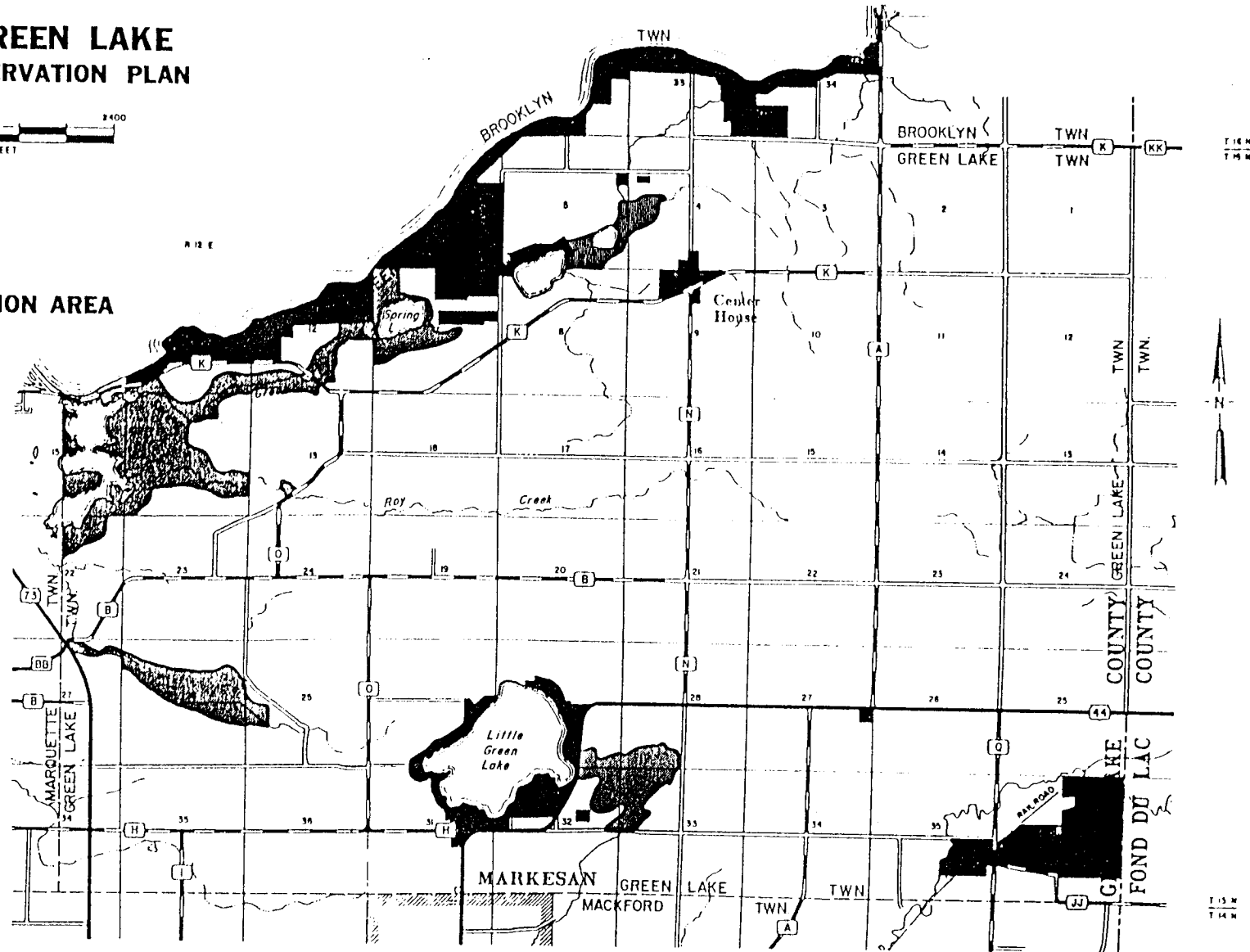
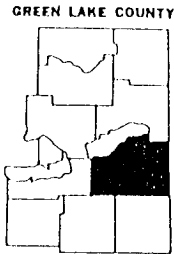
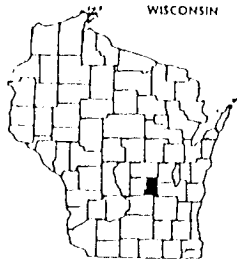


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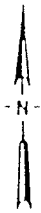


## LEGEND

-  FARMLAND PRESERVATION AREA
-  ENVIRONMENTAL AREA
-  EXCLUDED AREA



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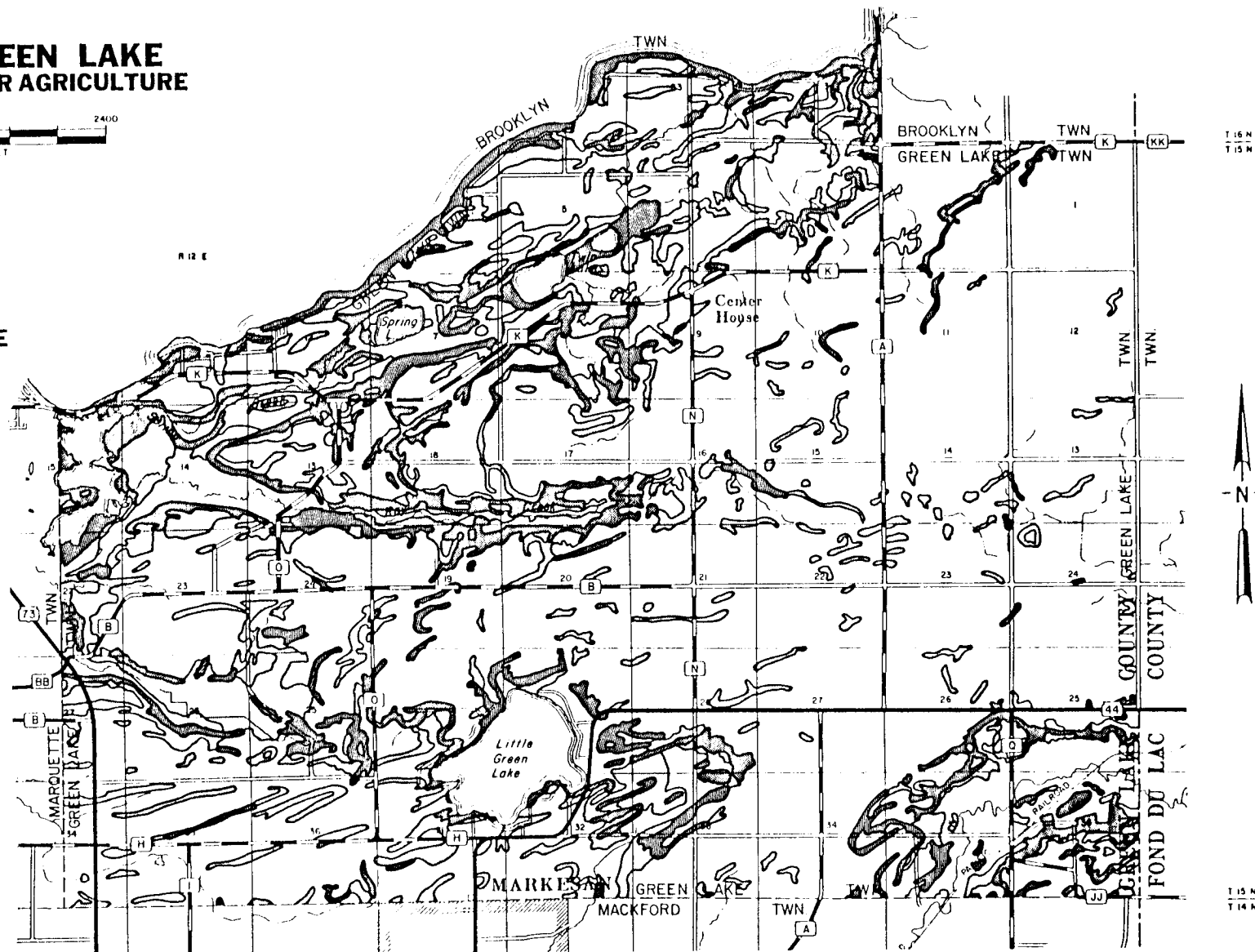
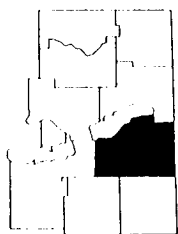


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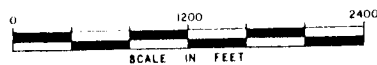
SCALE IN FEET

☐ CLASS I AND II  
AGRICULTURAL SOILS  
(SLIGHT AND MODERATE  
LIMITATIONS)

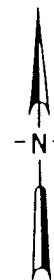
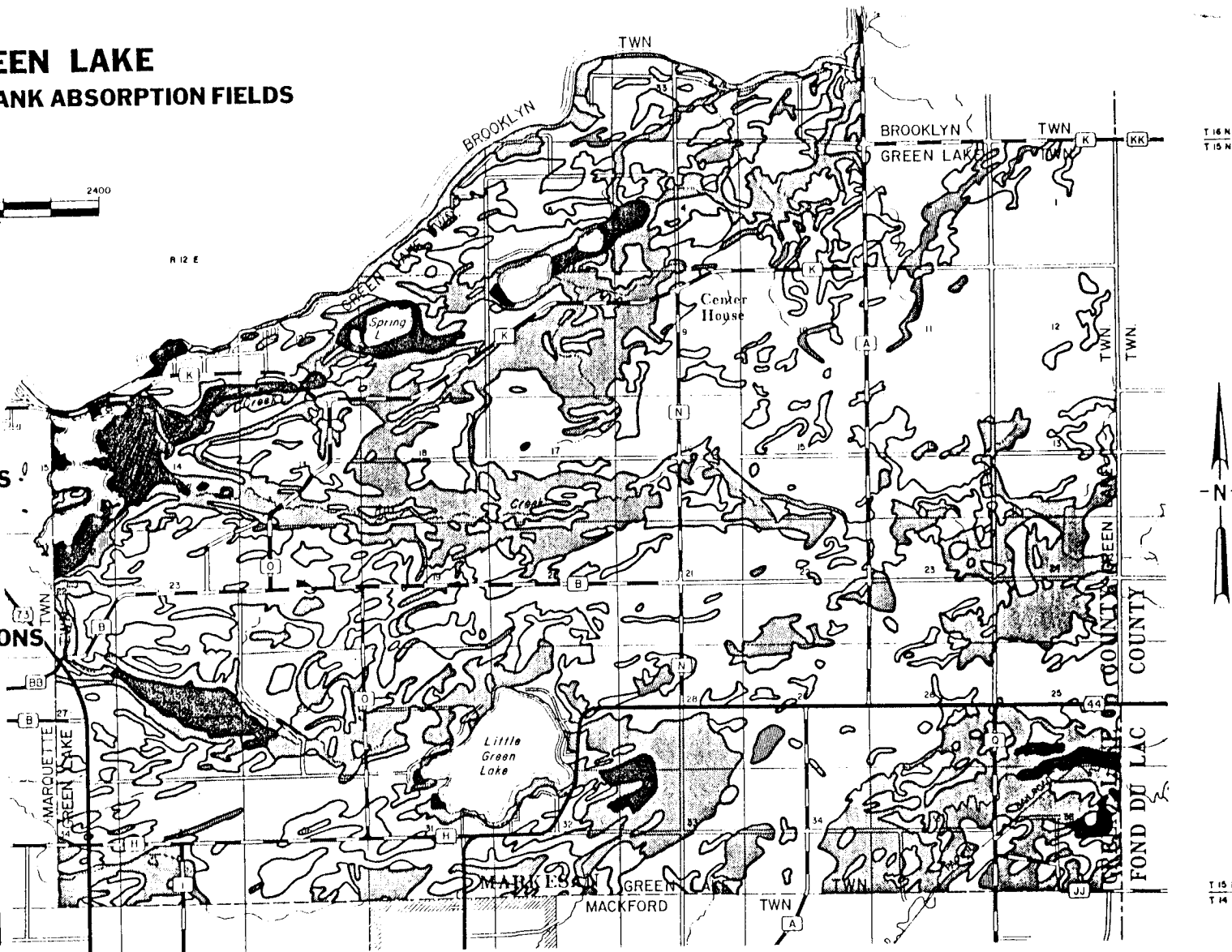
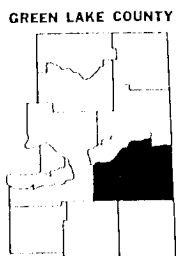
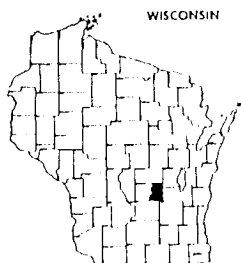
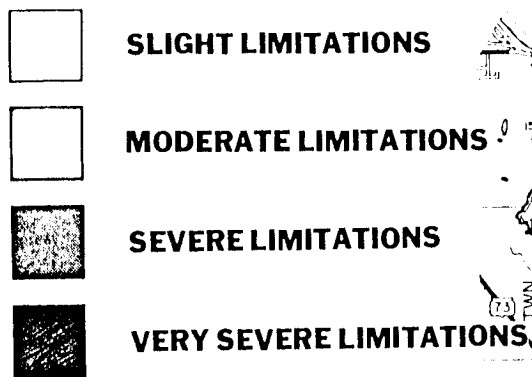


# TOWN OF GREEN LAKE

## SOIL SUITABILITY FOR SEPTIC TANK ABSORPTION FIELDS

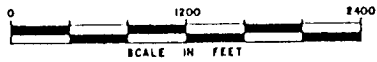


### LEGEND






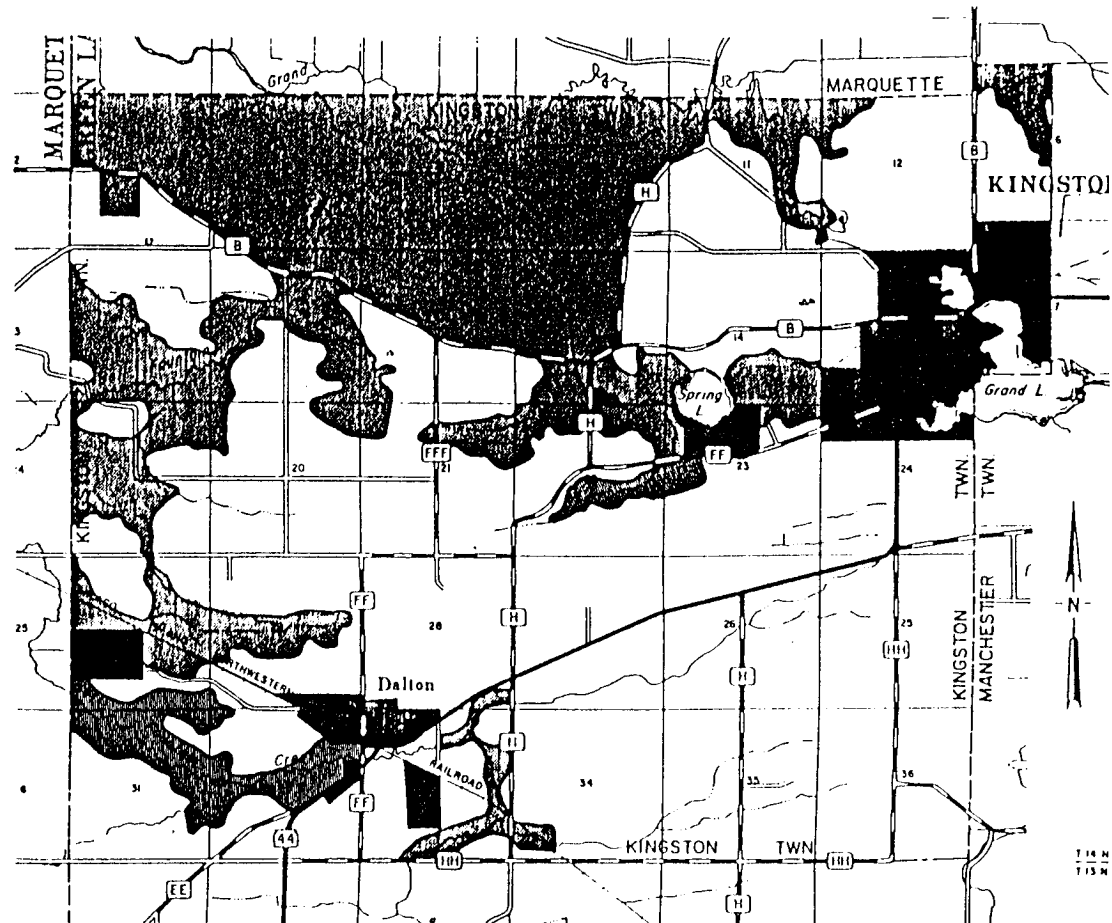
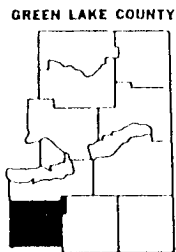
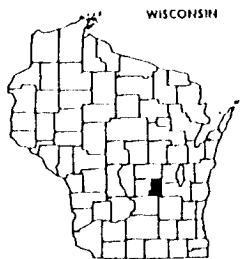
T 15 N  
T 14 N

# TOWN OF KINGSTON FARMLAND PRESERVATION PLAN



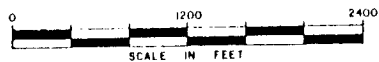
## LEGEND

-  FARMLAND PRESERVATION AREA
-  ENVIRONMENTAL AREA
-  EXCLUDED AREA






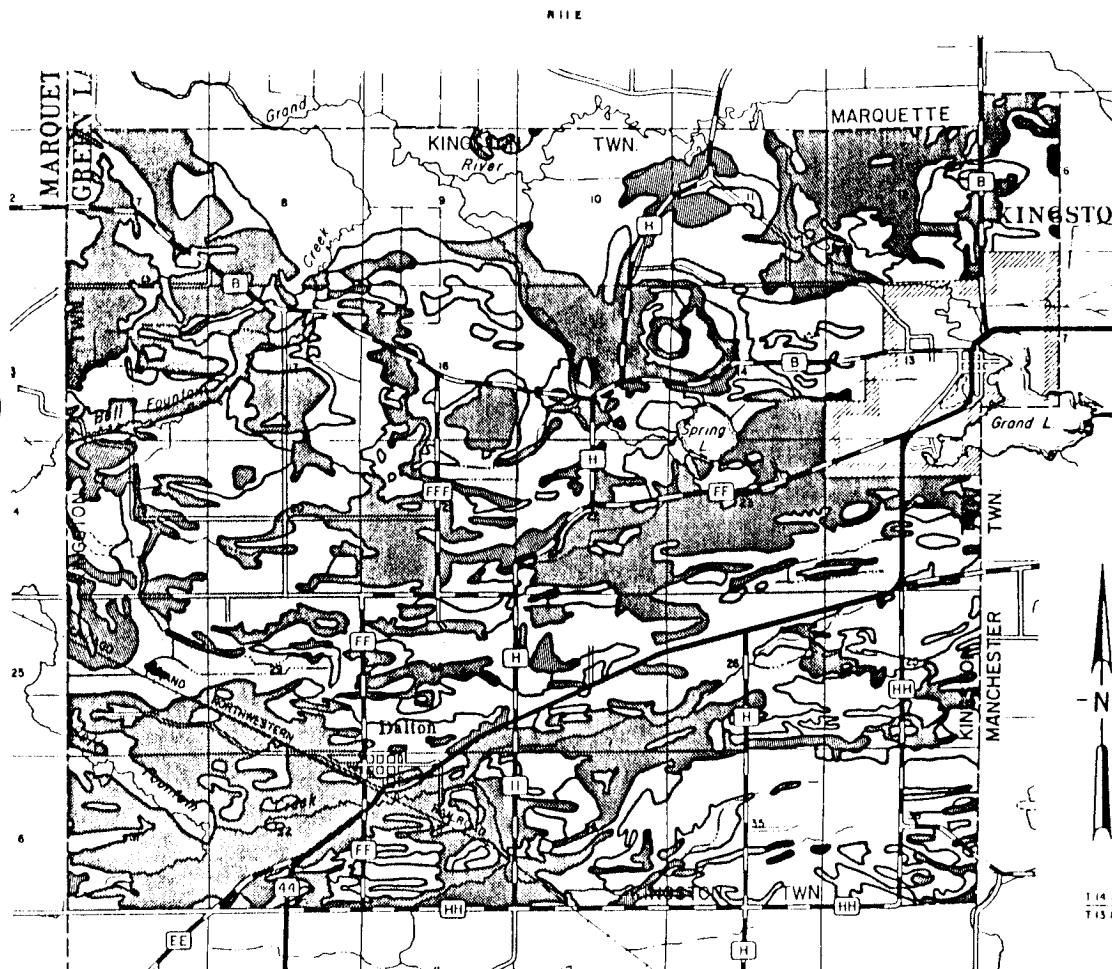
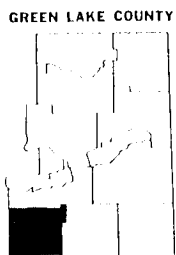
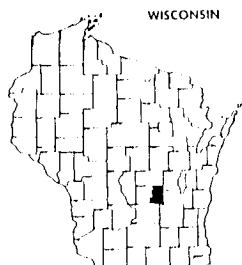


# TOWN OF KINGSTON SOIL SUITABILITY FOR AGRICULTURE







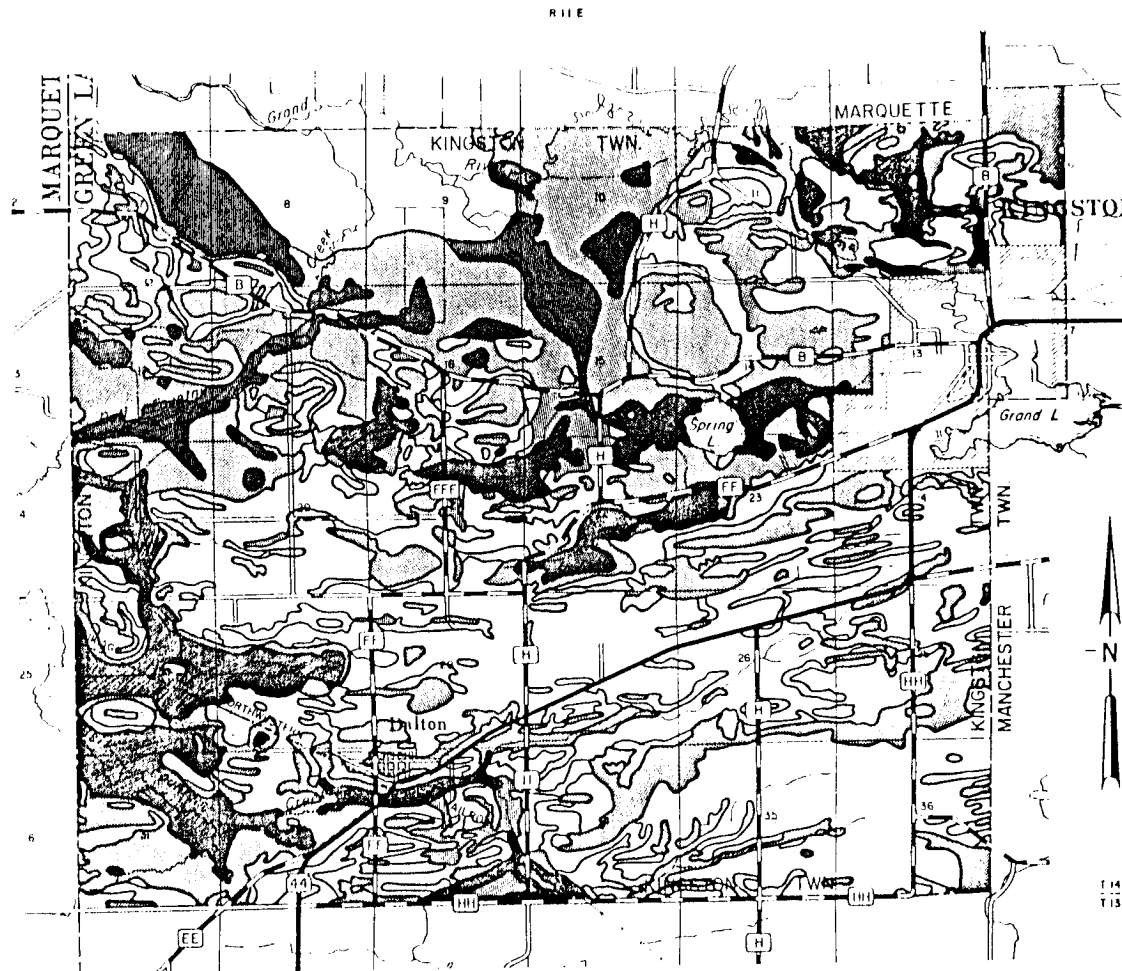
## LEGEND

-  CLASS I AND II AGRICULTURAL SOILS  
(SLIGHT AND MODERATE LIMITATIONS)
-  CLASS III AGRICULTURAL SOILS  
(SEVERE LIMITATIONS)
-  CLASS IV-VIII AGRICULTURAL SOILS  
(VERY SEVERE LIMITATIONS)









- |   |                                |
|---|--------------------------------|
|  | <b>SLIGHT LIMITATIONS</b>      |
|  | <b>MODERATE LIMITATIONS</b>    |
|  | <b>SEVERE LIMITATIONS</b>      |
|  | <b>VERY SEVERE LIMITATIONS</b> |

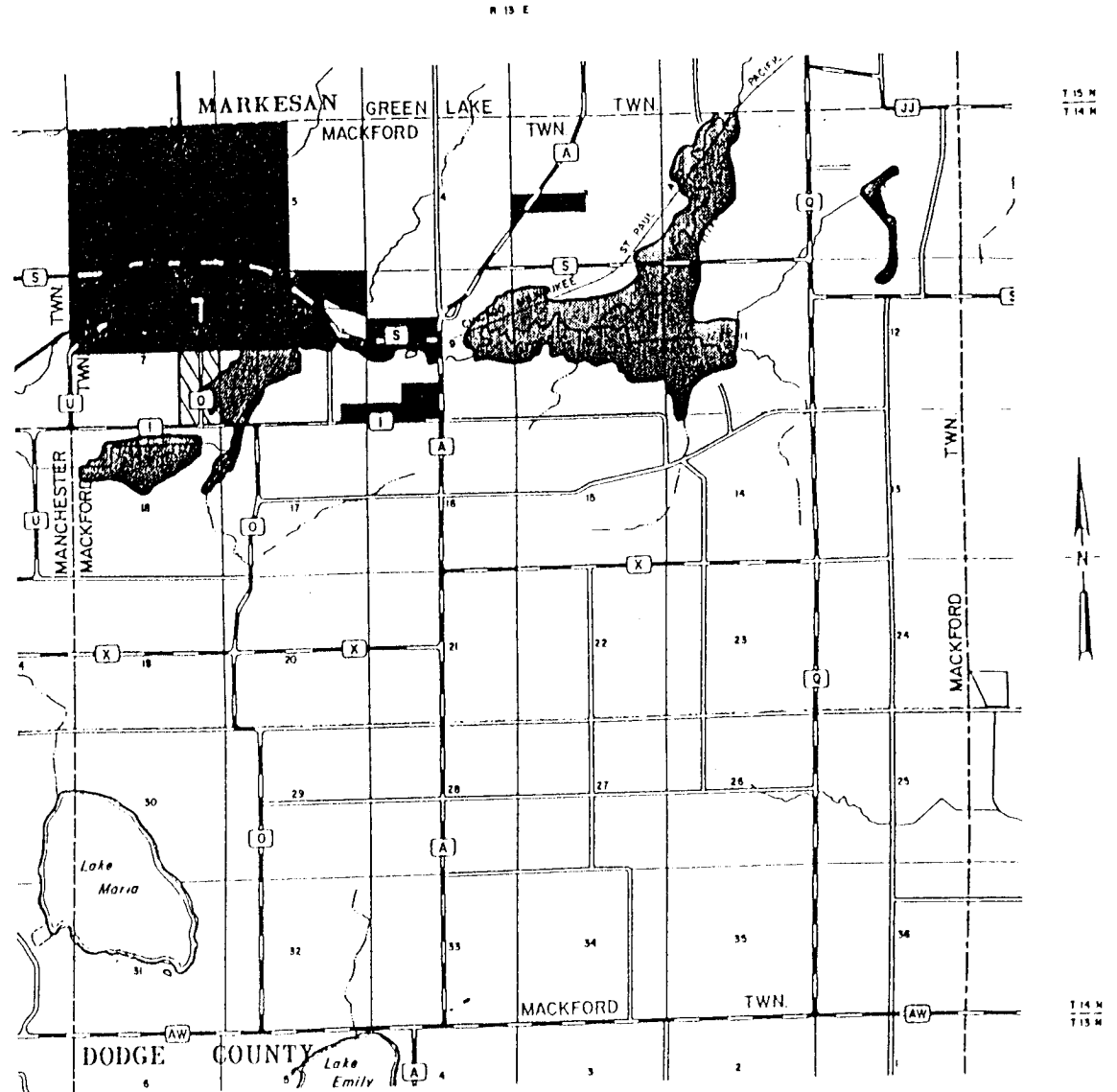
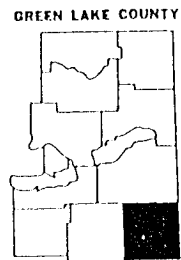


# TOWN OF MACKFORD FARMLAND PRESERVATION PLAN

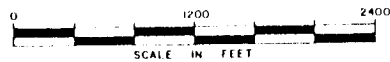


## LEGEND

-  FARMLAND PRESERVATION AREA
-  TRANSITIONAL AREA
-  ENVIRONMENTAL AREA
-  EXCLUDED AREA



# TOWN OF MACKFORD SOIL SUITABILITY FOR AGRICULTURE



## LEGEND



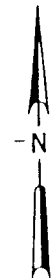
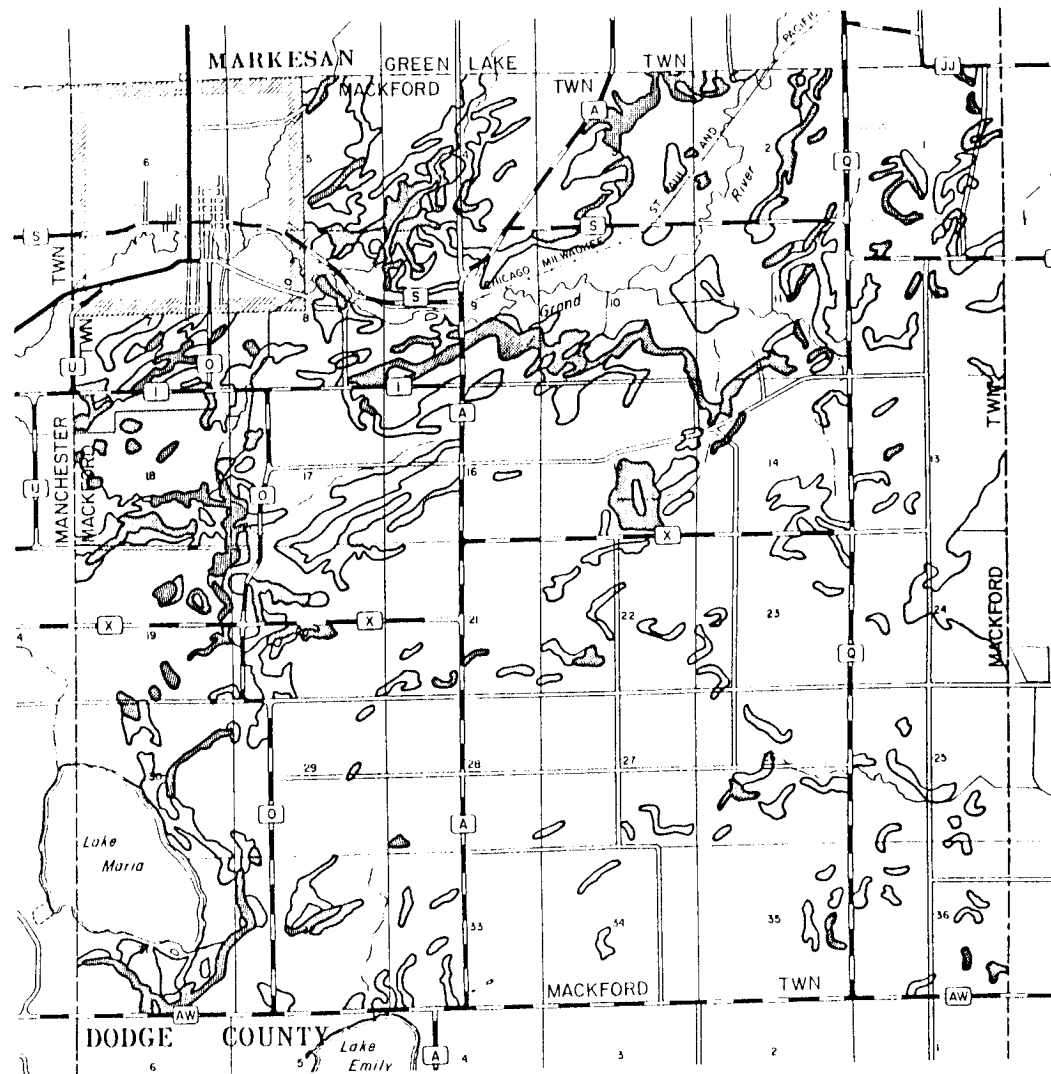
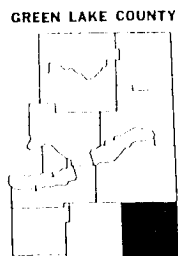
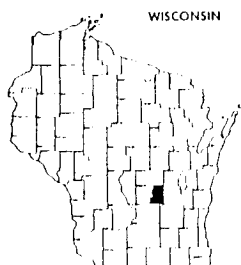
**CLASS I AND II AGRICULTURAL SOILS  
(SLIGHT AND MODERATE LIMITATIONS)**



**CLASS III AGRICULTURAL SOILS  
(SEVERE LIMITATIONS)**



**CLASS IV-VIII AGRICULTURAL SOILS  
(VERY SEVERE LIMITATIONS)**



T14N  
T13N

# TOWN OF MACKFORD

## SOIL SUITABILITY FOR SEPTIC TANK ABSORPTION FIELDS



## LEGEND



## SLIGHT LIMITATIONS



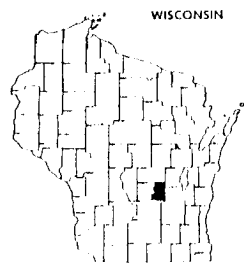
## MODERATE LIMITATIONS



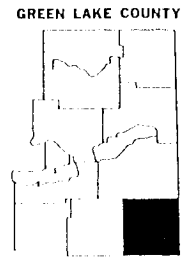
## SEVERE LIMITATIONS



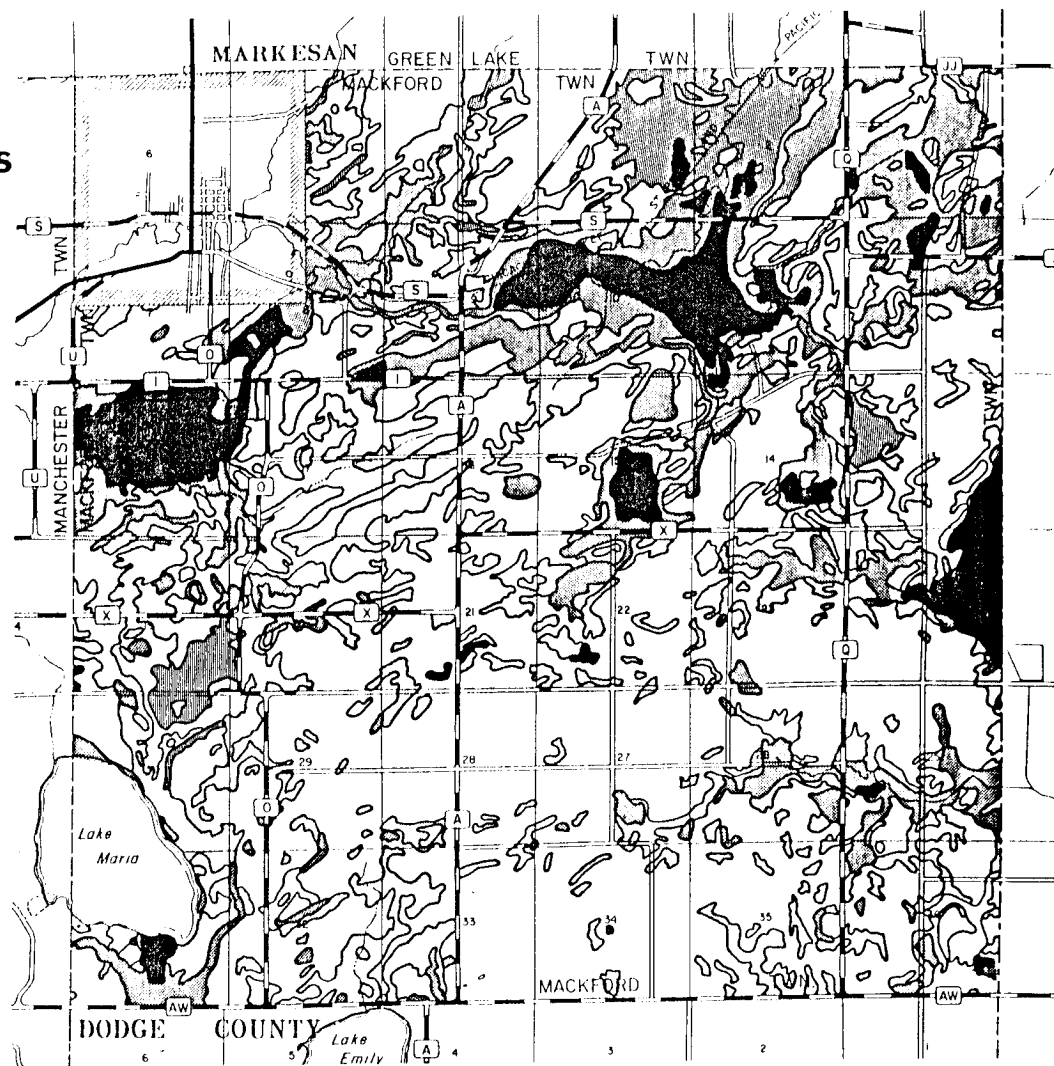
## VERY SEVERE LIMITATIONS



WISCONSIN

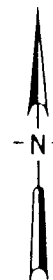


GREEN LAKE COUNTY



R 13 E

T 15 N	
T 14 N	







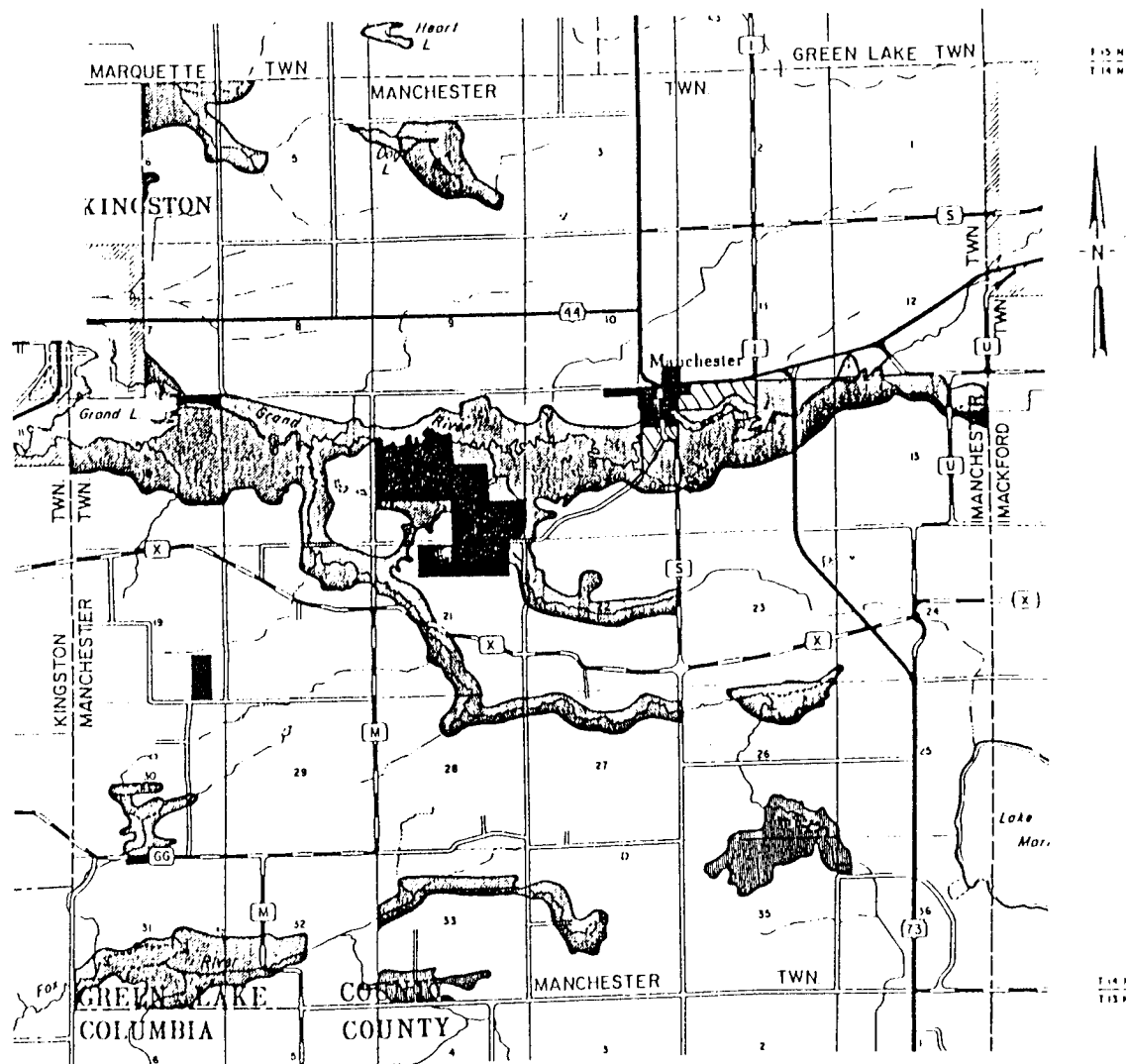
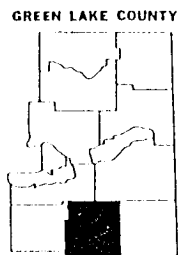
T 14 N  
T 13 N

# TOWN OF MANCHESTER FARMLAND PRESERVATION PLAN

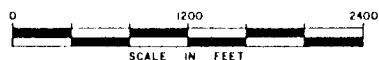


## LEGEND

-  FARMLAND PRESERVATION AREA
-  TRANSITIONAL AREA
-  ENVIRONMENTAL AREA
-  EXCLUDED AREA



# TOWN OF MANCHESTER SOIL SUITABILITY FOR AGRICULTURE

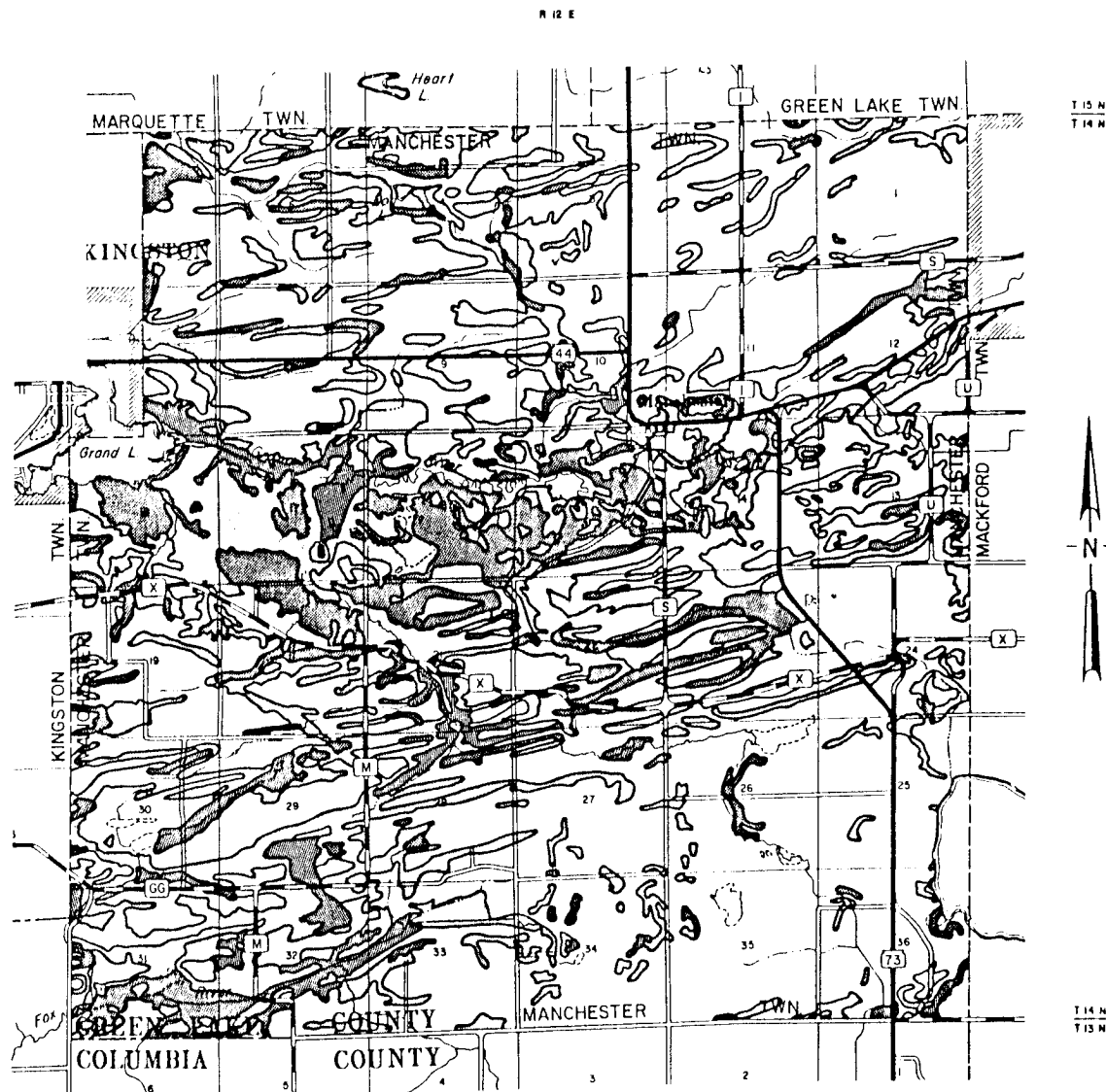
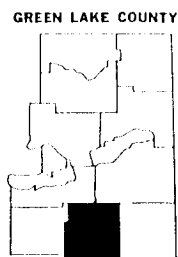
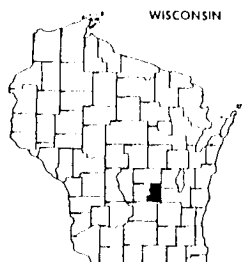


## LEGEND

 CLASS I AND II AGRICULTURE SOILS  
(SLIGHT AND MODERATE LIMITATIONS)

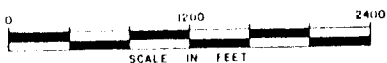
 CLASS III AGRICULTURAL SOILS  
(SEVERE LIMITATIONS)

 CLASS IV-VIII AGRICULTURAL SOILS  
(VERY SEVERE LIMITATIONS)

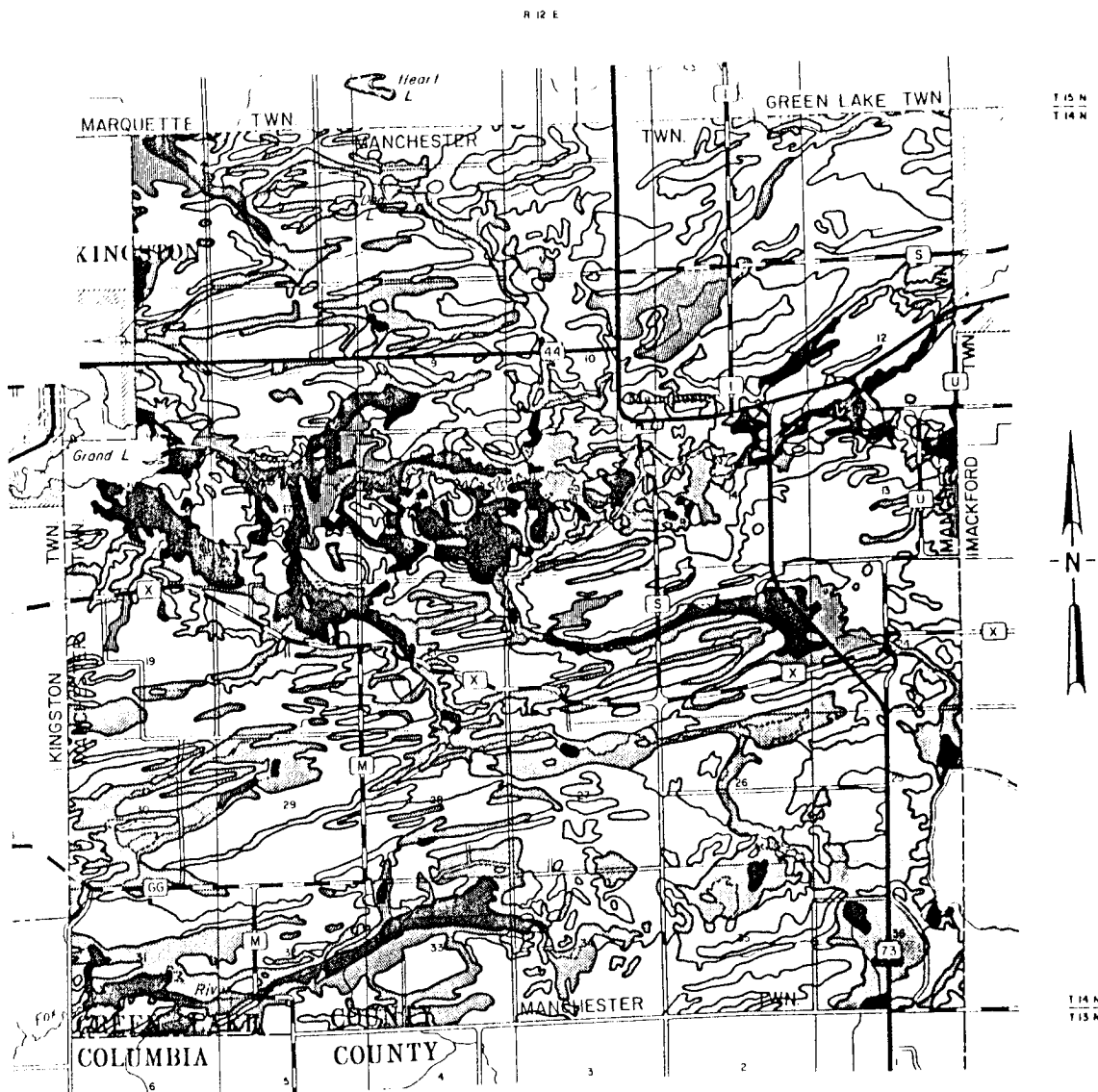
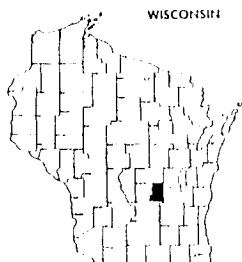
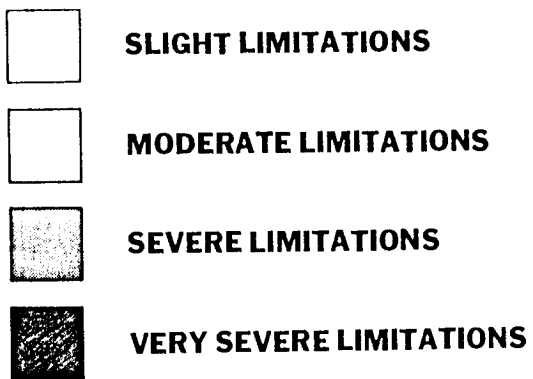


# TOWN OF MANCHESTER

## SOIL SUITABILITY FOR SEPTIC A TANK ABSORPTION FIELDS



### LEGEND



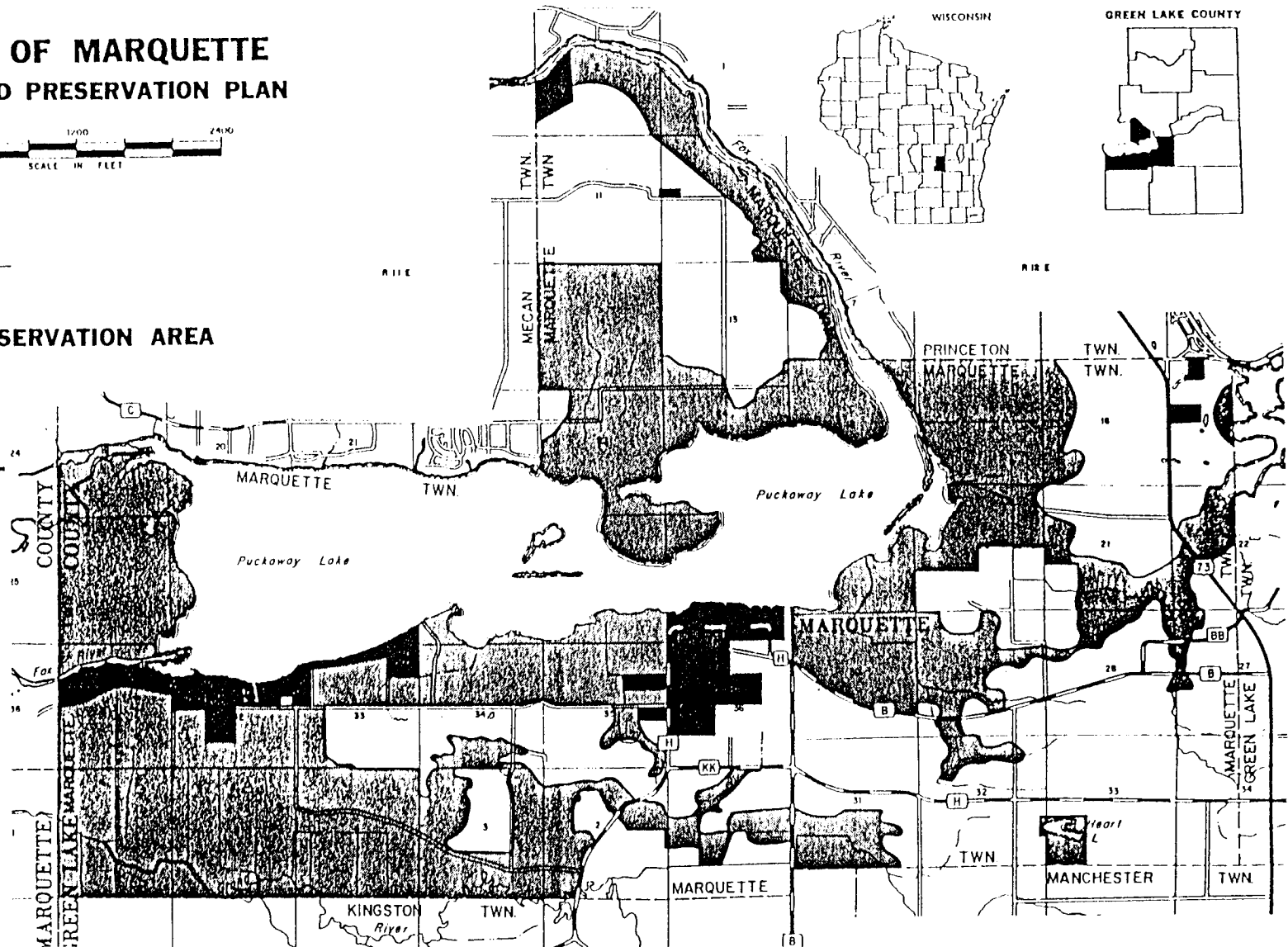
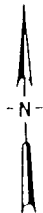


0 1200 2400  
SCALE IN FEET

The map displays three distinct land use categories:
 

- FARMLAND PRESERVATION AREA:** Indicated by a white square legend in the top left.
- ENVIRONMENTAL AREA:** Indicated by a black square with a stippled pattern in the middle left.
- EXCLUDED AREA:** Indicated by a solid black square in the bottom left.

 The map itself shows a large, irregularly shaped area on the right side, primarily filled with the stippled pattern of the Environmental Area. A road, labeled 'C' in a small box, runs horizontally across the top of this area. A vertical line, possibly a county boundary, is labeled 'COUNTY' twice, with 'COUNTY' written vertically on either side of the line. The number '24' is located near the top of this vertical line, and '15' is located near the bottom. The area to the left of the vertical line is mostly white, representing Farmland Preservation Area.



# TOWN OF MARQUETTE SOIL SUITABILITY FOR AGRICULTURE



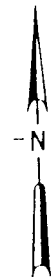
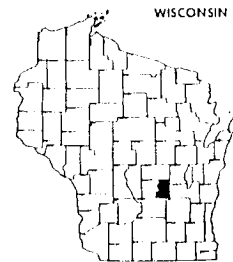
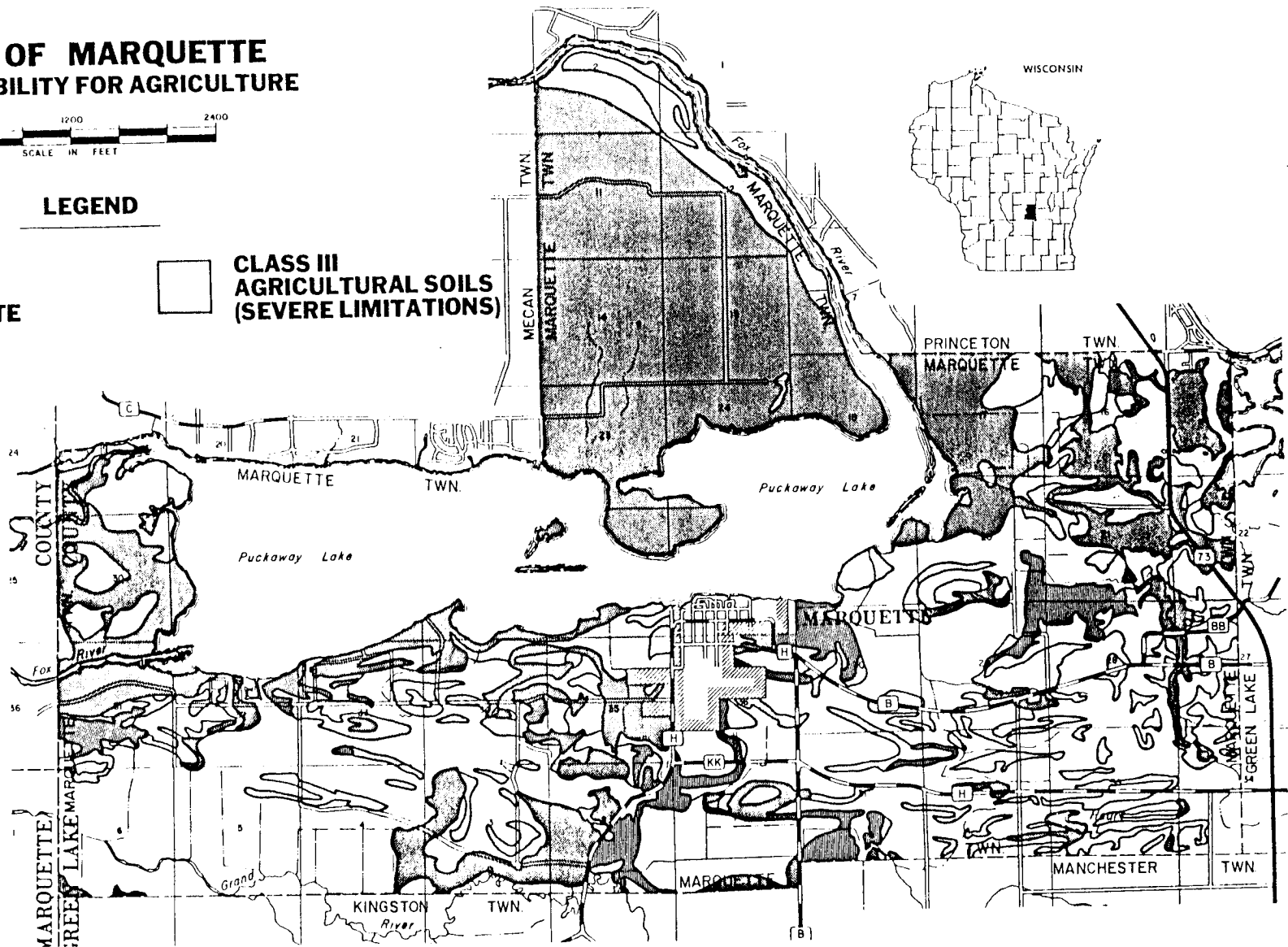
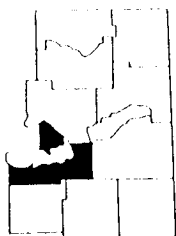
## LEGEND

**CLASS I AND II  
AGRICULTURAL SOILS  
(SLIGHT AND MODERATE  
LIMITATIONS)**

**CLASS III  
AGRICULTURAL SOILS  
(SEVERE LIMITATIONS)**

**CLASS IV-VIII  
AGRICULTURAL SOILS  
(VERY SEVERE  
LIMITATIONS)**

GREEN LAKE COUNTY

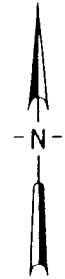
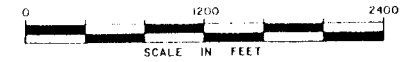


T 15 N  
R 14 W

# TOWN OF MARQUETTE

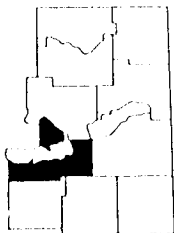
## SOIL SUITABILITY FOR SEPTIC TANK ABSORPTION FIELDS

### LEGEND

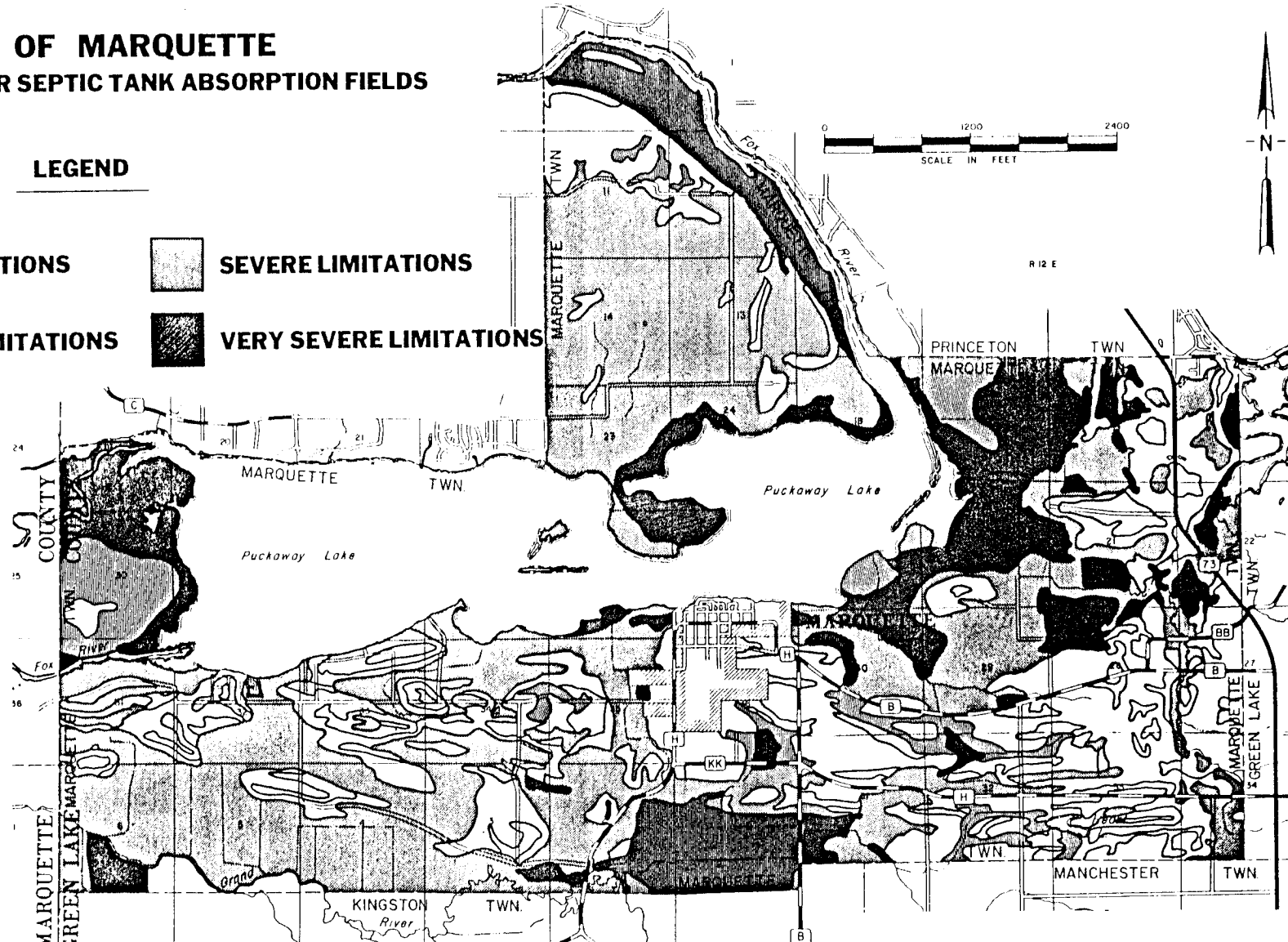
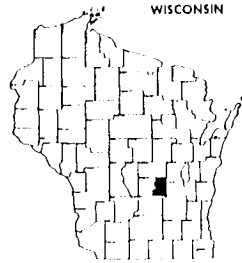


110

GREEN LAKE COUNTY

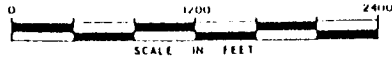


WISCONSIN







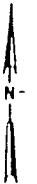
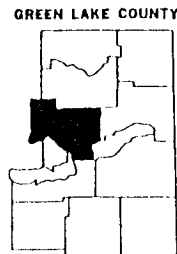
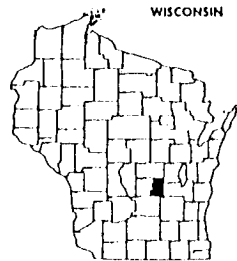
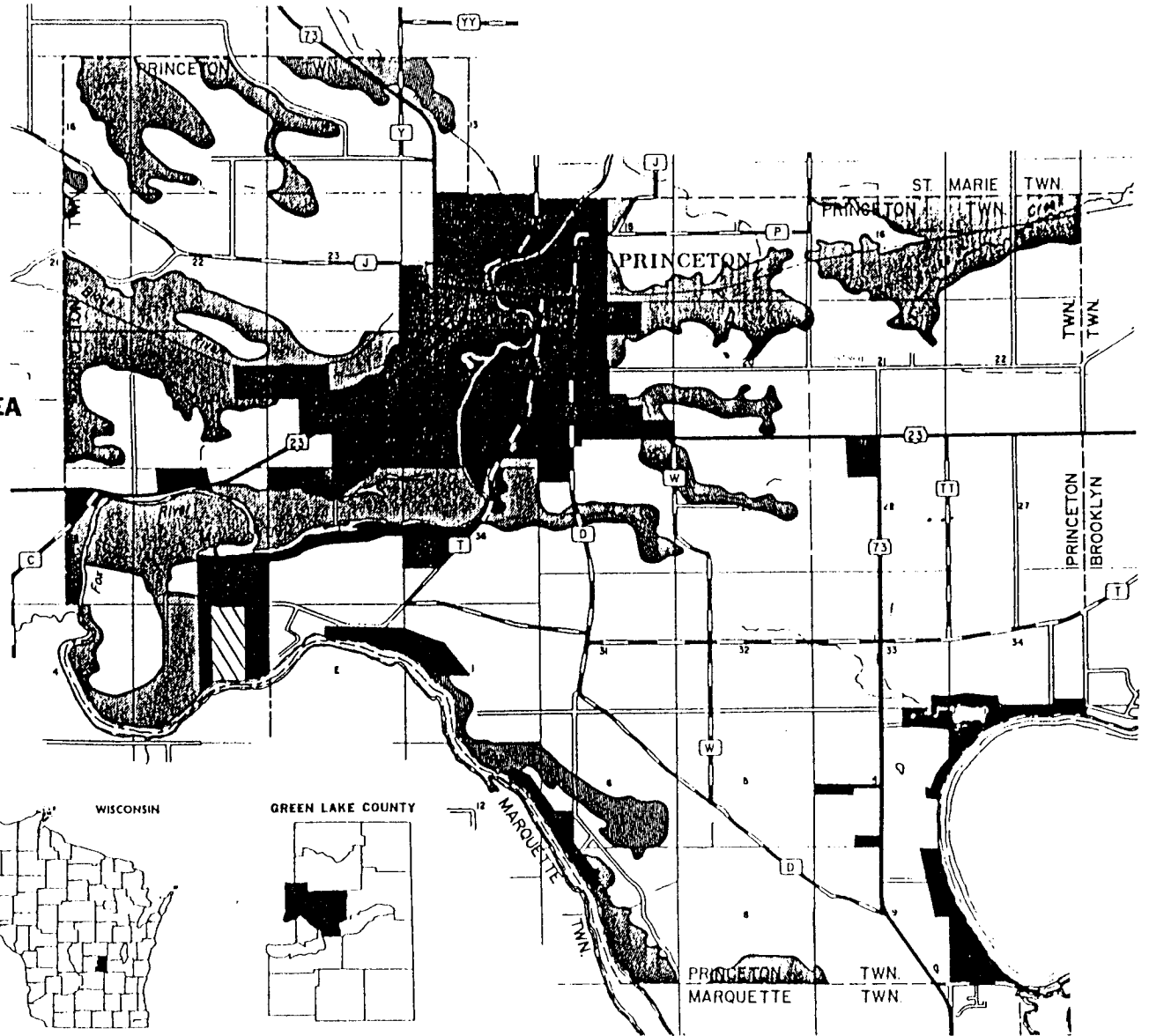
T 13 N  
T 14 N

# TOWN OF PRINCETON FARMLAND PRESERVATION PLAN



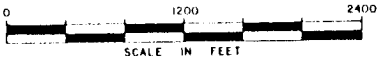
## LEGEND

-  FARMLAND PRESERVATION AREA
-  TRANSITIONAL AREA
-  ENVIRONMENTAL AREA
-  EXCLUDED AREA



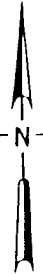
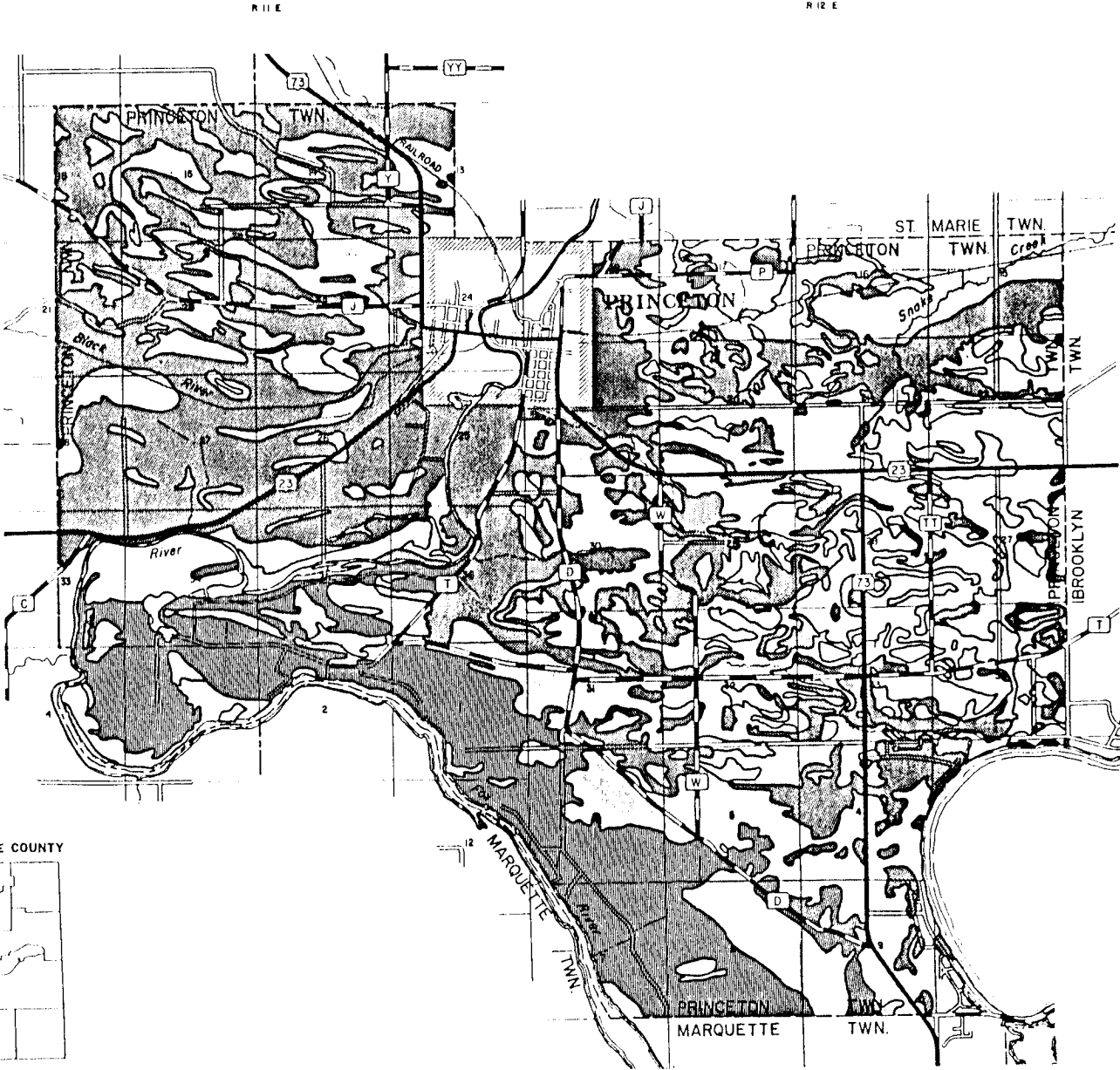
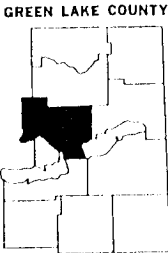
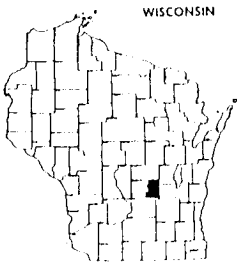
T 16 N  
R 18 W

# TOWN OF PRINCETON SOIL SUITABILITY FOR AGRICULTURE



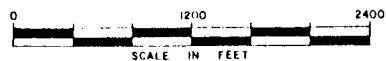
## LEGEND

- CLASS I AND II AGRICULTURAL SOILS (SLIGHT AND MODERATE LIMITATIONS)
- CLASS III AGRICULTURAL SOILS (SEVERE LIMITATIONS)
- CLASS IV-VIII AGRICULTURAL SOILS (VERY SEVERE LIMITATIONS)







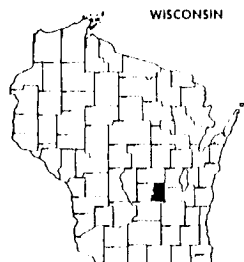
T 16 N  
T 15 N

# TOWN OF PRINCETON SOIL SUITABILITY FOR SEPTIC TANK ABSORPTION FIELDS

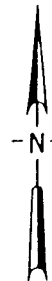
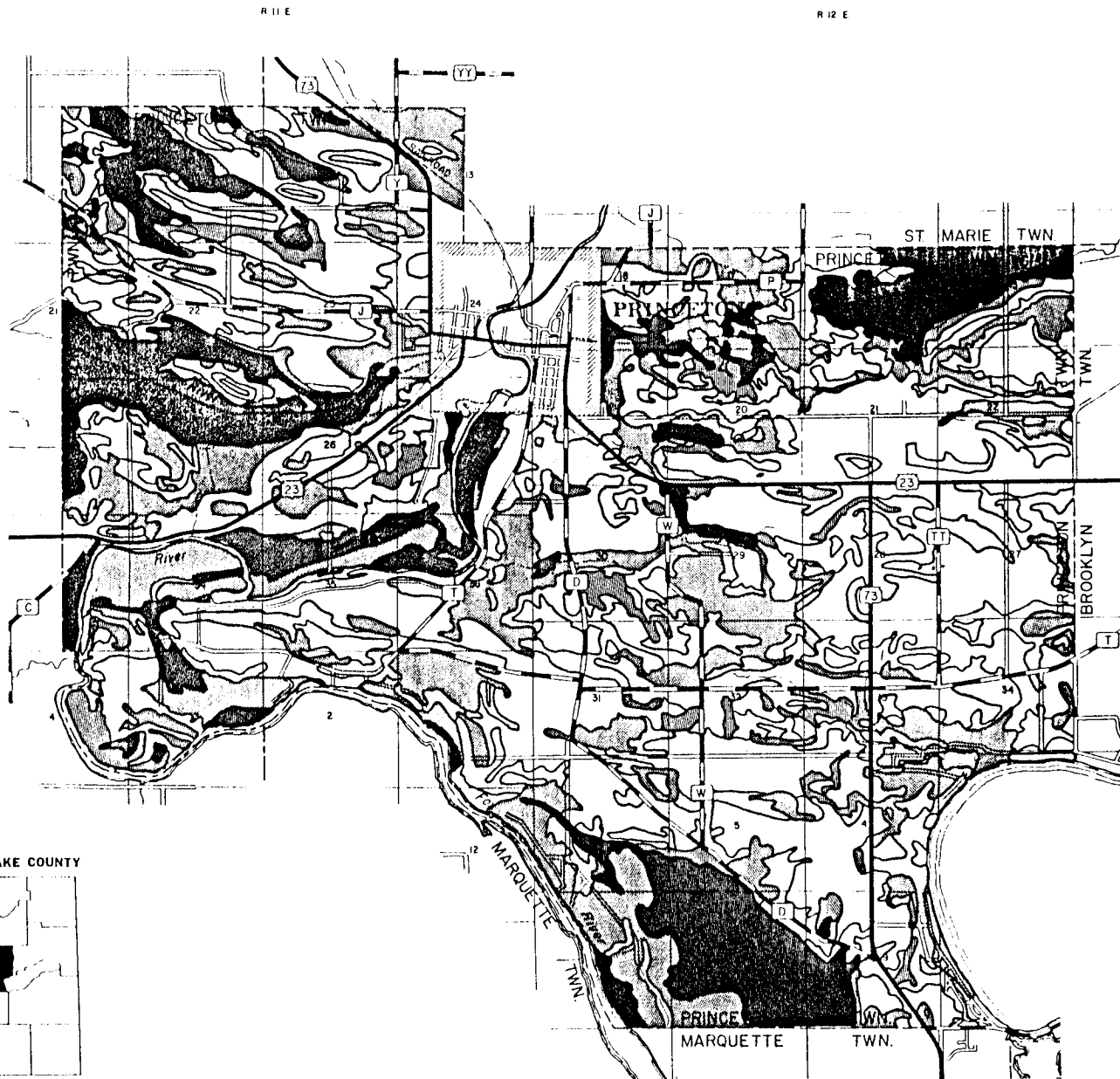
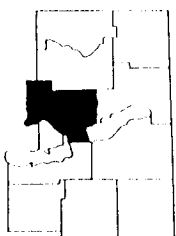


## LEGEND

-  SLIGHT LIMITATIONS
-  MODERATE LIMITATIONS
-  SEVERE LIMITATIONS
-  VERY SEVERE LIMITATIONS

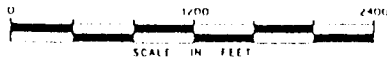


GREEN LAKE COUNTY



T 16 N  
T 15 N

# TOWN OF ST. MARIE FARMLAND PRESERVATION PLAN



## LEGEND



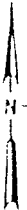
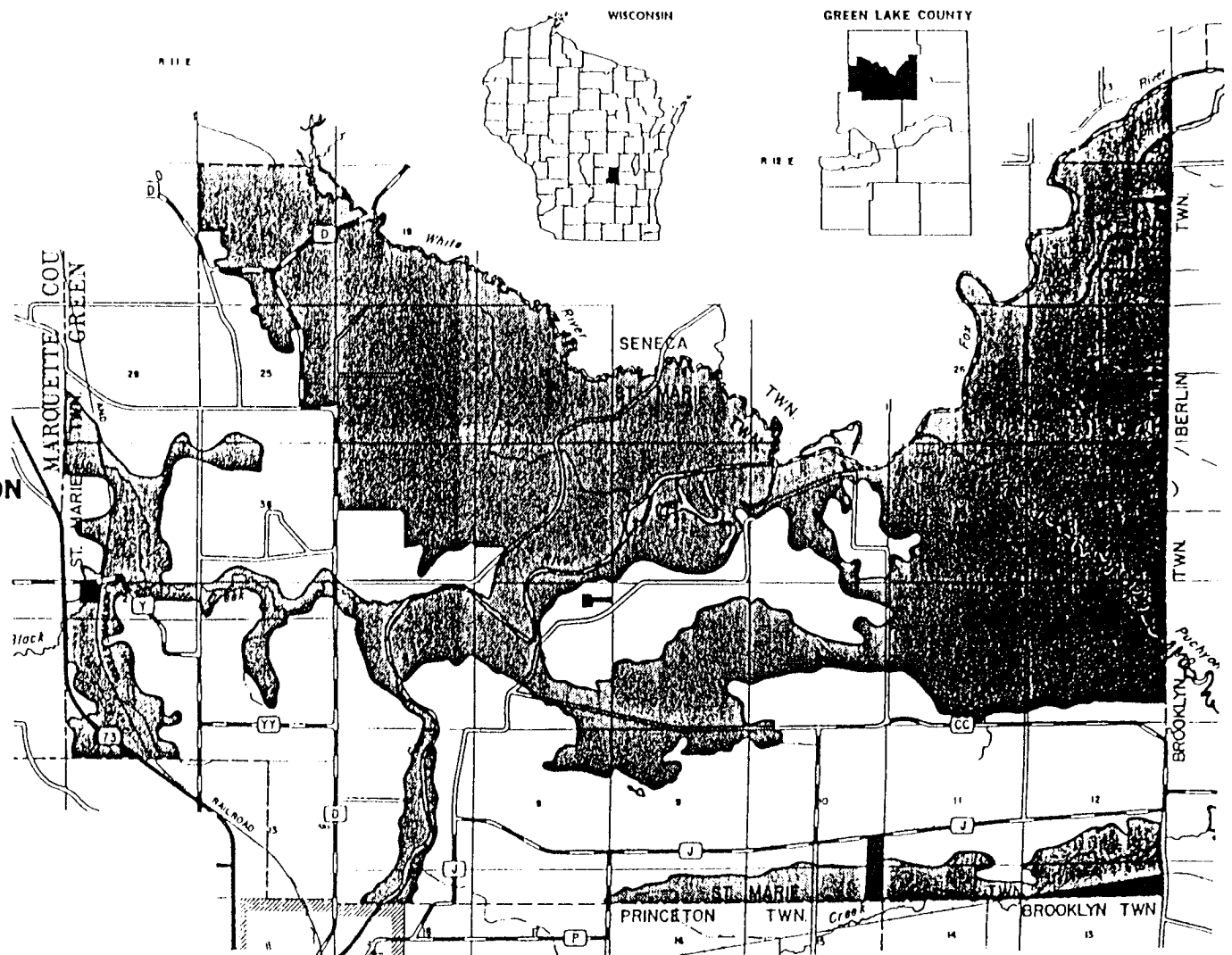
FARMLAND PRESERVATION  
AREA



ENVIRONMENTAL AREA

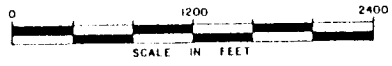


EXCLUDED AREA



1:17 M  
T.M.

# TOWN OF ST. MARIE SOIL SUITABILITY FOR AGRICULTURE



## LEGEND



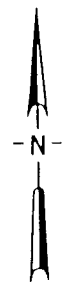
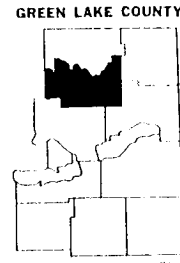
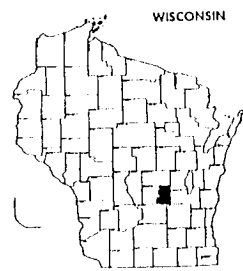
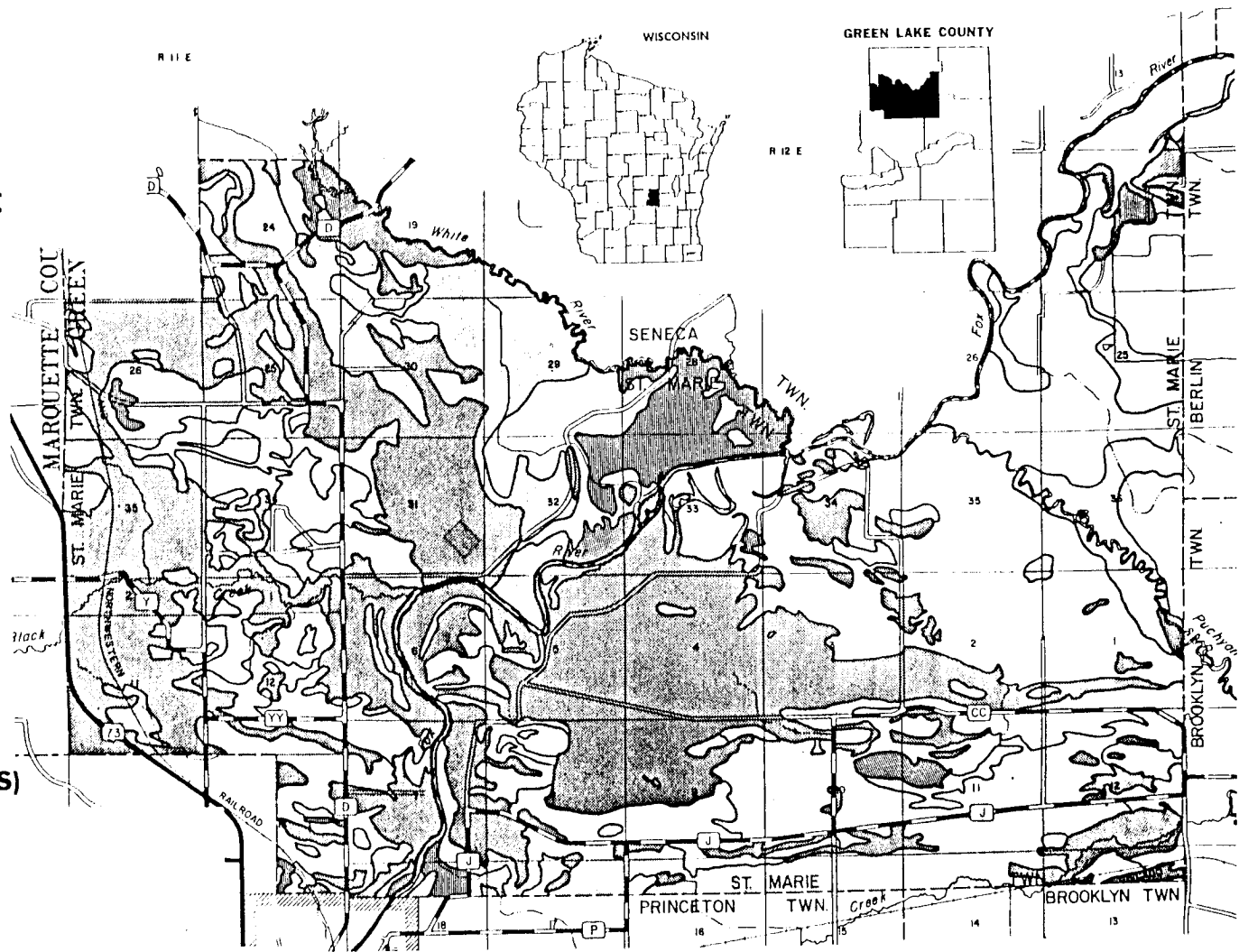
**CLASS I AND II  
AGRICULTURAL SOILS  
(SLIGHT AND MODERATE  
LIMITATIONS)**



**CLASS III  
AGRICULTURAL SOILS  
(SEVERE LIMITATIONS)**



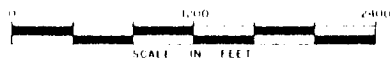
**CLASS IV-VIII  
AGRICULTURAL SOILS  
(VERY SEVERE LIMITATIONS)**







T 17 N  
T 16 N

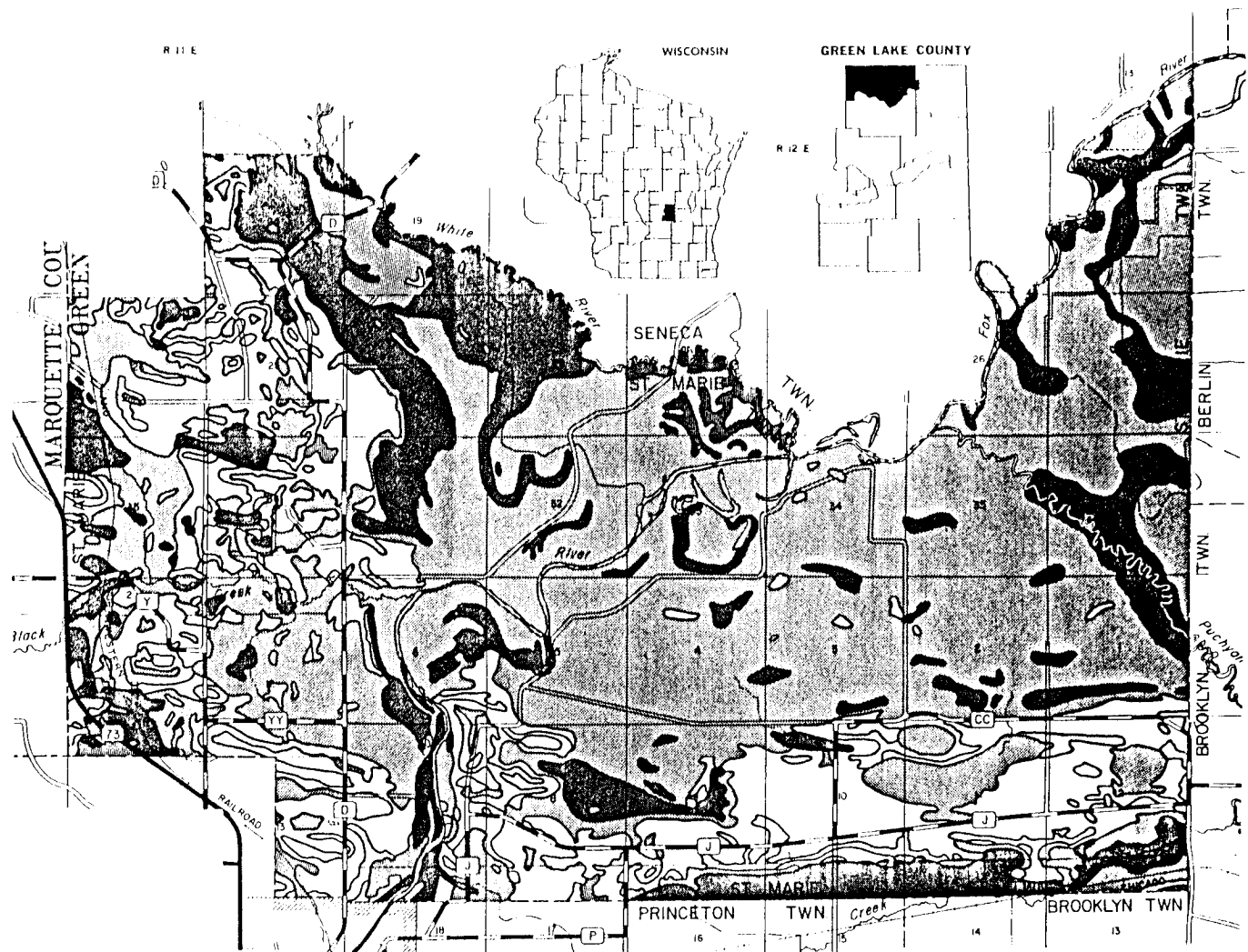


# **TOWN OF ST. MARIE** **SOIL SUITABILITY FOR SEPTIC TANK** **ABSORPTION FIELDS**

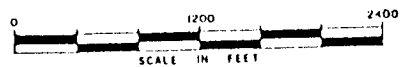


## **LEGEND**




-  SLIGHT LIMITATIONS
-  MODERATE LIMITATIONS
-  SEVERE LIMITATIONS
-  VERY SEVERE LIMITATIONS

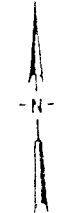
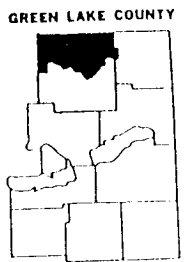
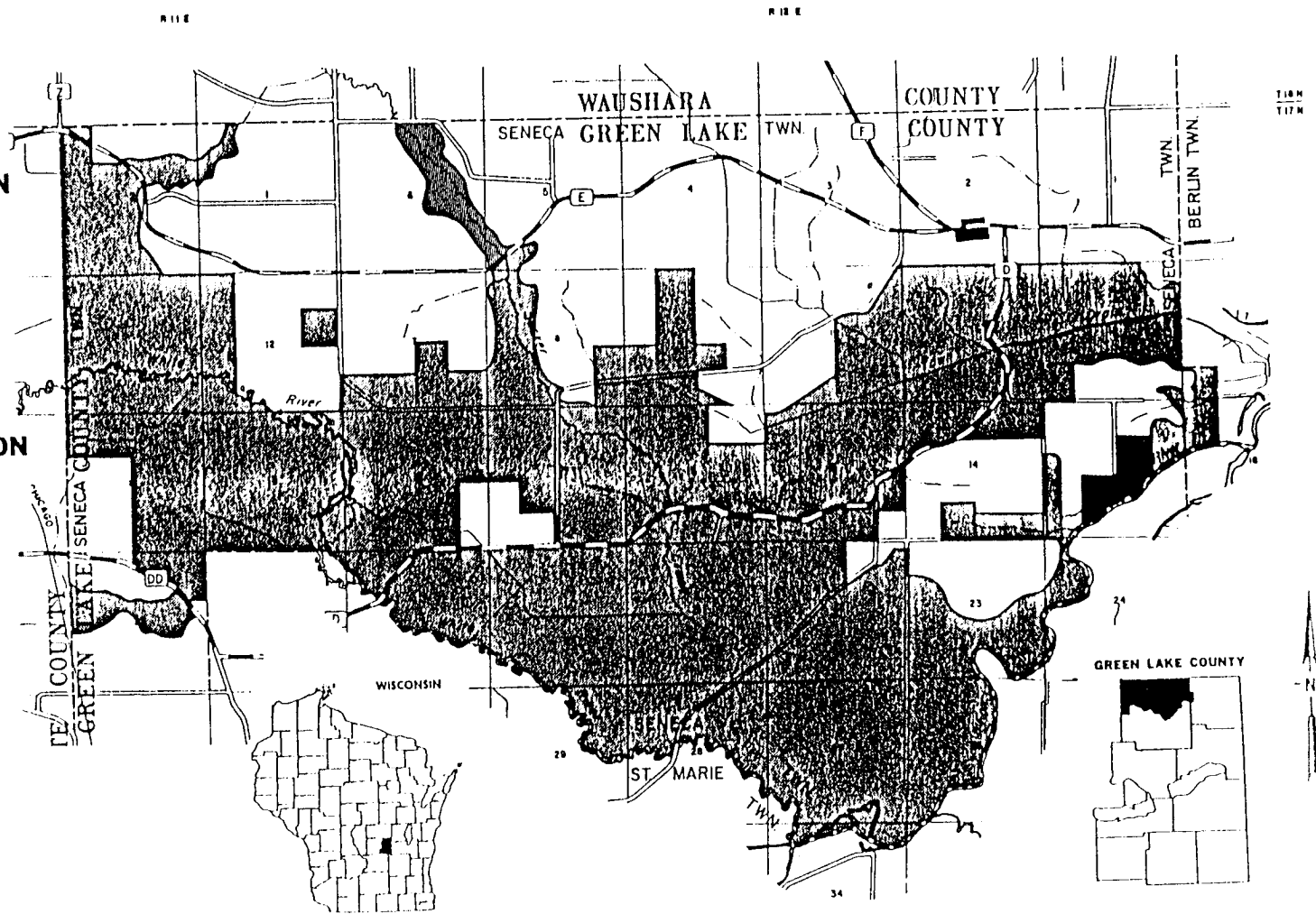


# TOWN OF SENECA FARMLAND PRESERVATION PLAN



## LEGEND

-  FARMLAND PRESERVATION AREA
-  ENVIRONMENTAL AREA
-  EXCLUDED AREA



# TOWN OF SENECA SOIL SUITABILITY FOR AGRICULTURE



## LEGEND



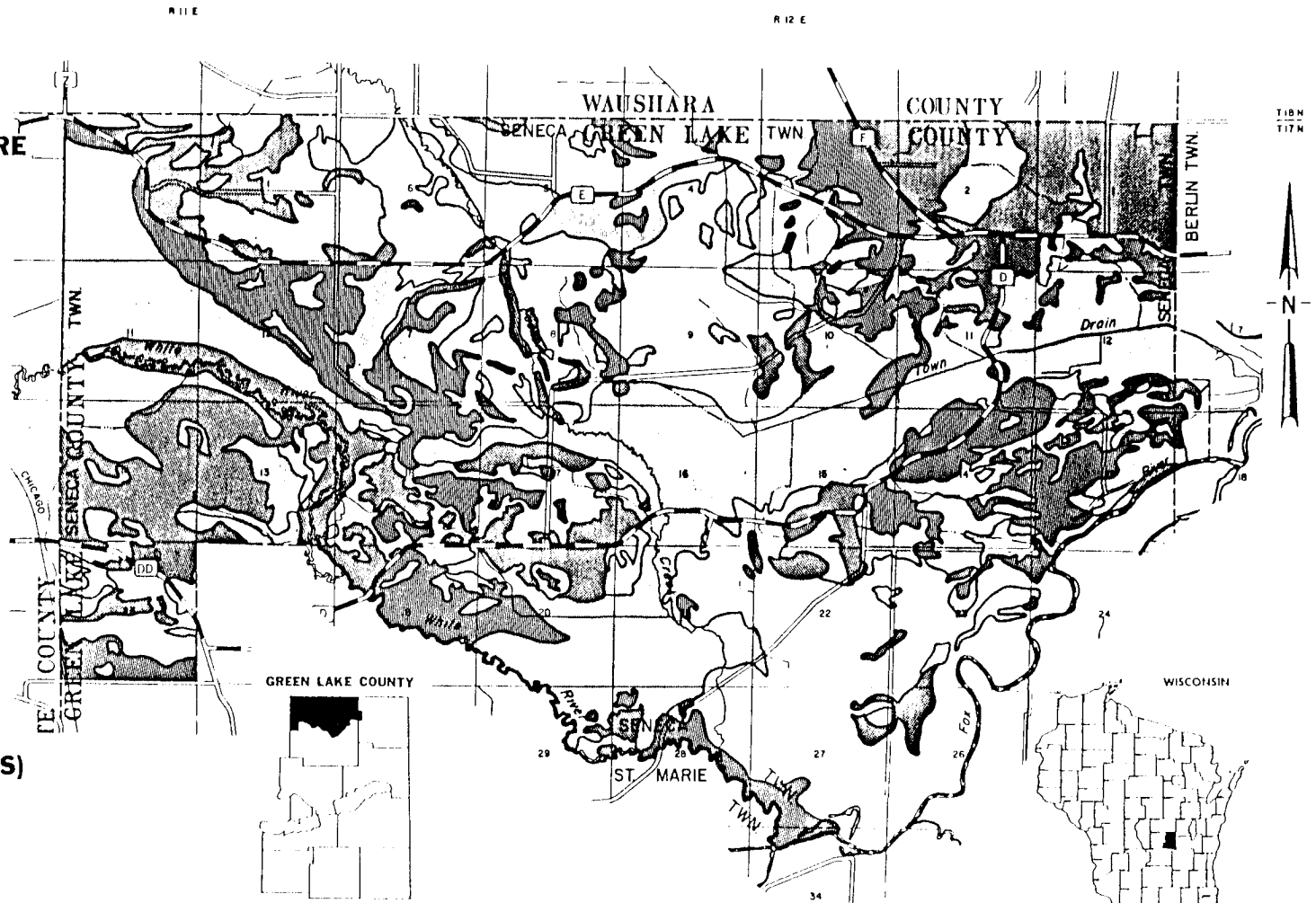
**CLASS I AND II  
AGRICULTURAL SOILS  
(SLIGHT AND MODERATE  
LIMITATIONS)**



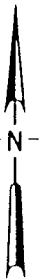
**CLASS III  
AGRICULTURAL SOILS  
(SEVERE LIMITATIONS)**



**CLASS IV-VIII  
AGRICULTURAL SOILS  
(VERY SEVERE LIMITATIONS)**

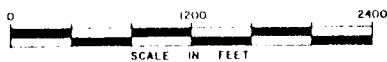


T 18 N  
T 17 N







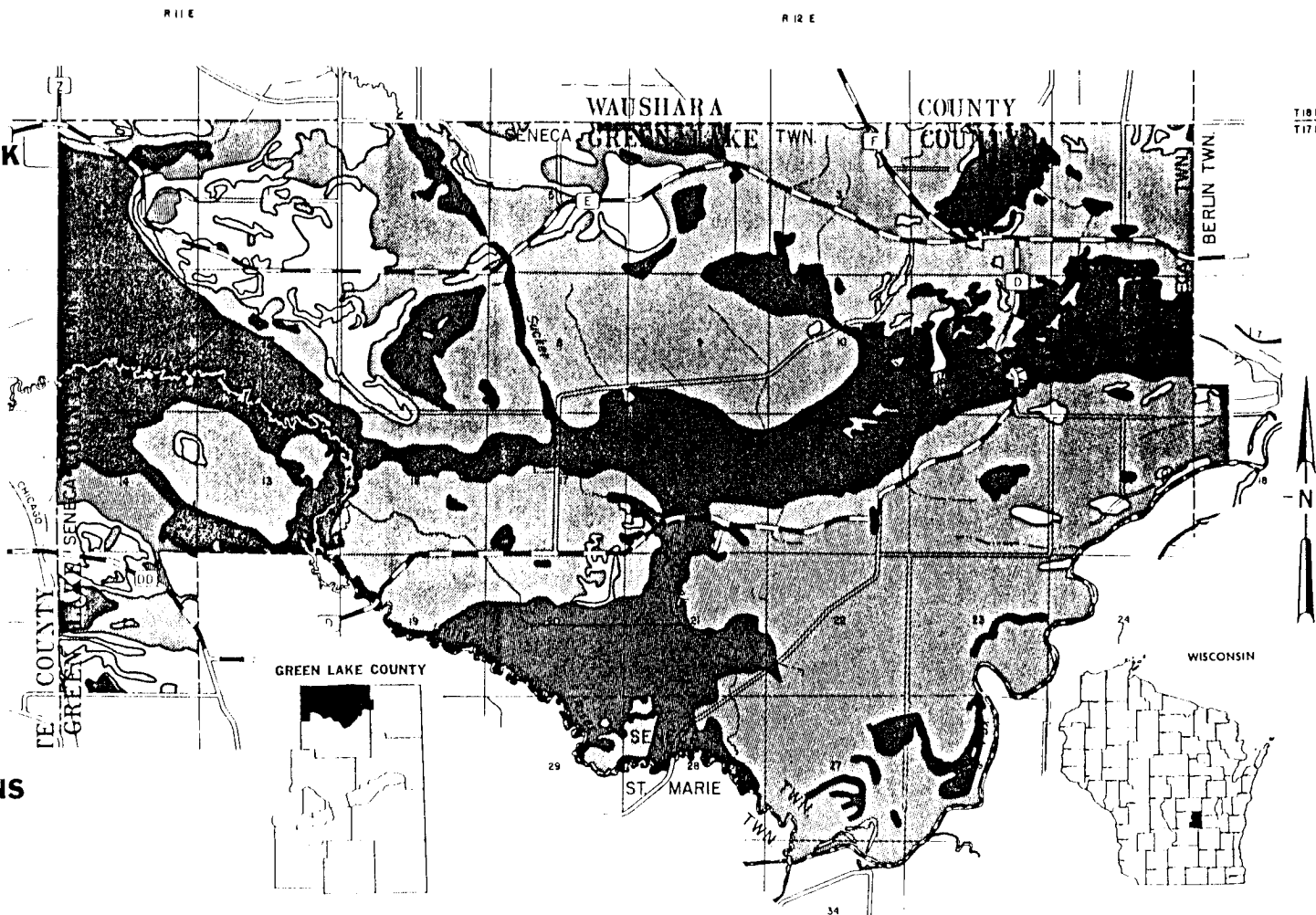
WISCONSIN

# TOWN OF SENECA SOIL SUITABILITY FOR SEPTIC TANK ABSORPTION FIELDS



## LEGEND

-  SLIGHT LIMITATIONS
-  MODERATE LIMITATIONS
-  SEVERE LIMITATIONS
-  VERY SEVERE LIMITATIONS



T18M  
T17M

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