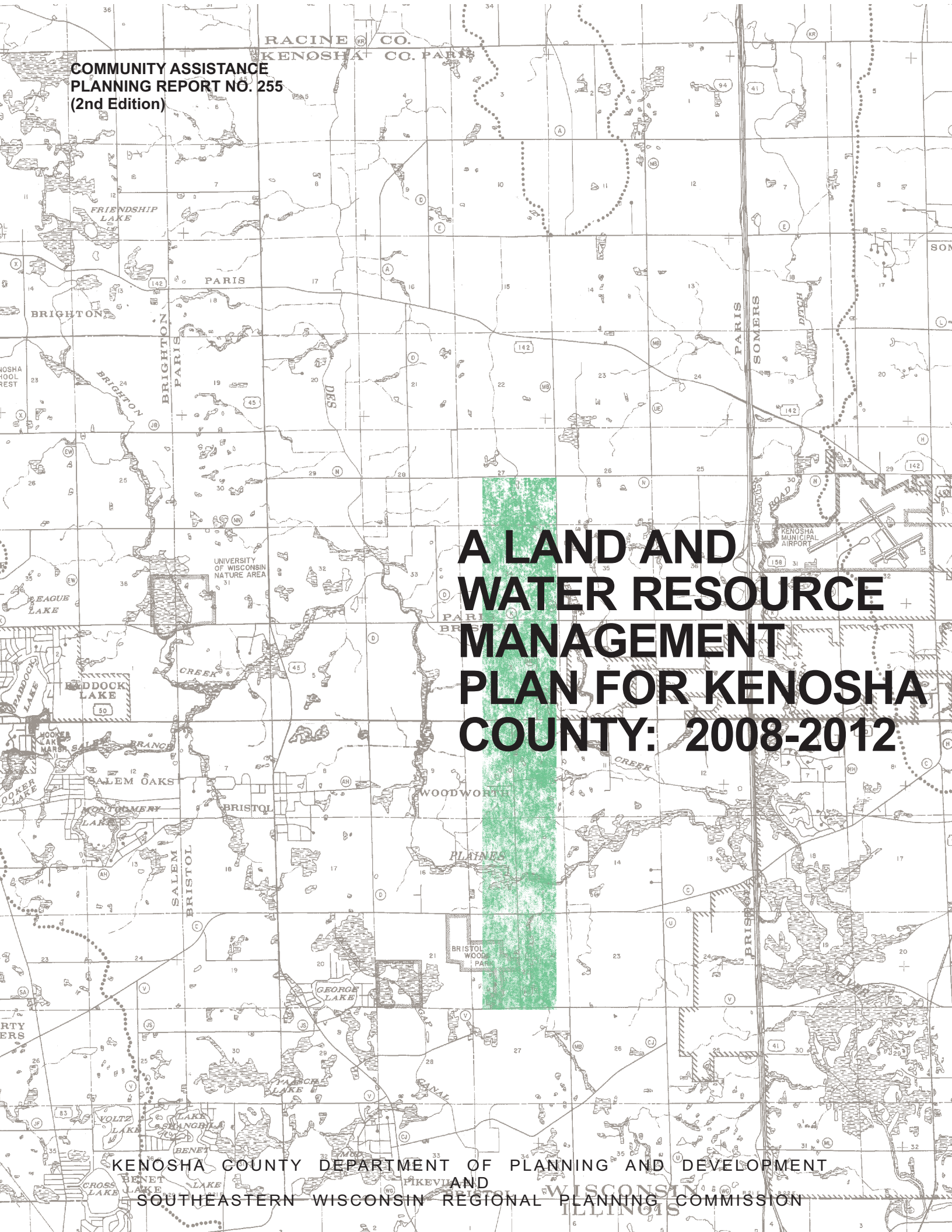


COMMUNITY ASSISTANCE
PLANNING REPORT NO. 255
(2nd Edition)



A LAND AND WATER RESOURCE MANAGEMENT PLAN FOR KENOSHA COUNTY: 2008-2012

KENOSHA COUNTY DEPARTMENT OF PLANNING AND DEVELOPMENT
AND
SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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Prepared by the
Kenosha County Department of Planning and Development
and the
Southeastern Wisconsin Regional Planning Commission

October 2007

\$20.00

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REPORT SUMMARY

MISSION STATEMENT

To maintain, enhance, and preserve the land and water resources of Kenosha County. To conserve energy, prevent urban sprawl, maintain open space, retain natural systems and natural processes, preserve natural resource base, promote local self-sufficiency, and preserve the rural lifestyle.

INTRODUCTION

In 1997, Chapter 92 of the *Wisconsin Statutes* was amended to require, and give authority for, counties to develop their own land and water resource management plans (LWRMP). The LWRMP is a state-mandated long-range planning document intended to guide the activities of the County Land and Water Conservation Department (LWCD) in its efforts to protect and improve the land and water resources. The initial Kenosha County LWRMP was adopted by the County Board in September of 2000. This first revision of the LWRMP has been prepared following the requirements of Chapters ATCP 50 and NR 151 of the *Wisconsin Administrative Code*, as adopted in 2002. The developments of such plans are intended to serve as a multi-year workplan which will:

- Specifically address the implementation of State nonpoint source pollution abatement performance standards developed by the Wisconsin Departments of Natural Resources (WDNR) and Agriculture, Trade and Consumer Protection (DATCP);
- Identify local land and water resources concerns, issues, and priorities;
- Establish goals and objectives in response to the identified concerns and issues;
- Develop a comprehensive program integrating existing and proposed resource management programs, plans, and funding sources designed to achieve the established goals and objectives;
- Establish partnerships between agencies, municipalities, and other organizations;
- Incorporate an informational and educational strategy in response to the identified concerns and issues; and
- Identify a method to evaluate and monitor progress.

The Kenosha County Land and Water Resource Management Plan incorporates inventory findings, including land use, natural resource data, soil erosion levels, and water quality data. Additionally, the plan addresses the principal land and water resource concerns and issues that were identified by the plan Citizen Advisory Committee. The principal issues and concerns that were identified by the Citizen Advisory Committee include the following:

- Increase natural resource, environmental, and state performance standards information and education;
- Implement the State agricultural and nonagricultural performance standards to reduce nonpoint source pollution;
- Invasive and nonnative species management and control;
- Protect and preserve land and water resources; and
- Increase cooperation with local, State, and Federal Partners.

The Kenosha County Land and Water Resource Management Plan revision contains the following five chapters:

Chapter I–Introduction and Plan Development Process

Chapter II–Resource Assessment

Chapter III–Related Plans, Regulations, and Programs

Chapter IV–Goals, Objectives, and Estimated Costs

Chapter V–Progress Monitoring and Evaluation

PUBLIC PARTICIPATION

The plan was developed under the guidance of a Citizen Advisory Committee that was comprised of individuals that had natural resource, nonpoint source, agricultural, or environmental backgrounds. The Committee included agency personnel from the Wisconsin Department of Natural Resources (WDNR), the University of Wisconsin-Extension, the Natural Resources Conservation Service (NRCS), Farm Services Agency, and SEWRPC; County elected officials and planning and land conservation staff and municipal representatives; and citizens of the County, including farmers, naturalists, a lake organization representative, and an environmental consultant. Two Citizen Advisory Committee meetings were held on March 26, 2007 and June 20, 2007. The Committee reviewed each chapter of the plan in draft form and provided comments and recommendations, which were then addressed in the final plan. On August 1, 2007, the County Land and Water Conservation Committee met to approve the plan. This meeting was open to the public for citizen comment and input. This meeting was announced twice in the *Kenosha News* prior to the meeting as a Class II public notice. This plan was approved by the LWRMP Citizen Advisory Committee on June 20, 2007, the Kenosha County Land and Water Conservation Committee on August 1, 2007, the Kenosha County Land Use Committee on August 8, 2007 and the Kenosha County Board of Supervisors on August 21, 2007, with final approval by the Wisconsin Land and Water Conservation Board on October 4, 2007.

ASSESSMENT OF WATER QUALITY AND NONPOINT SOURCE POLLUTION ISSUES

The water resources and the watershed areas of Kenosha County are illustrated on Map 23 in Chapter III of this report. Most of the rivers, streams, and lakes in Kenosha County currently are designated for a warmwater sportfish water use objective. However, some of those resources are determined to have limited forage fish or limited aquatic life use objectives. The majority of the water resources in the County are currently partially meeting the established water use objectives. The WDNR has also developed a list 303(d) impaired waters, which for a variety of reasons, are not meeting water quality standards. The upper Pike River (also referred to as the North Branch of the Pike River), including the portion in Kenosha County, upstream of its confluence with Pike Creek (also referred to as the South Branch of the Pike River), is currently on the Department's 303(d) list of

impaired waters. The Fox River from the State line upstream to a confluence with an unnamed tributary near CTH A in Waukesha is also on the 303(d) list.¹ Additionally, the WDNR's proposed 2006 Impaired Waters List identified Eichelman, Pennoyer Park, and Simmons Island Lake Michigan beaches, to be impaired based upon bacteria water quality standards.

According to the results from the 2005 Cropland Erosion Survey it was estimated at that time that approximately 69 percent of the fields that were surveyed were at or below the tolerable soil loss rate. The findings of this land and water resource management plan indicate that additional soil erosion control efforts are needed, particularly in the western portion of the County, which has significantly more relief, making erosion control more challenging. Additionally, groundwater quality is a concern, especially in the western portion of the County due to the fact that the soils are highly permeable and groundwater is the source of potable water. In addition to agricultural land soil erosion and groundwater issues, nonpoint source pollution from urban areas was identified in the plan as one of the primary issues to specifically address.

SUMMARY OF WORK PLAN

The land and water resources plan focuses on reducing the nonpoint source pollution from rural and urban areas in Kenosha County to the levels needed to achieve the water use objectives. Additionally, groundwater quality issues are also emphasized. The workplan elements are designed to meet the State nonpoint source pollution abatement performance standards and prohibitions. In addition, the plan also has specific objectives for the preservation and protection of land and water resources. The goals, objectives, and recommended actions contained in this plan were developed to focus on the priority issues and concerns identified by the LWRMP Citizen Advisory Committee and public survey responses. The objectives of the plan were divided into categories, including educational programming, agricultural and nonagricultural performance standards implementation, invasive species control, land and water quality protection, and improved partner relationships. The recommended goals, workplan objectives, and planned actions for the years 2008-2012 are summarized in the following section, and are presented in Table 25 in Chapter IV of this report.

Education and Information

Achieving the educational goal of increasing overall education and awareness of natural resources and the environment involves several objectives. These include:

- Educating landowners about Wisconsin's agricultural performance standards and prohibitions, County ordinances, applicable conservation practices, and cost-share grant opportunities;
- Promoting the principals of nutrient and chemical management and raising awareness of State requirements for landowners, producers, agricultural supply businesses, lawn maintenance companies, and golf course superintendents;
- Providing information to area contractors on best management practices for stormwater management and erosion control;
- Providing information to riparian property owners and landscape contractors on the effectiveness of riparian buffers and other design options;
- Providing information to Lake Michigan property owners on shoreline erosion;
- Developing new, and promoting existing, in-school curricula;

¹WDNR, *Approved 2004 Wisconsin 303(d) Impaired Waters List, August 2004.*

- Providing information to County residents on appropriate best management practices for yard maintenance; and
- Maintaining an up-to-date County conservation website.

Agricultural Nonpoint Source Pollution

The principal agricultural land management plan goals and workplan objectives include controlling nonpoint source pollution. The implementation strategy will include developing farm conservation plans for agricultural producers and encouraging landowners and farmers to utilize a wide variety of best management practices designed to target soil erosion. The County will continue to conduct the annual cropland erosion survey to monitor the use of conservation practices and their effectiveness in reducing agricultural erosion. Until a State buffer standard is adopted, the County and municipalities will promote the establishment of appropriate riparian buffers designed according to NRCS standards, in order to reduce sediment delivery to water resources. The major actions to accomplish the goals and workplan objectives include:

- Developing farm conservation plans;
- Identifying and evaluating priority farms for compliance with standards and prohibitions;
- Implementing the State Agricultural Performance Standards;
- Establishing a GIS database to monitor and track compliance status;
- Continuing to conduct a semi-annual transect cropland erosion survey;
- Encouraging the installation of riparian buffers;
- Developing nutrient management plans; and
- Managing livestock manure in accordance with State performance standards.

Nonagricultural Nonpoint Source Pollution

The nonagricultural and urban land use goals and workplan objectives include reducing nonpoint source pollution by reducing construction site erosion and managing stormwater runoff more effectively. In addition, it is recommended that urban-density land use be confined to identified urban service areas by limiting agricultural rezonings to planned urban service areas. The principal actions identified in the plan to accomplish these goals and workplan objectives will include:

- Encouraging the adoption of storm water management and construction site standards and guidelines;
- Developing a consistent inspection and monitoring program to reduce construction site erosion;
- Encouraging municipalities to take on responsibility associated with maintenance of storm water detention facilities;
- Implementing the State Nonagricultural Performance Standards;
 - Control 80 percent of sediment from construction sites;
 - Control 80 percent of post-construction total suspended solids (TSS) from new developments and 40 percent from redevelopments;
 - Maintain pre-development peak discharge rates for the two-year, 24-hour design storm for new developments;

- Infiltrate 90 percent of pre-development runoff volumes for new residential developments and 60 percent for nonresidential or demonstrate exemption;
- Maintain protective areas between new impervious surfaces and lakes, streams, and wetlands; and
- Control petroleum runoff (visible sheen) from fueling and vehicle maintenance areas.
- Encouraging urban-density land use to be confined to and within the identified urban service areas; and
- Complying with the Municipal Separate Storm Sewer System (MS4) permit requirements under Chapter NR 216 of the *Wisconsin Administrative Code*.

Invasive and Nonnative Species Management and Control

Nonnative and invasive species can alter ecological relationships among native species and can affect ecosystem function, economic value of ecosystems, and human health. In order to more effectively control the infestation and spread of nonnative and invasive animal and plant species, specific goals and workplan objectives have been identified as follows:

- Distribute informational material and respond to phone and direct inquiries;
- Organize and educate local work and youth groups to identify and eliminate nonnative and invasive species;
- Continue to coordinate the Gypsy Moth suppression program;
- Encourage the development and adoption of aquatic plant management plans for all inland lakes;
- Continue to conduct periodic workshops and presentations on nonnative and invasive plant and animal species control. and;
- Host a garlic mustard pull-a-thon event, assist the clean boats, clean waters volunteer program, and support purple loosestrife biological control.

Protect and Preserve Land and Water Resources

In order to improve overall land and water quality, the goals and workplan objectives include reducing erosion from unstable streambanks, reducing sedimentation of wetlands, supporting the acquisition of important identified natural areas, encouraging riparian buffer establishment, utilizing GIS technology to identify important water quality management areas, and protecting shoreland areas from actions which have negative impacts on water quality. Kenosha County LWCD will continue to monitor the Lake Michigan shoreline, especially in those reaches with relatively high unprotected bluffs and where shoreline protection structures are in need of maintenance, failing or have failed. The LWCD will monitor shoreline protection structures that have been placed in isolated situations and are more likely to cause differential erosion on unprotected portions of the shoreline in the immediate vicinity. In order to improve groundwater resource protection, failing and noncompliant onsite sewage disposal systems will be identified for maintenance or replacement; support the application of storm water infiltration; improve the quality of storm water runoff through BMPs; delineate groundwater related water quality management areas; and help farmers manage livestock and manure more effectively in areas susceptible to groundwater contamination. The principal actions associated with achieving the goals and workplan objectives include:

- Encourage farmers to continue farming through sustainable and alternative agricultural practices and other initiatives which may include the purchase of development rights, comprehensive land use plans, farmland protection, farm-to-table programs (connecting local farmers with local buyers), cooperative farm approaches, trusts, deeded outlots, and conservancies;

- Promote riparian buffers along all water resources in the County;
- Create, restore and enhance wetland, riverine, and wildlife habitat throughout the County;
- Prevent the degradation and disturbance of wetlands;
- Support efforts to protect and enhance our forests and woodlots, enforce the County Upland Resource Conservancy District ordinance, continue the annual tree program and work with the area forester to provide forestry assistance and long-term management plans to landowners;
- Encourage lake districts and associations to apply for lake protection and similar grants for water quality improvement and provide grant writing assistance when needed, as resources allow;
- Continue to implement and refine the County's shoreland management program with emphasis on shoreline protection, restoration, and enhancement;
- Identify failing septic systems or those no longer in compliance with State codes;
- Incorporate surface and groundwater protection information into the County GIS system; and
- Incorporate groundwater protection and data on contamination potential into future land use planning activities.

Increase Cooperation with Local, State and Federal Partners

Coordination with Federal, State and local agencies is necessary to protect land and water resources in Kenosha County. In order to increase cooperation with local, State and Federal partners, specific goals and workplan objectives have been identified as follows:

- Help develop a countywide comprehensive plan to guide future land use in Kenosha County;
- Foster existing relationships with WDNR, FSA, DATCP and NRCS; and
- Look for new opportunities to coordinate plan implementation efforts with local grass roots groups, conservation and wildlife clubs, local, State and Federal agencies to help implement the goals of this LWRMP.

Estimated Costs

Fully implementing the Kenosha County Land and Water Resource Management Plan will require additional staff as well as additional sources of funding to cost-share recommended best management practices. At present, County source funding will be inadequate; therefore implementation will be dependent upon future funding levels being available largely from outside sources. A brief summary of the costs that are estimated to be needed to maintain existing program efforts is presented in Table 26 in Chapter IV of this report.

PROGRESS MONITORING AND EVALUATION

Monitoring program effectiveness will be carried out by analyzing and quantifying soil erosion and sediment delivery, tracking the level of protection of environmentally important lands and water quality, and administrative reporting of the implementation of program recommendations. The principal methods that will be used to evaluate agricultural soil erosion and sediment delivery will include State and Federal farm plan monitoring, plan revisions, random field checks, and conducting the annual cropland erosion survey. Additionally, nonagricultural and shoreline erosion will be monitored through quantification of shoreland permits and determining the effectiveness of construction site best management practices through cooperation and partnership with municipal building inspectors.

Protection of environmentally valuable lands will be quantified by utilizing GIS and other computer resources to determine ownership of properties and protection measures for environmental corridor areas and other important environmental lands identified in the SEWRPC regional natural areas and critical species habitat plan and comprehensive watershed plans. GIS will also be utilized to identify priority farms and monitor compliance with the nonpoint performance standards and to generate annual reports of activities such as plan reviews, permits issued, inspections conducted, and enforcement action taken. Water quality monitoring is an important endeavor not only to monitor the present condition of water resources, but also to gauge the effectiveness of land conservation-related activities and best management practices. Available data will be summarized on an annual basis. Regular meetings will be held to report progress to the County Land and Water Conservation Committee regarding conservation plans and nutrient management plans that were developed, buffers implemented, contacts made, and educational activities that were carried out. These meetings will be used to evaluate the effectiveness of current programs and to change or modify those programs to better address current conditions.

Consistent and thorough evaluation and monitoring of conservation efforts is essential to ensure the effectiveness of the Kenosha County Land and Water Resource Management Plan. An annual progress report will be the primary method used to evaluate progress of implementing the planned activities outlined in this plan. The progress report will consist of a summary of the annual outcomes and accomplishments of planned activities outlined in the workplan. This summary may include, but is not limited to: completed information and education activities, landowners contacted, BMP's designed and installed, conservation and nutrient management plans written or revised, cost-share agreements developed, storm water and erosion control plans reviewed, compliance monitoring and status, and other planned program results. These annual progress reports will be compiled and forwarded to the Department of Agriculture, Trade and Consumer Protection and the WDNR. Periodic updates will also be posted on the Kenosha County website. The results of the monitoring and evaluations conducted over the term of this plan (2008-2012), will be used to improve the next land and water resource management plan.

Chapter I

INTRODUCTION AND PLAN DEVELOPMENT PROCESS

OVERVIEW OF STUDY AREA

Kenosha County is located in extreme southeastern Wisconsin, and is bordered on the east by Lake Michigan, on the north by Racine County, on the west by Racine and Walworth Counties, and on the south by Lake and McHenry Counties in Illinois. The impacts of urbanization in the Milwaukee and Racine metropolitan areas, and in particular, in northeastern Illinois, are increasingly affecting the County.

The County covers about 278 square miles and contains one city, all or parts of five villages, and seven towns. There are all or parts of five natural watersheds and a total of about 4,800 acres of inland surface waters within the County. The subcontinental divide between the Mississippi River and Great Lakes drainage basins traverses the County and has important implications for some aspects of land and water resources planning.

The majority of the population resides in the eastern portion of Kenosha County, within the City of Kenosha, the Village of Pleasant Prairie, and the Town of Somers. However, population centers are also found in the vicinity of some of the major lakes, including the Towns of Salem and Camp and Center Lake, and the Villages of Paddock Lake, Silver Lake, and Twin Lakes and in the partially urbanized town areas. Much of the land in the County remains in agriculture, but the dairy industry has steadily declined. The primary form of agriculture involves cash-grain farming for corn and soybeans. Additionally, as urban and nontraditional rural development has expanded into rural areas, the horse industry has grown significantly, and the number of small-scale and hobby farms has greatly increased. The major industries within the County are generally located east of IH 94, with smaller industrial development being located in nearly all of the other urban centers.

Kenosha County is undergoing significant urban growth and development, and faces the challenge of balancing this growth in conjunction with protecting and maintaining its natural resources. The County has a rich and diversified natural resource base, including the Lake Michigan nearshore area, several inland lakes, as well as major river systems. Additionally, the County contains significant areas of quality wetlands, woodlands, and grasslands, the most important of which are incorporated into the areas designated as environmental corridors.

PLAN BACKGROUND AND PURPOSE

In 1997, the State Legislature, through Wisconsin Act 27, amended Chapter 92 of the *Wisconsin Statutes*, requiring that all counties develop a land and water resource management plan (LWRMP). The intent of this charge is to foster and support a locally led process which is intended to address each individual county's unique natural resources; identify particular problems associated with the resource base; and establish a plan to help protect and restore those resources. Additionally, the County plans are intended to focus on State minimum nonpoint source pollution performance standards related to agriculture and urban development. The plan

development process is intended to encourage innovative programming and leadership and to build local support. The plan identifies the natural resources and the current condition of those resources, the limitations of those resources, and sets forth a strategy that addresses the natural resource issues and problems. This plan also provides a means to educate the public about these issues and problems and include them in the steps necessary to protect the natural resource base.

The initial Kenosha County Land and Water Resource Management Plan was approved in 2000. Chapter 92 of the *Statutes* requires that LWRM Plans must be updated every five years for counties to be able to receive conservation staff funding and cost-share grant monies. In 2003 Kenosha County requested and received a three-year extension of its existing LWRMP from the Wisconsin Land and Water Conservation Board. This plan is, therefore, the first revision of the initial LWRM Plan. The revised multi-year land and water resource management plan must meet the requirements of *Wis. Stats.*, 92.06, and additional guidelines established by the Wisconsin Department of Agriculture, Trade and Consumer Protection and the Wisconsin Land and Water Conservation Board. This plan will serve as a program guide for local conservation efforts in Kenosha County.

PLAN DEVELOPMENT AND PUBLIC PARTICIPATION

The Kenosha County Land and Water Resource Management Plan was developed through a collective effort of a number of agencies and organizations under the overall direction of the Kenosha County Land and Water Conservation Committee (LWCC). Like the original plan an important aspect of the development of the revised plan relied on the participation from both citizens of the County, as well as representatives from various intergovernmental agencies. The agencies that were involved include the Kenosha County Department of Planning and Development, the Southeastern Wisconsin Regional Planning Commission (SEWRPC), the Wisconsin Department of Natural Resources (WDNR), the University of Wisconsin-Extension Service, the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and the USDA Farm Services Agency (FSA). The plan was developed under the guidance of the Kenosha County Land and Water Resource Management Plan Citizen Advisory Committee (CAC), which was created by the County specifically for plan development purposes and is, comprised of elected and appointed officials, agency personnel and citizens knowledgeable in land and water resource matters. The members of the Citizen Advisory Committee and their affiliation are listed in Table 1.

The revision to the Kenosha County Land and Water Resource Management Plan began in July of 2006 with a conservation survey page included in the July/August - 2006 newsletter, *Ties to the Land*. The conservation survey was also made available on the Land and Water Conservation page of the Kenosha County website (<http://www.co.kenosha.wi.us/plandev/conservation/index.html>). Additionally, the conservation survey was placed in the April 2007 issue of *Compass Point*, the Kenosha County's Comprehensive Planning Newsletter. Survey results were utilized by the CAC in order to identify major conservation concerns. Two Citizen Advisory Committee meetings were held on March 26, 2007 and June 20, 2007. The Committee reviewed each chapter of the plan in draft form and provided comments and recommendations, which were then addressed in the final plan. On August 1, 2007, the County Land and Water Conservation Committee met to approve the plan; this meeting was open to the public for citizen comment and input. This meeting was announced twice in the *Kenosha News* prior to the meeting as a Class II public notice. This plan was approved by the LWRMP Citizen Advisory Committee on June 20, 2007, the Kenosha County Land and Water Conservation Committee on August 1, 2007, the Kenosha County Land Use Committee on August 8, 2007 and the Kenosha County Board of Supervisors on August 21, 2007, with final approval by the Wisconsin Land and Water Conservation Board on October 4, 2007.

LAND AND WATER RESOURCE MANAGEMENT PLAN PRIORITY ISSUES

At the initial meetings of the CAC, members reviewed the plan priority issues from the last LWRMP, and recommended amendments/revisions to the workplan along with adding recommendations for workplan action items, ranking issues, goals and the objectives. The CAC identified priority issues of concern including the following:

Table 1

**KENOSHA COUNTY LAND AND WATER RESOURCE MANAGEMENT PLAN
CITIZEN ADVISORY COMMITTEE MEMBERS AND SUPPORTING STAFF**

Name	Title or Affiliation
Committee Member Ronald L. Johnson, Chairman	Kenosha County Board Supervisor, 12th District, Kenosha County Land and Water Conservation Committee; Chairman
Dave Daniels	Dairy Farmer, Town of Brighton, Kenosha County Land and Water Conservation Committee Member
Gerald L. Hebard	District Conservationist, U.S. Department of Agriculture, Natural Resources Conservation Service
Judy Jooss	Lakes Specialist, Citizen, Village of Twin Lakes, Kenosha County Land and Water Conservation Committee Member
Kimberly Iczkowski	Executive Director, U.S. Department of Agriculture, Farm Services Agency
Mark Edquist	Row Crop Farmer, Town of Paris
Michael A. Luba	Root/Pike Basin Team Leader, Wisconsin Department of Natural Resources
Chuck Haubrich	Board Member, Racine/Kenosha Land Trust
Melanie Bohl	Executive Director, Root/Pike Watershed Initiative
Richard Schroeder	Assistant City Planner, City of Kenosha
Rose Skora	Agriculture Educator, University of Wisconsin-Extension Service
Supporting Staff Members Michael G. Hahn	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Daniel R. Treloar	Conservation Planner, Southeastern Wisconsin Regional Planning Commission and Kenosha County-wide Long Range Planning Division
Sara A. Arnold	Land & Water Conservation Engineer, Kenosha County-wide Long Range Planning Division
John F. Roth	Director, Kenosha County-wide Long Range Planning Division

Source: SEWRPC.

- Increase Natural Resource, Environmental, and State Performance Standards Information and Education;
- Implement the State Agricultural and Nonagricultural Performance Standards to Reduce Nonpoint Pollution;
- Invasive and Nonnative Species Management and Control;
- Protect and Preserve Land and Water Resources; and
- Increase Cooperation with Local, State, and Federal Partners.

The goals, objectives, and recommended actions contained in this plan were developed to focus on those issues and concerns identified by the CAC and public survey and also to address the minimum State performance standards and prohibitions.

Chapter II

RESOURCE ASSESSMENT

INTRODUCTION

The conservation and wise use of agricultural and natural resources and the preservation of cultural resources are important factors influencing the growth and development potential of the County. Aside from the County's physical location, the natural resource base is one of the assets that make the County a desirable community to reside and work. The natural resources of Kenosha County not only provide recreational and aesthetic value, but also provide economic value as well. Protecting this resource base is also important to maintain biological diversity, which is vulnerable to the misuse that is associated with inappropriate development. Accordingly, future development should be guided to be consistent with the ability of the natural resource base to support various forms of urban and rural development without deterioration of the existing natural resources in the County.

The natural resources in Kenosha County are susceptible to permanent damage resulting from inappropriate land use, transportation, and public facility development. Additionally, traditional occupations such as farming, silviculture, horticulture, and the expanding horse industry, also place significant burdens on the natural resource base. Sufficient understanding of the characteristics and elements of the natural resources must exist in order to prevent the environmental degradation and monetary costs associated with overuse and alteration of the existing natural resource base. A sound land and water resource planning program must recognize that natural resources in the County are limited. Kenosha County and the local governments within the County must work together to develop a sound planning process that acknowledges the potential threats to the resource base, and provides goals and objectives to preserve, protect and enhance that resource base, and also, educates the public on the value of natural resources and the benefits of good land stewardship.

This chapter provides inventory information on existing agricultural, natural, and cultural resources in Kenosha County. The resource assessments that are discussed include soil types, existing farmland, farming operations, topography and geology, nonmetallic mining resources, water resources, woodland resources, natural areas and critical species habitats, environmental corridors, park and open space sites, cultural (historical and archeological) resources, and land use and demographics.

The base year for inventory data presented in this chapter ranges from 1994 to 2006. Much of the inventory data has been collected through regional land use and natural area planning activities conducted by SEWRPC. Additional inventory data has been collected from and by Kenosha County, local units of government, and State and Federal agencies including the Wisconsin Department of Natural Resources (WDNR); Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP); State Historical Society of Wisconsin; and the U.S. Department of Agriculture (USDA).

SOILS AND AGRICULTURAL RESOURCES

Soil Survey

The USDA Soil Conservation Service, now the Natural Resources Conservation Service (NRCS), issued a soil survey for Kenosha County in 1970.¹ Soils were identified and mapped and organized by soil association, soil series, and soil type. The soil survey results, including the attributes of each soil type, are now available on the NRCS website as part of the Soil Survey Geographic (SSURGO) database. Unless otherwise noted, the soil information in this chapter was obtained from the SSURGO database.

Soil properties exert a strong influence on the manner in which the land is used, especially where land use is continually changing and evolving, as it is in Kenosha County. Soils directly affect the types of land use that can take place, whether those uses are agricultural, recreational, commercial, or residential. Any comprehensive land and water resource management plan needs to evaluate how soils are currently being used, and also, how soils should best be used and managed over time. The soil survey can play an important role in land use decisions. The information contained in the soil survey can help identify which areas of the County are suitable for agricultural use and areas with limitations for development due to wet soils or bedrock near the surface.

Soil Associations

A soil association is a landscape that has a distinctive pattern of soils. There are nine soil associations in Kenosha County and Map 1 shows their spatial distribution across the County. Soils are typically grouped into an association by drainage patterns, as well as surface horizon thickness. The general soil associations can be used for comparing suitability of relatively large areas for various land uses. However, for specific applications, the aforementioned detailed soil survey information should be relied upon, as well as onsite field data for confirmation purposes. Soils, as a whole, are very diverse and polymorphic, making it necessary to field verify what is actually on the landscape.

Soil Limitations for Development

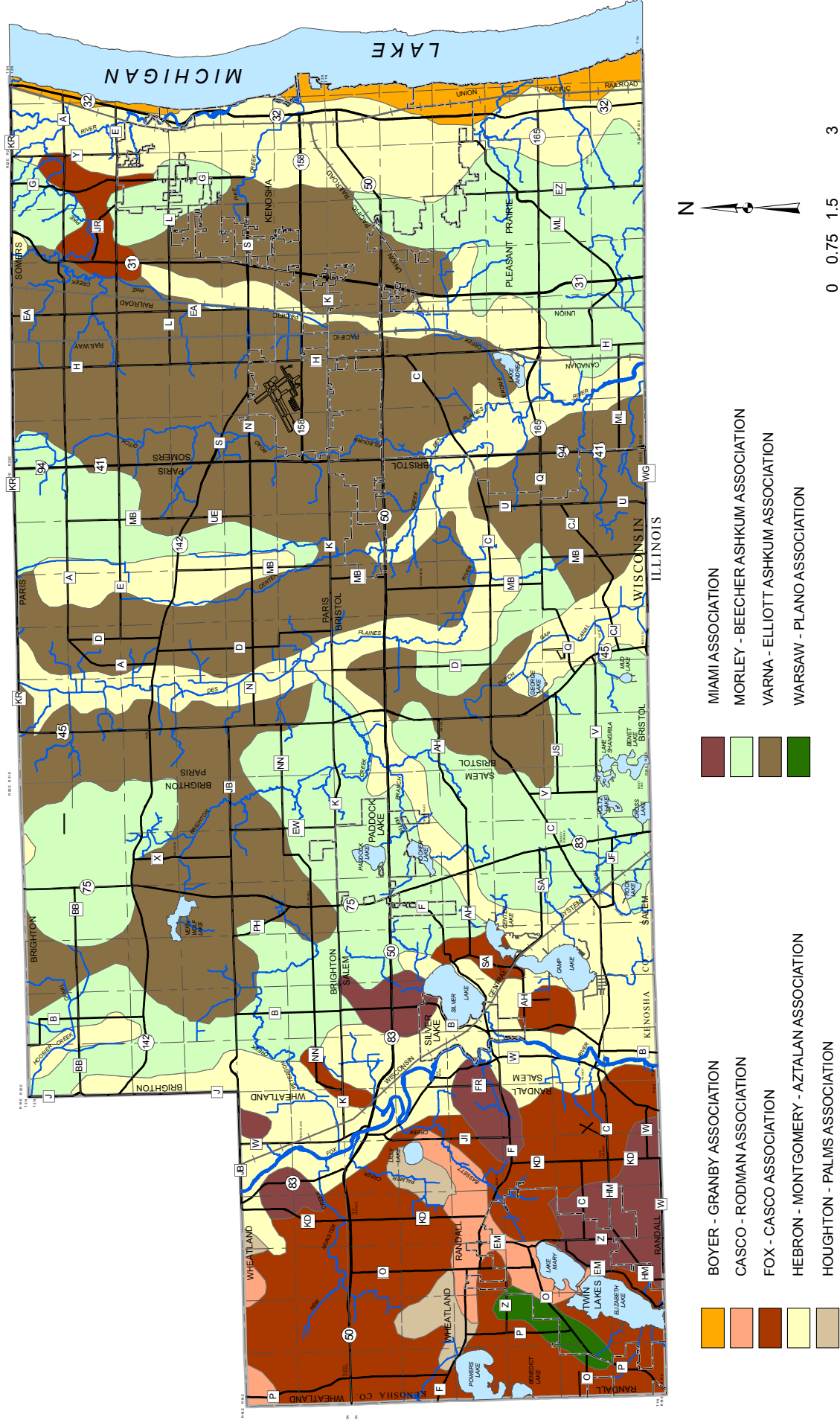
A variety of soil characteristics can impact the suitability of land for development. Severe structural soils, as identified by the NRCS, impose significant limitations on development of dwellings with or without basements and structures requiring septic tank absorption fields. Severe structural soils possess properties or site features that are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings and affect dwellings with or without basements. Likewise, a high water table, depth to bedrock, large stones, slope, and flooding affect the ease of excavation and construction and also influence the performance of septic tank absorption fields.

Soils that are saturated with water or that have a water table at or near the surface are known as hydric soils, and pose significant limitations for most types of development. High water tables often cause wet basements and poorly functioning absorption fields for private onsite waste treatment systems. The excess wetness may also restrict the growth of landscaping plants and trees. Wet soils also restrict or prevent the use of land for crops, unless the land is artificially drained. Map 2 depicts severe structural soils and hydric soils in Kenosha County, as identified by the NRCS. The number of acres of severe structural soils and hydric soils in the County and each local government is shown in Table 2. Although such areas are generally unsuitable for development, they may serve as important locations for restoration of wetlands and wildlife habitat.

Topographical features, particularly slopes, have a direct bearing on the potential for soil erosion and the sedimentation of surface waters. Slope steepness affects the velocity and, accordingly, the erosive potential of runoff. The amount of slope or relief on the land is one of the most important factors governing soil development

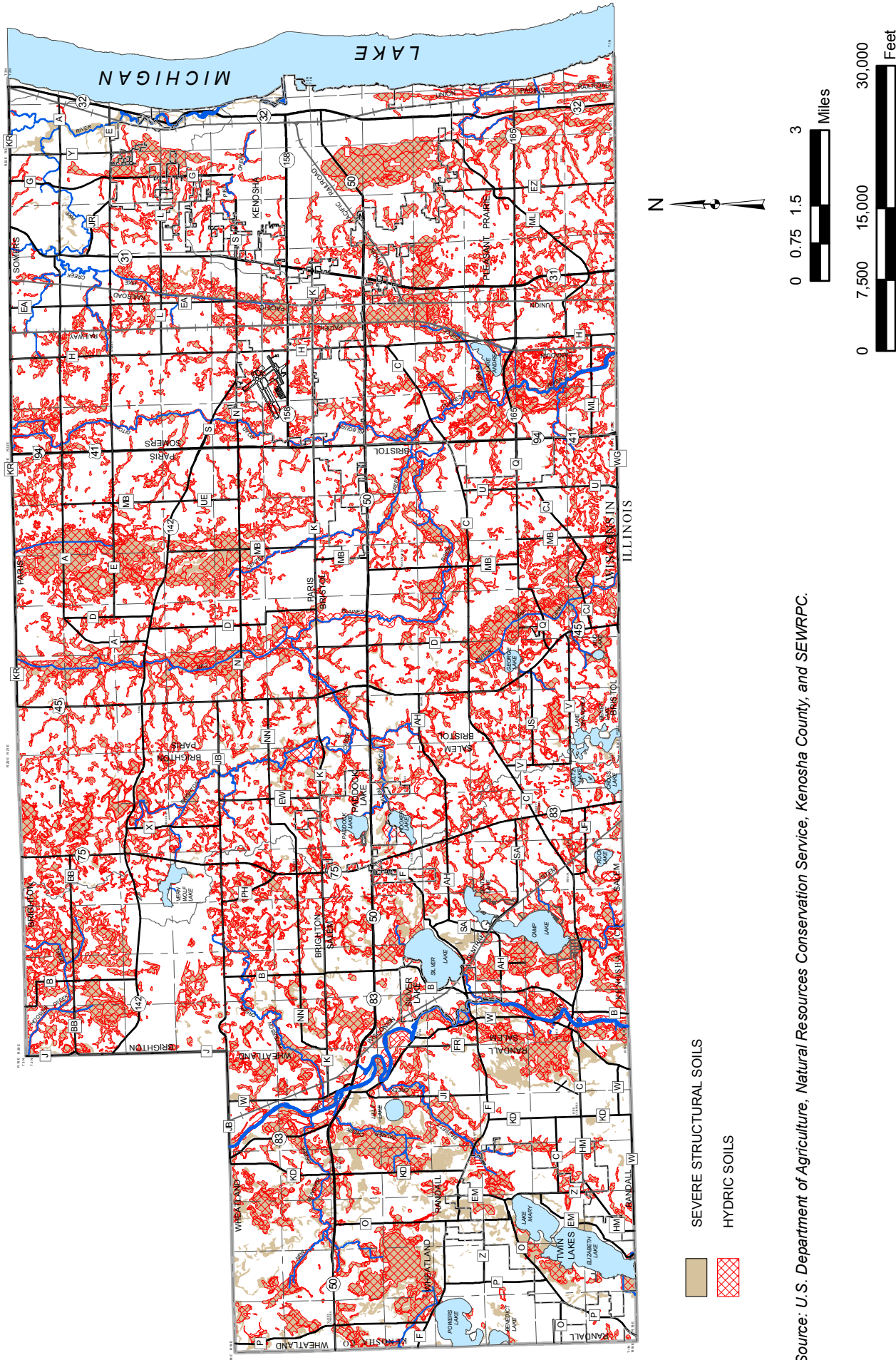
¹*Documented in the USDA Soil Conservation Service, Soil Survey of Kenosha and Racine Counties, Wisconsin, 1971.*

Map 1 GENERAL SOIL ASSOCIATIONS IN KENOSHA COUNTY



Source: U.S. Department of Agriculture, Natural Resources Conservation Service and SEWRPC.

Map 2
SOIL LIMITATIONS FOR DEVELOPMENT IN KENOSHA COUNTY



Source: U.S. Department of Agriculture, Natural Resources Conservation Service, Kenosha County, and SEWRPC.

Table 2

SEVERE STRUCTURAL SOILS AND HYDRIC SOILS IN KENOSHA COUNTY COMMUNITIES: 2006^a

Civil Division	Severe Structural Soils (acres)	Percent of Civil Division Area	Hydric Soils (acres)	Percent of Civil Division Area
City of Kenosha	3,463	20.9	3,409	20.5
Village of Pleasant Prairie.....	5,823	27.1	6,058	28.2
Village of Silver Lake	200	23.0	223	25.6
Town of Brighton.....	6,785	29.6	6,327	27.6
Town of Bristol.....	5,523	25.8	5,783	27.0
Town of Paris.....	6,925	30.1	6,785	29.5
Town of Salem.....	5,855	28.4	5,426	26.3
Town of Somers.....	3,369	18.1	2,969	15.9
Town of Wheatland.....	6,173	40.0	4,731	24.6
Village of Genoa City	4	3.0	4	3.0
Village of Paddock Lake	382	21.8	332	18.9
Village of Twin Lakes.....	1,179	24.7	635	13.3
Town of Randall.....	2,179	20.8	1,158	11.1
Kenosha County Total	47,861	26.9	43,840	24.6

^aSevere structural soils and hydric soils are not exclusive categories. As seen on Map 2, significant overlap exists between the severe structural soil and hydric soil classifications.

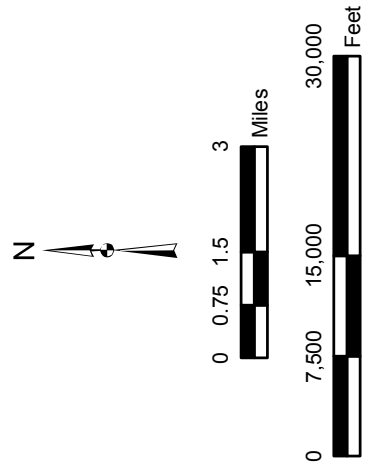
Source: Natural Resources Conservation Service, Kenosha County, and SEWRPC.

processes and determines many of the physical and chemical properties of a specific soil. Additionally, slope is also one of the principal factors involved in soil erosion. As slopes increase, so also does the erosion rate. Much of Kenosha County is fairly flat with gently rolling slopes, with the areas of more significant relief being in the western half of the County (Map 3). The majority of land area in Kenosha County, approximately 85 percent, has slopes that are between 0 and 6 percent based upon soil interpretations. Highly erodible lands (HEL) are those areas in the County that have slopes greater than 6 percent. Although areas that have slopes less than 6 percent are still prone to erosion without proper management, the areas that are greater than 6 percent slope are of most concern. The NRCS considers a farm field to be considered HEL if one-third or more of that field contains slopes of 6 percent or greater. The soils in these areas are difficult to manage, not only for agriculture, but also for urban development. There are approximately 24 square miles of HEL soils in the unincorporated areas of Kenosha County. Of that area, about half is zoned for agricultural purposes, and half is zoned for nonagricultural purposes. Additionally, about 5 percent of the soils are described as disturbed land, such as landfills, dumps, and gravel pits, or are surface waters and are not assigned a slope classification. While the areas with highly erodible soils cover only about 10 percent of the total land area in the County, these areas are likely the source of the majority of soil erosion.

Soil Suitability for Agricultural Production

The NRCS has classified the agricultural capability of soils based on their general suitability for most kinds of farming. These groupings are based on the limitations of the soils, the risk of damage when used, and the way in which the soils respond to treatment. Generally, lands with Class I and II soils are considered “National Prime Farmlands.” Almost 72 percent of the County is covered by prime farmland soils. Lands with Class III soils are considered “Farmlands of Statewide Significance,” which cover about 16 percent of the County. Class I soils have few limitations, the widest range of use, and the least risk of damage when used. The soils in the other classes have progressively greater natural limitations. Class II soils have some limitations that reduce the choice of plants that can be grown, or require moderate conservation practices to reduce the risk of damage when used. Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both, and Class IV soils have very severe limitations. Class V, VI, and VII soils are considered suitable for pasture, but not for crops, and Class VIII soils are so rough, shallow, or otherwise limited that they do not produce economically worthwhile yields of crops, forage, or wood products.

This map illustrates the Kalamazoo River watershed, a critical water source for the region. The river is depicted in blue, showing its course from the northwest, through the heart of the watershed, and into Lake Michigan. The map includes a grid system with letters (A-Z) and numbers (1-10) for easy location finding. Key towns and communities shown include Paris, Bristol, Kalamazoo, and Holland. Major roads, such as I-94 and I-196, are marked with their respective numbers. The map also shows various smaller lakes and streams within the watershed, as well as the surrounding areas of Michigan and Indiana.



Source: U.S. Department of Agriculture, Natural Resources Conservation Service and SEWRPC.

The location and amount of Class I, II, and III soils, as set forth in Map 4 and Table 3, were an important consideration when farmland preservation areas were identified in the existing County farmland preservation plan (adopted in 1981) and existing town land use and master plans. The County Farmland Preservation Plan² used the following criteria to designate Prime Farmlands: farms with at least 50 percent of soils classified as Class I, II, or III, located within a farming block of at least 100 acres, and having a minimum farm size of 35 acres. Farms less than 35 acres were included if used for the production of specialty crops or livestock, provided the soil criteria and minimum farming block criteria were met. The Towns of Bristol, Paris, and Salem used the presence of Class I, II, and III soils to help identify prime agricultural lands in their existing Town land use plans.

Existing Farmland

Agricultural lands in 2000 were identified by SEWRPC as part of the regional land use inventory conducted as part of the regional planning program. The land use inventory identified croplands, pasture lands, orchards, nurseries, specialized farming, and nonresidential farm buildings. Farm residences, together with a 20,000-square-foot dwelling site, are classified as single-family residential land uses. Based on the land use inventory, about 94,715 acres, or about 148 square miles, representing almost 53 percent of the County, were in agricultural use in 2000. It should be noted that this figure includes lands actually used for agriculture—primarily cultivated lands and lands used for pasture—and excludes the wetland and woodland portions of farm fields. Table 4 sets forth the number of acres occupied by farmland in each community and the County in 2000.

Map 5 and Table 4 show the area devoted to farmland use in 2000, categorized as follows:

- Cultivated Lands, which includes lands used for the cultivation of crops including row crops, grain crops, vegetable crops, and hay.
- Pasture Land and Unused Agricultural Lands, which includes lands used as pasture, or lands which were formerly cultivated or used for pasture which have not yet succeeded to a wetland or woodland plant community.
- Orchards, Nurseries, and Specialty Crops, which includes lands used for orchards, nurseries, sod farms, and specialty crops such as mint, ginseng, and berry fields.
- Farm Buildings, which includes barns, silos, and other buildings used to store farm equipment or supplies or house farm animals.

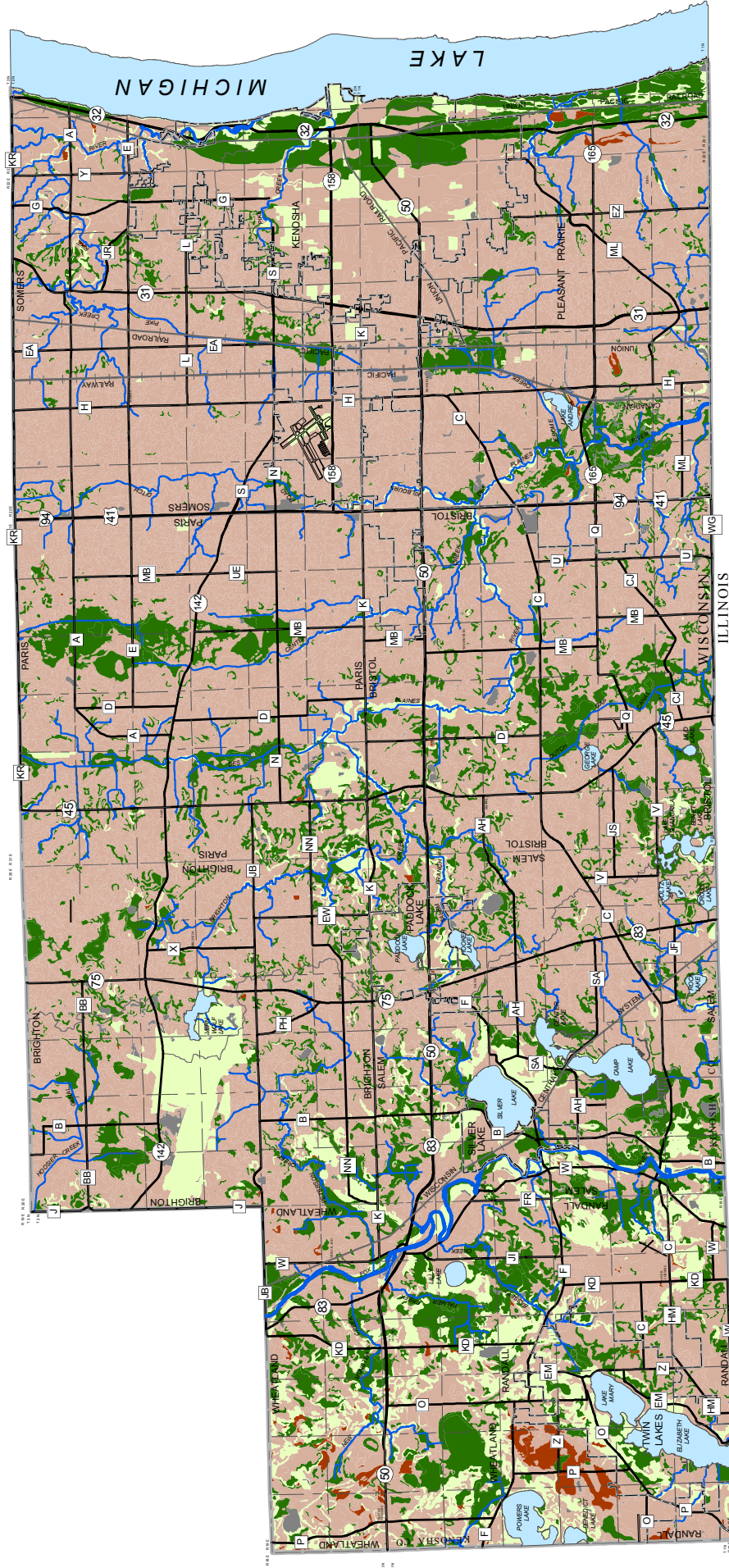
Overall, cultivated lands were the predominant type of agricultural use in Kenosha County accounting for about 87 percent of agricultural land in 2000.

From 1999 to 2005, the Kenosha County LWCD has conducted an annual Transect Cropland Erosion Survey program, which is a method to determine the average rate of cropland erosion throughout the County. In 1999, 71 percent of all cropland within the County was eroding at or below tolerable soil loss rates. In 2005, 69 percent of all cropland was eroding at or below tolerable soil loss rates. This suggests that local, State and Federal conservation program efforts have had limited success in helping farmers manage soil erosion and further efforts are needed.

²*Documented in SEWRPC Community Assistance Planning Report No. 45, A Farmland Preservation Plan for Kenosha County, Wisconsin, June 1981.*

Map 4

AGRICULTURAL SOIL CAPABILITY IN KENOSHA COUNTY



- CLASS I
- CLASS II
- CLASS III
- CLASS IV, V, VI, VII, VIII
- AREAS FOR WHICH DATA ARE NOT AVAILABLE FROM SOIL SURVEY

Source: U.S. Department of Agriculture, Natural Resources Conservation Service and SEWRPC.

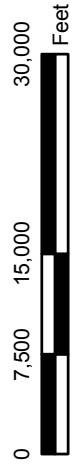
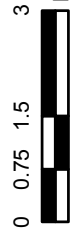


Table 3

AGRICULTURAL SOIL CAPABILITY IN KENOSHA COUNTY COMMUNITIES

Civil Division	Class I Soils (acres)	Class II Soils (acres)	Class III Soils (acres)	Class IV, V, VI, VII, and VIII Soils and Unclassified Areas (acres)	Surface Water (acres)	Total (acres)
City of Kenosha	--	12,079	2,669	1,765	84	16,596
Village of Pleasant Prairie	150	16,492	3,525	993	337	21,498
Village of Silver Lake	--	448	284	137	1	871
Town of Brighton	2	16,230	3,243	3,091	330	22,896
Town of Bristol	--	16,418	3,840	816	318	21,393
Town of Paris	--	18,500	3,723	741	49	23,013
Town of Salem	3	12,698	3,998	2,074	1,876	20,648
Town of Somers	20	16,962	1,166	451	60	18,658
Town of Wheatland	311	7,816	3,965	2,992	333	15,417
Village of Genoa City	34	111	1	1	--	147
Village of Paddock Lake	--	1,138	337	140	141	1,755
Village of Twin Lakes	28	1,995	829	901	1,028	4,782
Town of Randall	582	5,669	1,701	2,054	470	10,475
Kenosha County Total	1,130	126,556	29,281	16,154	5,028	178,149
Percent of Total Lands	0.6	71.0	16.4	9.1	2.8	100.0

Source: Natural Resources Conservation Service and SEWRPC.

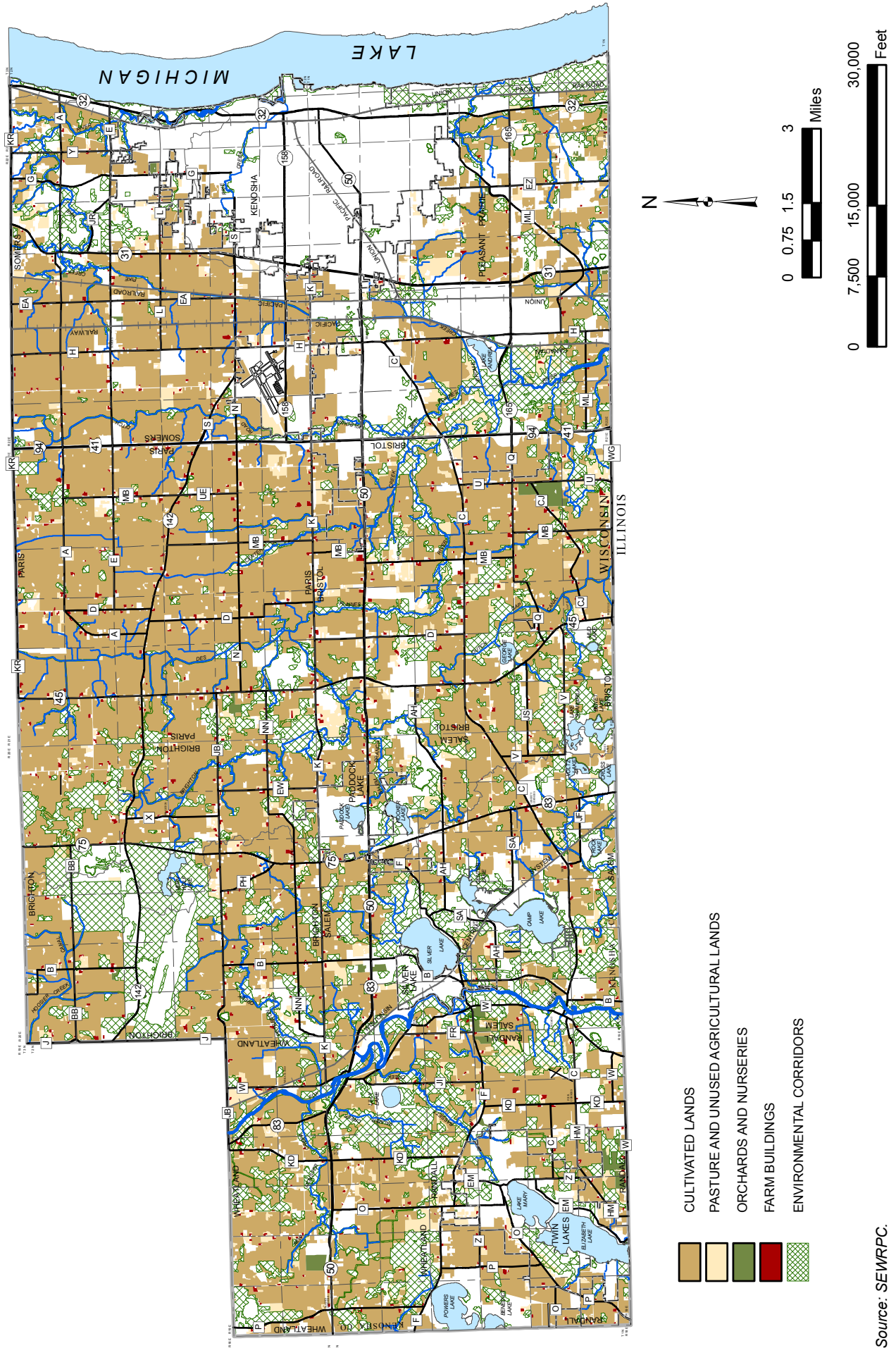
Table 4

EXISTING AGRICULTURAL LANDS IN KENOSHA COUNTY: 2000

Civil Division	Cultivated Lands (acres)	Percent of Agricultural Lands	Pasture Land and Unused Agricultural Land (acres)	Percent of Agricultural Lands	Orchards, Nurseries, and Specialty Crops	Percent of Agricultural Lands	Farm Buildings (acres)	Percent of Agricultural Lands	Total Agricultural Lands (acres)
City of Kenosha	2,243	83.9	251	9.4	154	5.8	24	0.9	2,672
Village of Pleasant Prairie	6,505	81.2	1,366	17.1	38	0.5	98	1.2	8,007
Village of Silver Lake	66	76.7	17	19.8	--	0.0	2	2.3	86
Town of Brighton	12,182	91.3	888	6.7	17	0.1	254	1.9	13,341
Town of Bristol	11,162	82.1	1,954	14.4	230	1.7	256	1.9	13,601
Town of Paris	17,750	93.3	864	4.5	53	0.3	356	1.9	19,023
Town of Salem	7,294	82.0	1,339	15.0	130	1.5	134	1.5	8,898
Town of Somers	10,754	91.3	794	6.7	62	0.5	167	1.4	11,777
Town of Wheatland	7,837	83.4	1,315	14.0	89	0.9	158	1.7	9,398
Village of Genoa City	128	95.5	4	3.0	--	0.0	2	1.5	134
Village of Paddock Lake	630	89.9	64	9.1	--	0.0	7	1.0	701
Village of Twin Lakes	998	78.5	257	20.2	--	0.0	17	1.3	1,272
Town of Randall	4,654	80.2	869	15.0	183	3.2	99	1.7	5,804
Kenosha County Total	82,203	100.0	9,983	100.0	955	100.0	1,574	100.0	94,715
Percent of Total Lands	86.8	--	10.5	--	1.0	--	1.7	--	100.0

Source: SEWRPC.

Map 5
EXISTING AGRICULTURAL LANDS AND ENVIRONMENTAL CORRIDORS IN KENOSHA COUNTY: 2000



Source: SEWRPC.

Farm Production and Revenue

Farm production and revenue inventory data^{3,4} are useful in determining the economic impact of agriculture in Kenosha County and the major types of agricultural products. Agricultural sectors in the County and State in 2002, and the amount and percentage of revenue associated with each sector, are set forth in Table 5. Grain crops were the predominant source of agricultural revenue in the County in 2002, accounting for about 32 percent of agricultural revenue. A much lower percentage, about 16 percent, of agricultural revenue Statewide was based on grain crops. Of the 466 farms in the County in 2002, 161, or about 35 percent, were grain crop farms.

Horticulture was the second-largest source of agricultural revenue in Kenosha County in 2002, accounting for about 23 percent of sales. Statewide, horticulture accounted for just 3.5 percent of sales. The relative importance of the horticultural industry in the County compared to the State is likely a response to the demand for landscaping material for urban development in the County and the Milwaukee and Chicago metropolitan areas. Dairy farming was the third-largest source of agricultural revenue in Kenosha County in 2002, accounting for about 22 percent of the total. The percentage of agricultural revenue from dairy farming Statewide was much higher, accounting for about 47 percent of the total revenue.

Table 6 sets forth total value of sales⁵ in 2002 for farms in Kenosha County. There were 189 farms, or about 41 percent of all farms in Kenosha County, that had total value in sales of less than \$2,500. A similar percentage, about 40 percent, of farms Statewide had a total value in sales less than \$2,500. There were 79 farms, or about 17 percent of farms in the County, with total value in sales of \$100,000 or more, compared to about 18 percent of State farms with total value in sales of \$100,000 or more.

Average net income from farm operations in the County in 2002 was \$17,132, which was lower than the State average of \$17,946. Farming was the principal occupation of the farm operator on 251 farms, or about 54 percent, and was not the primary occupation of the farm operator on the remaining 215 farms, or 46 percent. Statewide, farming was the principal occupation of the farm operator on about 59 percent of farms and was not the principal occupation of the farm operator on the remaining 41 percent of farms.

Number and Size of Farms

Table 7 sets forth the number of farms by size category⁶ in Kenosha County and Wisconsin. As noted earlier, there were 466 farms in the County in 2002. The average farm size was 190 acres, and the median farm size was 75 acres. This compares to 204 acres and 140 acres, respectively, for farms in the State. The largest percentages of farms in the County, about 43 percent, were between 10 and 49 acres, and an additional 25 percent of farms were between 50 and 179 acres. Only about 9 percent of farms were more than 500 acres in size.

NATURAL RESOURCES

Topography and Geology

The landforms and physical features of Kenosha County, such as topography and drainage patterns, are an important determinant of growth and development. The physiography of the area not only must be considered in sound land use and supporting transportation, utility, and community facility planning and development, but it

³Data included in this section are 2002 data for Kenosha County from the USDA National Agricultural Statistics Service. Data are reported at the County level, and are not available for local governments.

⁴The USDA defines a farm as any place from which \$1,000 or more of agricultural products (crops and livestock) were sold or normally would have been sold during the year under consideration.

⁵The total value of sales is equal to the gross market value before taxes and production expenses for all agricultural products sold.

⁶Data included in this section includes lands owned by the farmer, not lands the farmer may rent.

Table 5**AGRICULTURAL SECTORS IN KENOSHA COUNTY AND WISCONSIN: 2002**

Sector	Kenosha County		State of Wisconsin	
	2002 Sales (in thousands)	Percent of Total Agricultural Revenues	2002 Sales (in thousands)	Percent of Total Agricultural Revenues
Dairy	\$ 7,400	21.7	\$2,651,000	47.1
Horticulture	7,900	23.2	197,400	3.5
Grains (Crops)	11,000	32.3	893,300	15.9
Cattle and Calves	2,300	6.9	834,900	14.9
Vegetables.....	2,900	8.6	341,600	6.1
Other.....	2,500	7.4	705,100	12.5
Total	\$34,000	100.0	\$5,623,300	100.0

Source: USDA National Agricultural Statistics Service, 2002 Census of Agriculture.

Table 6**FARMS IN KENOSHA COUNTY AND WISCONSIN BY VALUE OF SALES: 2002**

Value of Sales	Kenosha County		State of Wisconsin	
	Number	Percent	Number	Percent
Less than \$2,500	189	40.6	30,491	39.5
\$2,500 to \$4,999	43	9.2	5,389	7.0
\$5,000 to \$9,999	34	7.3	5,788	7.5
\$10,000 to \$24,999	55	11.8	8,362	10.8
\$25,000 to \$49,999	27	5.8	5,929	7.7
\$50,000 to \$99,999	39	8.4	7,242	9.4
\$100,000 or More	79	17.0	13,930	18.1
Total	466	100.0	77,131	100.0

Source: USDA National Agricultural Statistics Service, 2002 Census of Agriculture.

Table 7**FARM SIZE IN KENOSHA COUNTY AND WISCONSIN: 2002**

Size (acres)	Kenosha County		State of Wisconsin	
	Number	Percent	Number	Percent
Less than 10 acres	43	9.2	4,141	5.4
10 to 49 acres	199	42.7	17,152	22.2
50 to 179 acres	116	24.9	29,458	38.2
180 to 499 acres	68	14.6	20,021	25.9
500 to 999 acres	22	4.7	4,465	5.8
1,000 acres or More.....	18	3.9	1,894	2.5
Total	466	100.0	77,131	100.0

Source: USDA National Agricultural Statistics Service, 2002 Census of Agriculture.

also contributes directly to the natural beauty and overall quality of life in the County. Kenosha County varies from gently rolling glacial plains in the eastern half to steeper hills in the western half. Additionally, the subcontinental divide, which separates the Mississippi River Basin and the Great Lakes-St. Lawrence River Basin, traverses the eastern half of Kenosha County. The County is adjacent to Lake Michigan, one of the five Great Lakes.

Glaciations have largely determined the physiography and topography, as well as the soil within the County. Generalized landforms and topographic characteristics are shown on Map 6. Land surface elevations range from 580 feet above sea level at the Lake Michigan shoreline to approximately 950 feet in the Town of Randall, along the Wisconsin-Illinois State line. There is evidence of four major stages of glaciation in the Southeastern Wisconsin Region. The last, and most influential in terms of present physiography and topography in Kenosha County, was the Wisconsin stage, which is believed to have ended in the State about 11,000 years ago.

The dominant physiographic and topographic features occur in the western portion of the County. On the western side of the Fox River, gentle slopes give way to steeper hills which are comprised of sand and gravel outwash deposits. The majority of the County is dominated by gently sloping ground moraines. Ground moraines were laid down directly by the glacier, and are typically made up of dense basal till, which contains a combination of silt and clay. Kenosha County also contains wetland areas made up of peat and organic materials. Glacial outwash deposits are common along the major rivers and streams of Kenosha County. Outwash is alluvial in origin and was deposited by glacial meltwaters. A few places in the County also contain lacustrine deposits which contain the sediments of glacial lakebeds. In addition, there are areas of steep bluffs along the Lake Michigan shoreline, particularly near the Racine County line.

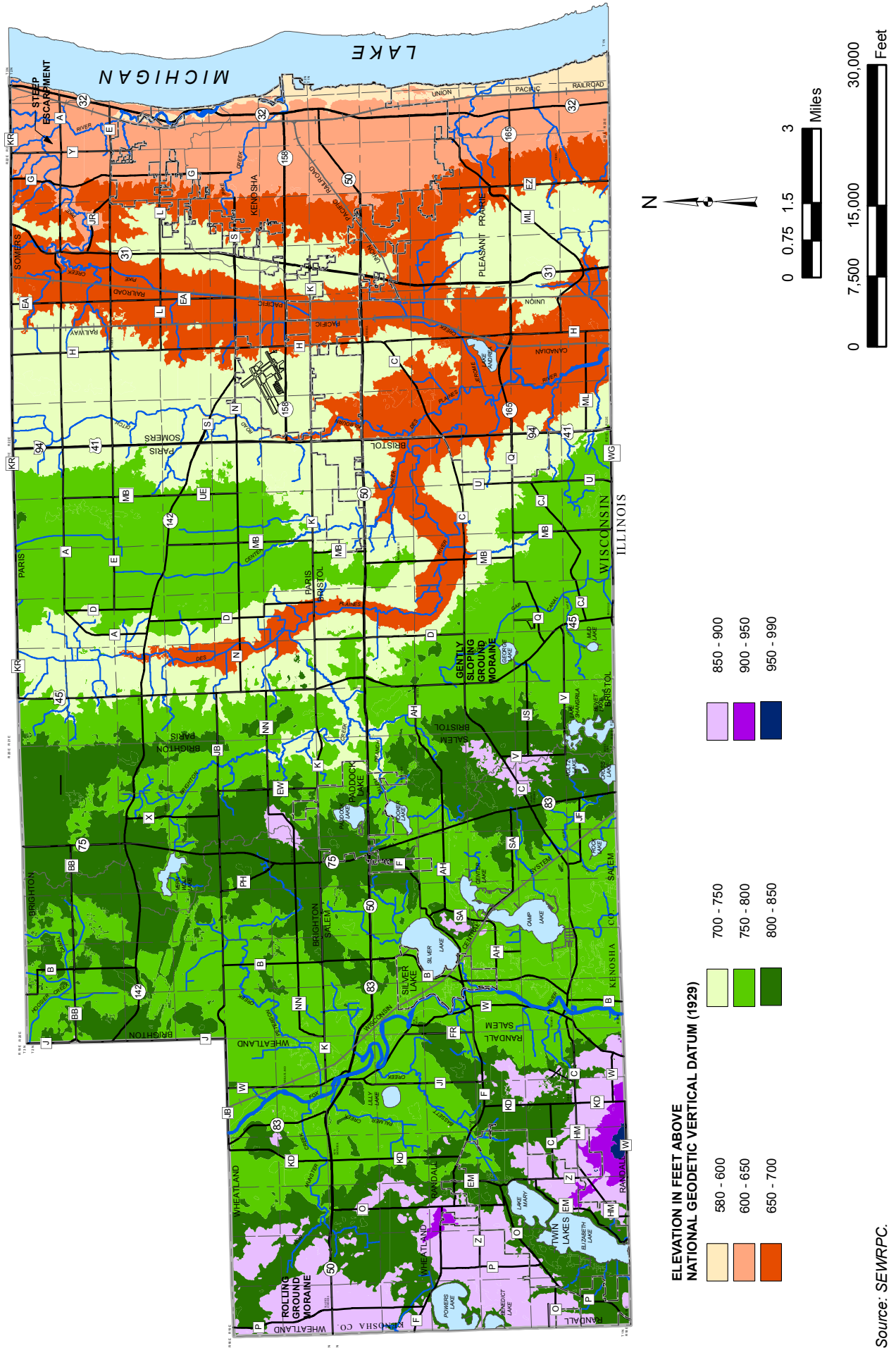
Lake Michigan Bluff and Ravine Areas

There are approximately 12.6 linear miles of Lake Michigan shoreline in Kenosha County. Shoreline erosion and bluff stability conditions are important considerations in planning for the protection and sound development and redevelopment of lands located along Lake Michigan. These conditions can change over time because they are related to changes in climate, water level, the geometry of the near shore areas, the extent and condition of shore protection measures, the type and extent of vegetation, and the type of land uses in shoreland areas. In 1995 SEWRPC completed a study of shoreline erosion and bluff stability conditions along Lake Michigan for its entire length in the Southeastern Wisconsin Region.

The findings for Kenosha County are summarized in Table 8 and depicted on Map 7 and include bluff height, bluff stability, shoreline recession data, and beach width. This information is documented in greater detail in the SEWRPC Technical Report No. 36, *Lake Michigan Shoreline Recession and Bluff Stability in Southeastern Wisconsin: 1995*. Bluff stability field research was conducted at 18 sites in Kenosha County. A safety factor was calculated for potential failure surfaces within the bluffs using shear strengths and stresses. The score is defined as the ratio of the forces resisting shear, such as soil cohesion and friction, to the forces promoting shear, such as soil mass, along a failure surface. A factor of less than 1.0 is considered unstable, a factor of 1.0 to 1.1 is considered marginally stable, and a factor of greater than 1.1 is considered stable.

The nature of the Lake Michigan shoreline varies considerably within Kenosha County. At the north end, the shoreline is characterized by clayey bluffs ranging up to about 35 feet in height. The height of the bluff decreases steadily so that it is about 20 feet high at the northern limits of the City of Kenosha and typically four or five feet along the southern shoreline reaches of the County. Bluff stability safety factors ranged greatly, from 0.72 to 5.55, in Reach 3. Shoreline recession rates also ranged greatly from an average of 0 to 5.9 feet per year between 1963 and 1995. The beach width varies considerably, ranging from complete absence of beach in some places to over 275 feet in others.

Map 6
GENERALIZED TOPOGRAPHIC CHARACTERISTICS



Source: SEWRPC.

Table 8

BLUFF STABILITY AND SHORELINE RECESSION ALONG LAKE MICHIGAN IN KENOSHA COUNTY: 1995

Shoreline Analysis Reach (see Map 7)	Bluff Heights (feet)	Deterministic Bluff Stability Safety Factor		Shoreline Recession Data 1963-1995		Estimated Beach Width (feet)	
		1995 Conditions	1977 Conditions	Total (feet)	Annual Average (feet per year)	1995 Conditions	1977 Conditions
Reach 1	0-20	N/A	N/A	20-190	0.6-5.9	0-150	0-100
Reach 2	0-20	N/A	N/A	10-50	0.3-1.5	0-200	0-100
Reach 3 ^a	0-40	0.72-5.55	0.21-1.25	0-140	0.0-4.4	0-300	0-275

^aIncludes a portion of Racine County.

Source: SEWRPC.

Nonmetallic Mineral Resources⁷

Nonmetallic minerals include, but are not limited to, crushed stone (gravel), dimension stone, peat, clay, topsoil, asbestos, beryl, diamond, coal, feldspar, talc, and sand. Nonmetallic mines (quarries) in southeastern Wisconsin provide sand, gravel, and crushed limestone or dolomite for road building; peat for gardening and horticulture; and dimension stone for use in buildings, landscaping, and monuments. Nonmetallic minerals are important economic resources that should be taken into careful consideration whenever land is being considered for development. If an adequate supply of stone and sand is desired for the future, wise management of nonmetallic mineral resources and access to them is important. Map 8 shows nonmetallic mining sites in Kenosha County. The mines produce sand and gravel. Approximately 263 acres in Kenosha County are located within nonmetallic mining sites. Chapter NR 135 of the *Wisconsin Administrative Code* establishes a procedure for landowners to register marketable nonmetallic mineral deposits in order to preserve these resources. There were no registered nonmetallic mineral sites in Kenosha County as of October 1, 2006.

Areas Suitable for Sand and Gravel Extraction

Map 9 shows the location of potential commercially workable sand deposits and the location of potential commercially workable gravel deposits in the County, as identified by the NRCS. The NRCS rates each soil mapping unit as probable or improbable sources of sand or gravel. The rating is intended only to show the probability of the presence of material of suitable quality in workable quantities. Kenosha County has a moderate supply of sand and gravel deposits as a result of its glacial history. There are approximately 28,000 acres of land indicated to have potential sand and gravel deposits, which comprises about 16 percent of the County. The highest-quality deposits are found in the outwash areas of the County, particularly west of the Fox River, where the washing action of glacial meltwaters has sorted the sand and gravel into somewhat homogeneous deposits that are commercially more attractive. Most of the sand and gravel mining occurs in the Towns of Wheatland and Randall.

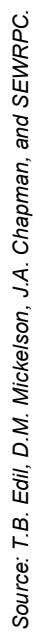
Surface Water Resources

Surface water resources, consisting of lakes and streams and their associated wetlands, floodplains, and shorelands, constitute an extremely important part of the natural resource base of the County. The contribution of surface water resources to economic development, recreational activity, and scenic beauty is immeasurable. The number of acres of surface waters, wetlands, and floodplains in the County are listed in Table 9.

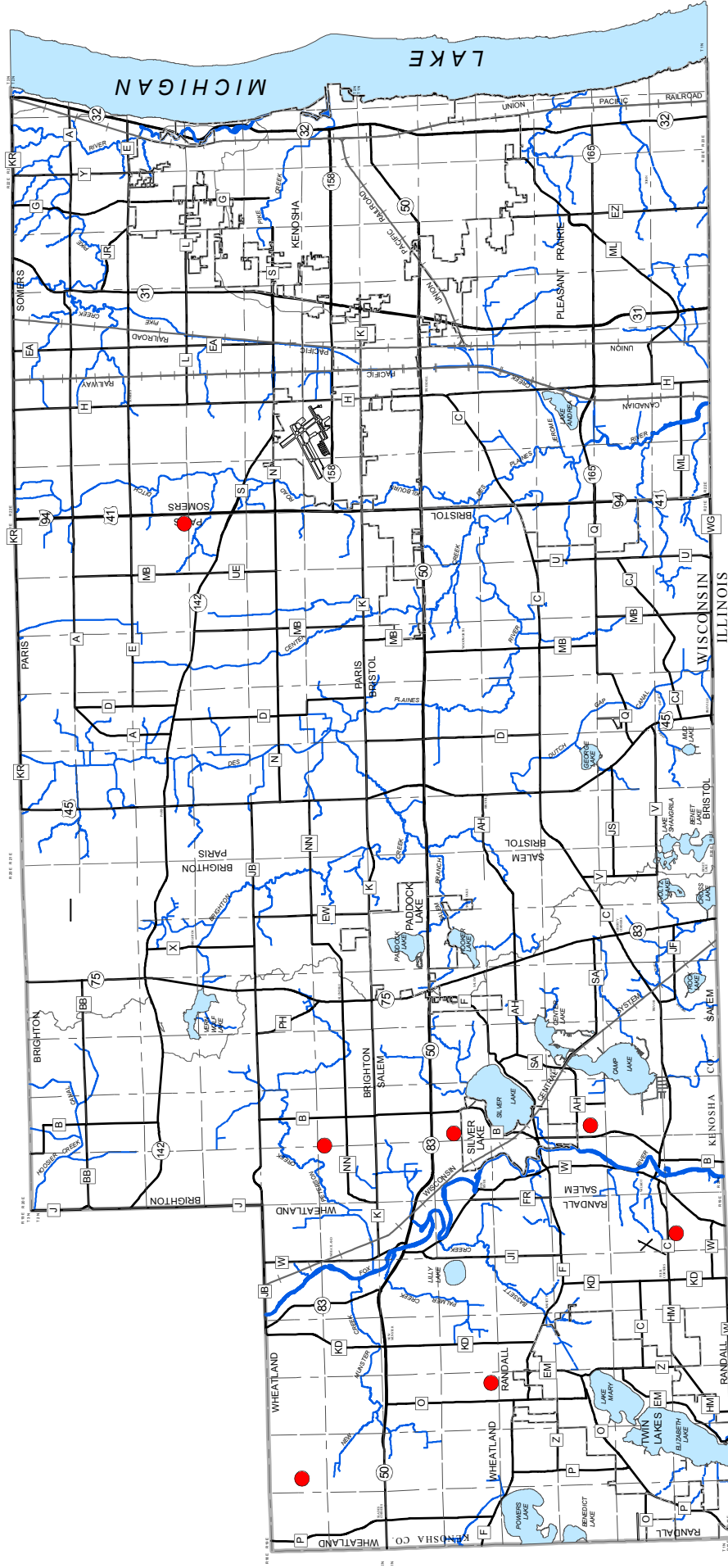
Both surface water and groundwater are interrelated components of a single hydrologic system. The groundwater resources are hydraulically connected to the surface water resources inasmuch as the former provide the base flow

⁷There are no marketable metallic mining resources in Kenosha County.

BLUFF STABILITY



Map 8
NONMETALLIC MINING SITES IN KENOSHA COUNTY: 2006



0 0.75 1.5 3



Miles

0 7,500 15,000 30,000



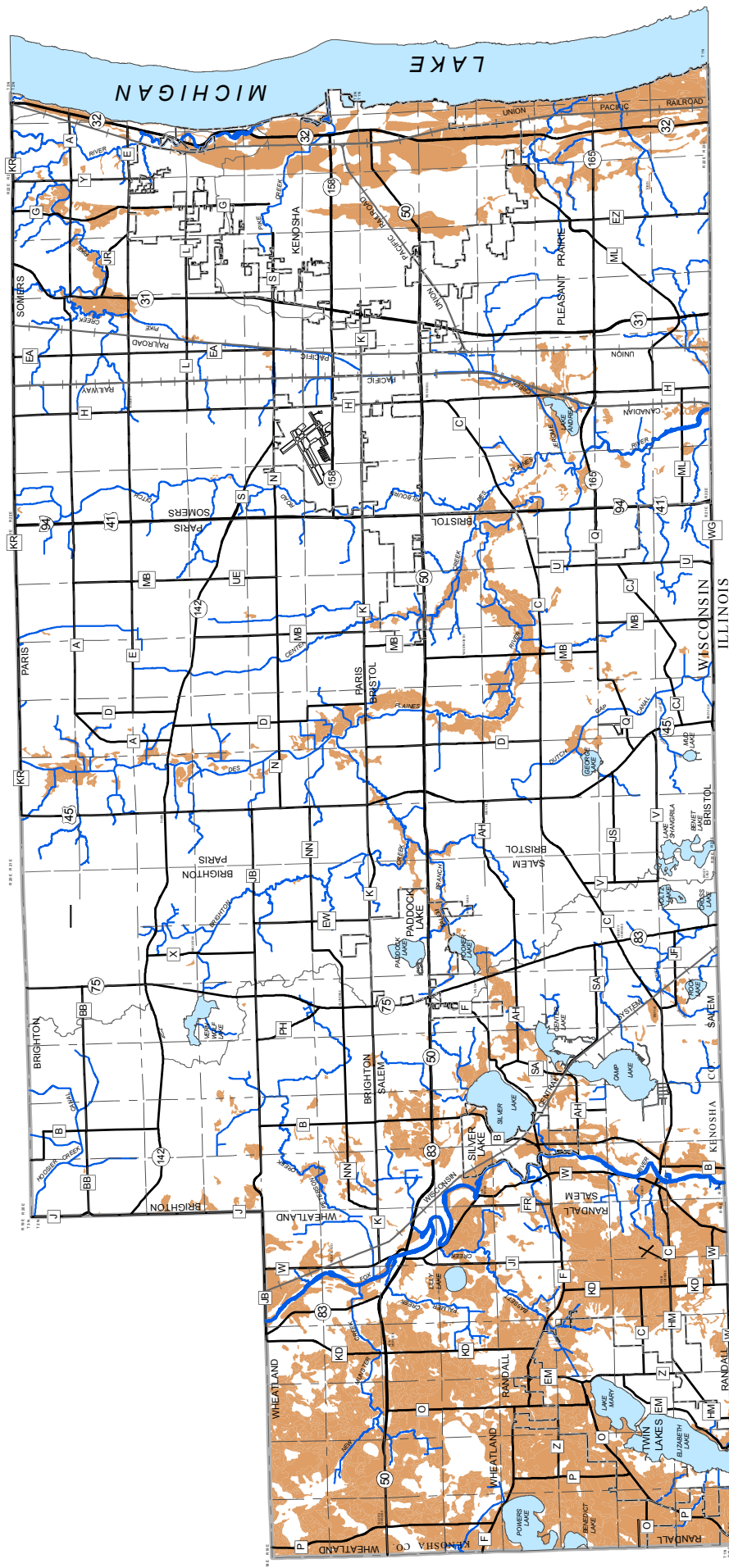
Feet

● NONMETALLIC MINING SITE

Source: Kenosha County and SEWRPC.

Map 9

AREAS WHERE SOIL SURVEY DATA INDICATE POTENTIAL SAND AND GRAVEL DEPOSITS IN KENOSHA COUNTY



AREA OF POTENTIAL SAND AND GRAVEL DEPOSIT

Source: U.S. Department of Agriculture, Natural Resource Conservation Service, Kenosha County, and SEWRPC.



Table 9

SURFACE WATER, WETLANDS, AND FLOODPLAINS IN KENOSHA COUNTY COMMUNITIES: 2006^a

Civil Division	Surface Water Area (acres)	Floodplain Area (acres)	Wetland Area (acres)
City of Kenosha.....	84	105.5	298
Village of Pleasant Prairie.....	337	3,680.3	3,168
Village of Silver Lake.....	1	171.4	176
Town of Brighton.....	330	1,051.5	2,037
Town of Bristol.....	318	3,261.6	2,409
Town of Paris.....	49	1,415.5	808
Town of Salem.....	1,876	3,605.2	2,945
Town of Somers.....	60	2,289.1	573
Town of Wheatland.....	333	1,920.7	2,275
Village of Genoa City.....	--	0.0	1
Village of Paddock Lake.....	141	240.1	154
Village of Twin Lakes.....	1,028	1,192.4	409
Town of Randall.....	470	719.5	813
Kenosha County	5,028	19,652.9	6,068

^aThe area within surface water and wetlands is based on the 2000 SEWRPC land use inventory using 2006 civil divisions.

Source: Federal Emergency Management Agency and SEWRPC.

of streams and contribute to inland lake levels. The surface water resources constitute the major source of supply for domestic, municipal, and industrial water users in Kenosha County.

Watersheds

A subcontinental divide that separates the Mississippi River and the Great Lakes-St. Lawrence River drainage basins crosses Kenosha County from the Town of Somers on the north to the Village of Pleasant Prairie on the south, as shown on Map 10. About 38,304 acres, or 22 percent of the County, are located east of the divide and drain to the Great Lakes-St. Lawrence River system; the remaining 139,836 acres, or 78 percent of the County, drain west to the Mississippi River.

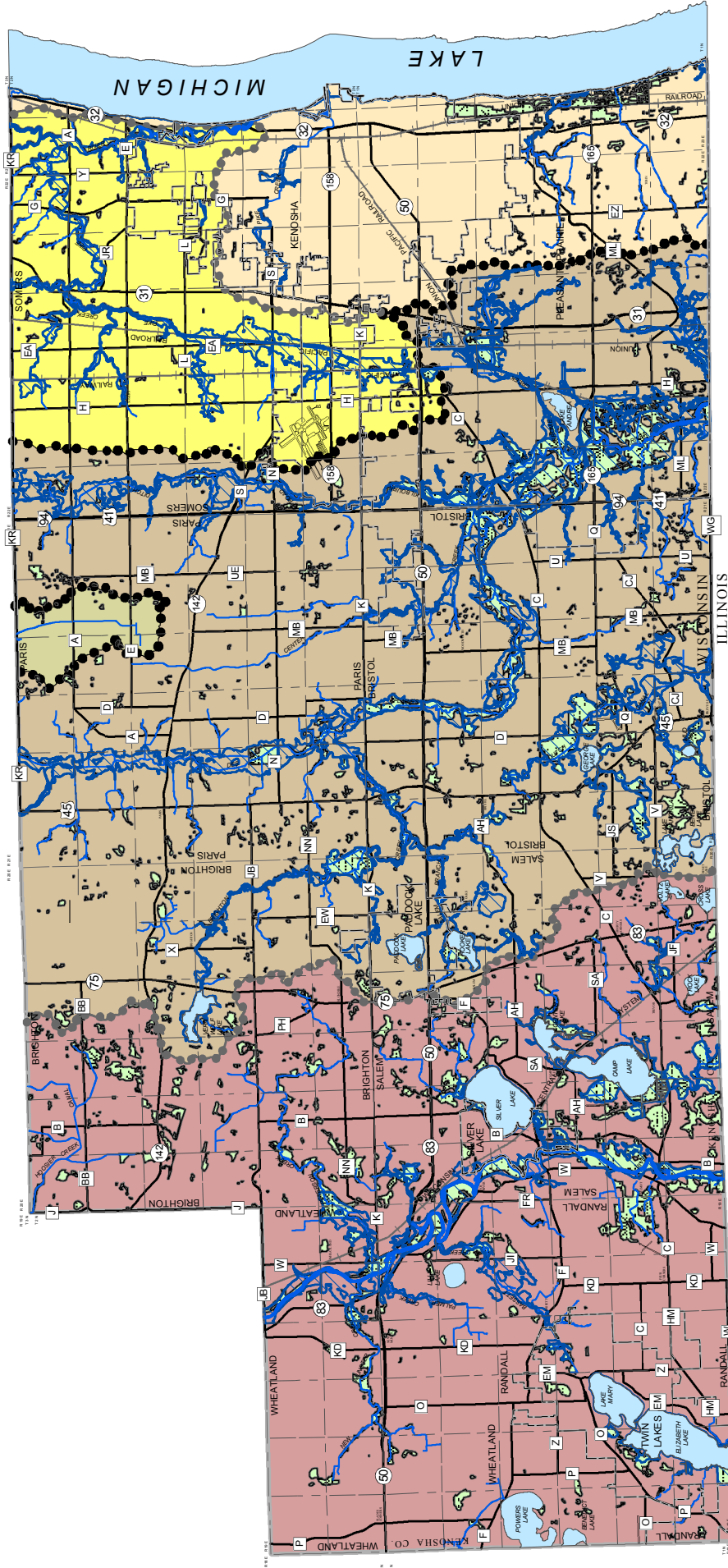
The subcontinental divide not only exerts a major physical influence on the overall drainage pattern of the County, but also carries with it legal constraints that, in effect, prohibit the diversion of any substantial quantities of Lake Michigan water across the divide. Areas east of the divide can utilize Lake Michigan as a source of water supply, with the spent water typically returned to the lake via the sanitary sewerage system. Areas west of the divide must utilize the groundwater reservoir as the supply source. A recent accord—the Great Lakes Charter Annex—signed by the governors of the eight States bordering the Great Lakes⁸ and the premiers of the Canadian provinces of Ontario and Quebec would ban most diversions of Great Lakes water outside the drainage basin, but make limited exceptions for communities and counties that straddle the watershed boundary. The accord must be approved by each State Legislature and the U.S. Congress before taking effect. If approved, each state and province would develop regulations to carry out the accord.

Watersheds within the County are shown on Map 10. The Great Lakes-St. Lawrence River drainage basin includes the Pike River watershed, which encompasses about 11 percent of the County, and the Root River

⁸Includes the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.

Map 10

SURFACE WATERS, WETLANDS, FLOODPLAINS, AND MAJOR WATERSHEDS IN KENOSHA COUNTY: 2005



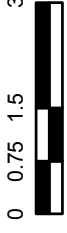
MAJOR WATERSHEDS

- DESPLAINES RIVER
- FOX RIVER
- PIKE RIVER
- ROOT RIVER
- DIRECT DRAINAGE TRIBUTARY TO LAKE MICHIGAN
- MAJOR WATERSHED
- SUBCONTINENTAL DIVIDE

100-YEAR RECURRENCE INTERVAL FLOODPLAIN

- WETLANDS
- SURFACE WATER

NOTE: Floodplains will be updated when the Federal Emergency Management Agency Map Modernization project is completed.



Source: Federal Emergency Management Agency, and SEWRPC.

watershed, which encompasses about 1 percent of the County. An additional 10 percent of the County drains directly to the Great Lakes-St. Lawrence River basin. The Mississippi River drainage basin includes the Des Plaines River watershed, which encompasses about 44 percent of the County, and the Fox River watershed, which encompasses about 35 percent of the County. The Regional Planning Commission has developed comprehensive plans for the Fox River watershed,⁹ Pike River watershed,¹⁰ and the Des Plaines River watershed.¹¹ Another source of information pertaining to the watersheds in Kenosha County is set forth in SEWRPC Planning Report No. 255, *A Land and Water Resource Management Plan for Kenosha County: 2000-2004*, September 2000.

Lakes and Streams

Perennial rivers and streams are defined as those which maintain, at a minimum, a small continuous flow throughout the year except under unusual drought conditions. There were 110 miles of named perennial rivers and streams in Kenosha County reported by the WDNR in their 1961 surface water inventory for the County.¹² An additional 55 miles of unnamed tributary streams draining into the named watercourses were identified in the adopted regional water quality management plan.¹³ As noted above, the County includes portions of the Des Plaines River and Fox River watersheds. Major streams in the Des Plaines River watershed, which is located in the central portion of the County, are Brighton Creek, Center Creek, the Des Plaines River, Dutch Gap Canal, Kilbourn Road Ditch, and the Salem Branch of Brighton Creek. Major streams in the Fox River watershed, which generally includes the area in the western portion of the County, include Bassett Creek, the Fox River, Hoosier Creek, New Munster Creek, Palmer Creek, Peterson Creek, and Trevor Creek. Barnes Creek, Kenosha South Creek, Pike Creek, and Pleasant Prairie Ditch, located in the eastern portion of Kenosha County, all drain directly to Lake Michigan. Of the 158 stream miles for which data were available, about 95 miles, or about 60 percent were reported to be of poor quality, and about 63 miles, or about 40 percent were reported to be of fair quality, based upon calculated biotic indices^{14,15} and/or the best professional judgment of WDNR staff conducting the assessments, as shown in Table 10. No water quality data were available for the remaining seven miles of streamcourses within Kenosha County. Major streams are shown on Map 11.

There are a total of 26 named lakes located entirely or partially within Kenosha County, 20 of which are over 50 acres in area, as shown on Map 11 and Table 11. Major lakes in the Des Plaines River watershed are Lake Andrea, Benet Lake, George Lake, Hooker Lake, Montgomery Lake, Paddock Lake, Lake Shangri-La, and Vern Wolf Lake. Major lakes in the Fox River watershed are Camp Lake, Center Lake, Dyer Lake, Lilly Lake, Lake Mary, Rock Lake, Silver Lake, and Voltz Lake. Lake Benedict, Cross Lake, Elizabeth Lake, and Powers Lake, also in the Fox River watershed, are located partially in Kenosha County. Together, these major lakes have a

⁹*Documented in SEWRPC Planning Report No. 12, A Comprehensive Plan for the Fox River Watershed, April 1969, and amended September 1973.*

¹⁰*SEWRPC Planning Report No. 35, A Comprehensive Plan for the Pike River Watershed, June 1983.*

¹¹*Documented in SEWRPC Planning Report No. 44, A Comprehensive Plan for the Des Plaines River Watershed, June 2003.*

¹²*Wisconsin Department of Natural Resources (Wisconsin Conservation Department), Surface Water Resources of Kenosha County, 1961.*

¹³*SEWRPC Planning Report No. 30, A Regional Water Quality Management Plan for Southeastern Wisconsin: 2000, Volume One, Inventory Findings, September 1978.*

¹⁴*Wisconsin Department of Natural Resources Technical Bulletin No. 132, Using a Biotic Index to Evaluate Water Quality in Streams, 1982.*

¹⁵*U.S. Department of Agriculture, Forest Service General Technical Report No. NC-149, Using The Index of Biotic Integrity (IBI) to Measure Environmental Quality in Warmwater Streams of Wisconsin, April 1992.*

Table 10

PERENNIAL STREAM CHARACTERISTICS IN KENOSHA COUNTY

River or Stream	Length (river miles)	Watershed	Water Quality ^a
Barnes Creek.....	3.0	Direct Drainage to Lake Michigan	Fair
Bassett Creek.....	5.1	Fox	Fair
Brighton Creek.....	17.5 ^b	Des Plaines	Fair to Good ^c
Center Creek.....	5.8	Des Plaines	Poor ^c
Des Plaines River.....	24.5	Des Plaines	Poor ^c
Dutch Gap Canal.....	5.8	Des Plaines	Poor ^c
Fox River.....	14.1	Fox	Fair
Hoosier Creek.....	21.8 ^d	Fox	Fair
Kenosha South Creek.....	1.0	Direct Drainage to Lake Michigan	-- ^e
Kilbourn Road Ditch.....	14.8	Des Plaines	Poor ^c
New Munster Creek.....	4.7	Fox	Fair
Palmer Creek.....	-- ^d	Fox	Fair
Peterson Creek.....	-- ^d	Fox	Fair
Pike Creek.....	3.7	Direct Drainage to Lake Michigan	Poor ^f
Pike River.....	38.5	Pike	Poor to Fair ^g
Pleasant Prairie Ditch.....	4.0	Direct Drainage to Lake Michigan	-- ^e
Salem Branch of Brighton Creek.....	-- ^b	Des Plaines	Poor ^c
Root River Canal, East Branch.....	2.0	Root	Poor ^h
Trevor Creek.....	3.0	Fox	-- ^e
Total	165.6	--	--

^aWater quality status as determined by the Wisconsin Department of Natural Resources based upon a calculated biotic index and/or the best professional judgment of staff conducting assessment.

^bBrighton Creek river length includes both Brighton Creek and the south branch (Salem Branch) of Brighton Creek.

^cThe Des Plaines River and its tributary streams, excluding Brighton Creek, have had major physical modifications to their channels, are impacted by high rates of siltation, and generally have had reported water quality problems associated with low dissolved oxygen, high phosphorus, and high fecal coliform concentrations. The lower reaches of the Des Plaines River mainstem have had reported water quality problems associated with toxic contaminants (heavy metals, hydrocarbons, and the pesticide heptachlor epoxide).

^dHoosier Creek stream length includes Hoosier, Palmer, and Peterson Creeks.

^eWater quality data are not available to make an accurate assessment.

^fPike Creek has had major modifications to its channel, is impacted by high rates of sedimentation, and has had reported water quality problems associated with high fecal coliform concentrations.

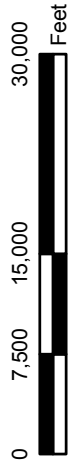
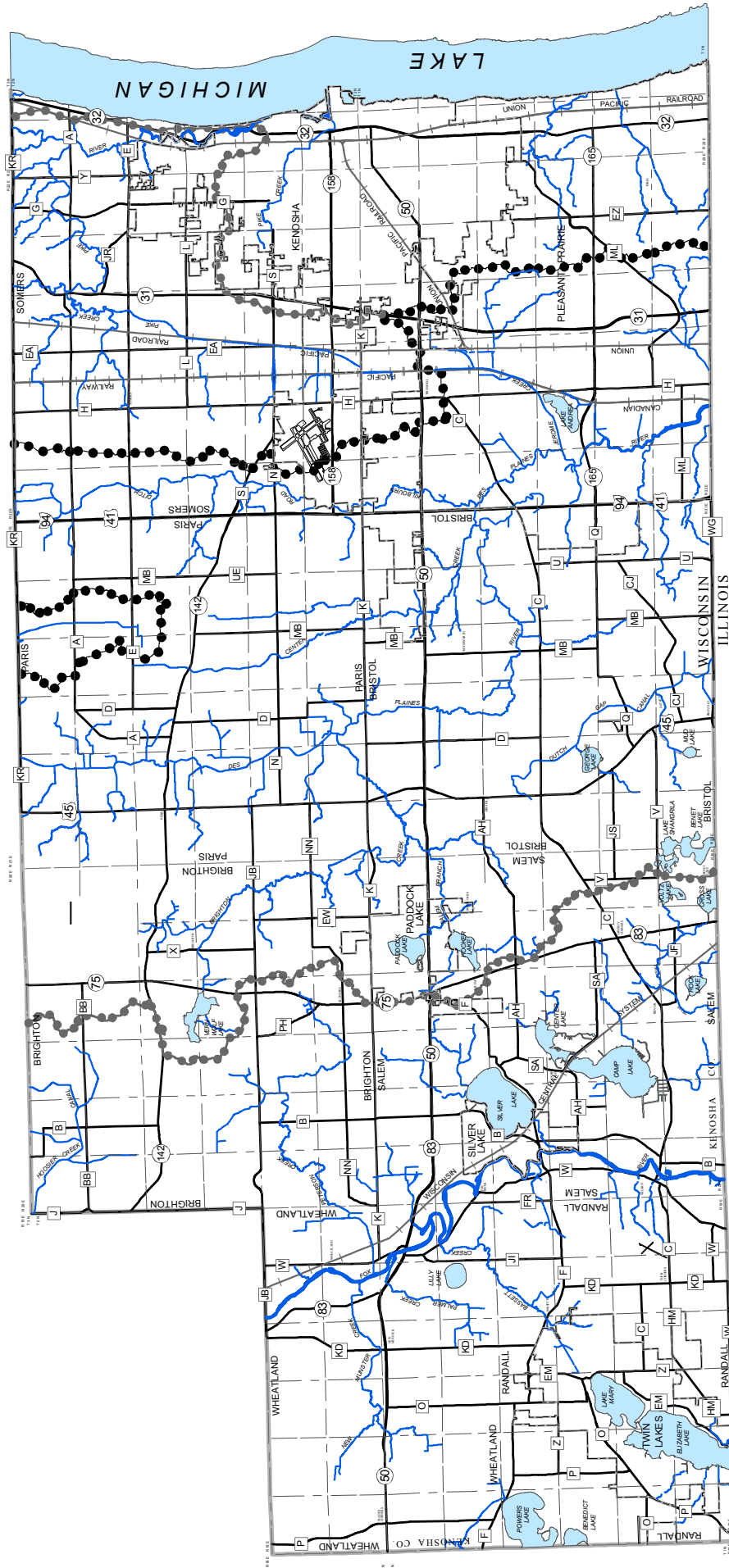
^gThe Pike River and its tributary streams have had moderate to major physical modifications to their channels, are impacted by high rates of sedimentation, and generally have had reported water quality problems associated with low dissolved oxygen and high fecal coliform concentrations.

^hThe East Branch of the Root River Canal has had reported water quality problems associated with low dissolved oxygen and high fecal coliform concentrations.

Source: SEWRPC.

combined surface area of about 3,836 acres in Kenosha County. The three largest lakes located entirely within the County are Silver Lake, with a surface area of about 526 acres; Camp Lake, with a surface area of about 464 acres; and Lake Mary, with a surface area of about 329 acres. The lake areas of Elizabeth Lake and Powers Lake located within Kenosha County are 689 and 377 acres, respectively. The majority of the streams and lakes within Kenosha County are fully or partially meeting recommended water use objectives, the WDNR has however, identified portions of two watercourses and several Lake Michigan beaches in Kenosha County as being impaired

Map 11
MAJOR LAKES AND RIVERS IN KENOSHA COUNTY



- PERENNIAL RIVER OR STREAM
- SURFACE WATER
- MAJOR WATERSHED
- SUBCONTINENTAL DIVIDE

Source: SEWRPC.

Table 11

MAJOR AND MINOR LAKES WITHIN KENOSHA COUNTY

Lake	Surface Area (acres)	Watershed	Lake Type	Maximum Depth (feet)	Trophic Status ^a
Paddock Lake	132	Des Plaines	Drained lake	32	Meso-eutrophic
Hooker Lake.....	120	Des Plaines	Drainage lake	27	Meso-eutrophic
Vern Wolf Lake	118	Des Plaines	Drainage lake	12	Eutrophic
Benet Lake.....	103	Des Plaines	Drained lake	24	Eutrophic
Lake Andrea.....	101	Des Plaines	Seepage lake	-	- _b
Lake Shangri-La.....	81	Des Plaines	Drained lake	-	- _c
George Lake	72	Des Plaines	Drainage lake	16	Eutrophic
Montgomery Lake	62	Des Plaines	Drained lake	23	Mesotrophic ^d
Lake Russo.....	23	Des Plaines	Seepage lake	-	- _b
Mud Lake	23	Des Plaines	Drained lake	15	Eutrophic ^d
Paasch Lake	22	Des Plaines	Drained lake	20	- _b
Lake Francis	17	Des Plaines	Drained lake	22	- _b
Lake Elizabeth	689 ^e	Fox	Drainage lake	32	Mesotrophic
Silver Lake	526	Fox	Drainage lake	43	Mesotrophic
Camp Lake.....	464	Fox	Drainage lake	17	Meso-eutrophic
Powers Lake	377 ^e	Fox	Drainage lake	33	Mesotrophic
Lake Mary	329	Fox	Drained lake	33	Mesotrophic
Center Lake	137	Fox	Drainage lake	28	Mesotrophic
Lilly Lake	84	Fox	Seepage lake	22	Meso-eutrophic
Voltz Lake	64	Fox	Drained lake	24	Eutrophic
Dyer Lake	63	Fox	Drainage lake	13	Eutrophic
Cross Lake.....	63 ^e	Fox	Drained lake	35	Eutrophic
Lake Benedict	59 ^e	Fox	Drained lake	38	Mesotrophic
Rock Lake	53	Fox	Drained lake	33	Mesotrophic ^d
Peat Lake.....	43	Fox	Drained lake	8	- _a
Flanagan Lake	11	Fox	Seepage lake	24	- _a
Total	3,836	- -	- -	- -	- -

^aTrophic status as determined by the Southeastern Wisconsin Regional Planning Commission based upon water chemistry data reported by Wisconsin Department of Natural Resources, and/or the U.S. Geological Survey, except as noted.

^bNo data available.

^cMaximum depth of Lake Shangri-La is not available separately. Historically, it has been combined with Benet Lake.

^dTrophic status as determined by the Wisconsin Department of Natural Resources based upon satellite telemetry.

^eThe area listed for Elizabeth Lake, Powers Lake, Cross Lake, and Lake Benedict include only those lake areas that fall within the jurisdictional boundaries of Kenosha County. The total areas are of 865, 459, 87, and 78 acres, respectively.

Source: Kenosha County Department of Planning and Development and SEWRPC.

or threatened by impairment. A complete discussion of water use objectives and water quality standards are set forth in Chapter III of this report.

Lakes and streams are readily susceptible to degradation through improper land use development and management. Water quality can be degraded by excessive pollutant loads, including nutrient loads, which enter from malfunctioning and improperly located onsite waste treatment systems, from sanitary sewer overflows, from construction and other urban runoff, and from careless agricultural practices. The water quality of lakes and streams may also be adversely affected by the excessive development of riparian areas and by the filling of peripheral wetlands, which remove valuable nutrient and sediment traps while adding nutrient and sediment sources. It is important that existing and future development in riparian areas be managed carefully to avoid further water quality degradation and to enhance the recreational and aesthetic values of surface water resources.

The trophic status of most of the lakes in Kenosha County is set forth in Table 11. Trophic status is an indicator of overall water quality. As of 1993, eight of the lakes for which data were available were classified as eutrophic, eight as mesotrophic, and four lakes as meso-eutrophic, in the regional water quality management plan update.¹⁶

Lake Protection and Rehabilitation Districts have been formed under Chapter 33 of the *Wisconsin Statutes* for Lake Benedict, Camp Lake, Center Lake, Elizabeth Lake and Lake Mary (Twin Lakes), George Lake, Hooker Lake, Lilly Lake, Lake Mary, Paddock Lake, Powers Lake, Lake Shangri-La, and Voltz Lake. The location of the lake districts are shown on Map 12. Lake districts are a special-purpose unit of government formed to maintain, protect, and improve the quality of a lake and its watershed. A lake management plan, or a component of such a plan, has been completed for the following lakes: Benet Lake-Lake Shangrila, Camp Lake, Center Lake, Elizabeth Lake, Lake George, Hooker Lake, Paddock Lake, Powers Lake, Lake Mary, and Voltz Lake. A comprehensive lake management plan update for Elizabeth Lake and Lake Mary is currently under preparation. Additional information regarding lake districts and adopted lake management plans is provided in Chapter III. The WDNR has also developed state of the basin reports which can be found on their website at <http://www.dnr.state.wi.us/org/gmu/gmu.html> these reports provide more information about the surface water resources and watersheds in Kenosha County.

Wetlands

Wetlands are generally defined as areas that have a predominance of hydric soils and that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of hydrophytic (water loving) vegetation.¹⁷ Wetlands generally occur in depressions and near the bottom of slopes, particularly along lakeshores and stream banks, and on large land areas that are poorly drained. Wetlands may, however, under certain conditions, occur on slopes and even on hilltops. Wetlands perform an important set of natural functions which include support of a wide variety of desirable, and sometimes unique, forms of plant and animal life; water quality protection; stabilization of lake levels and stream flows; reduction in stormwater runoff by providing areas for impoundment and storage; and protection of shorelines from erosion.

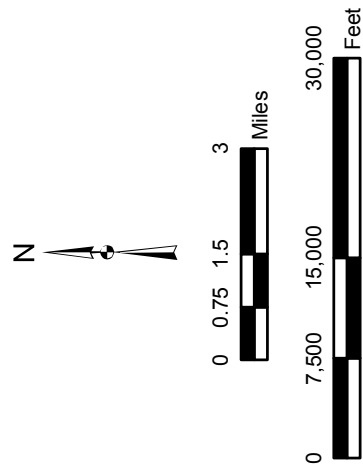
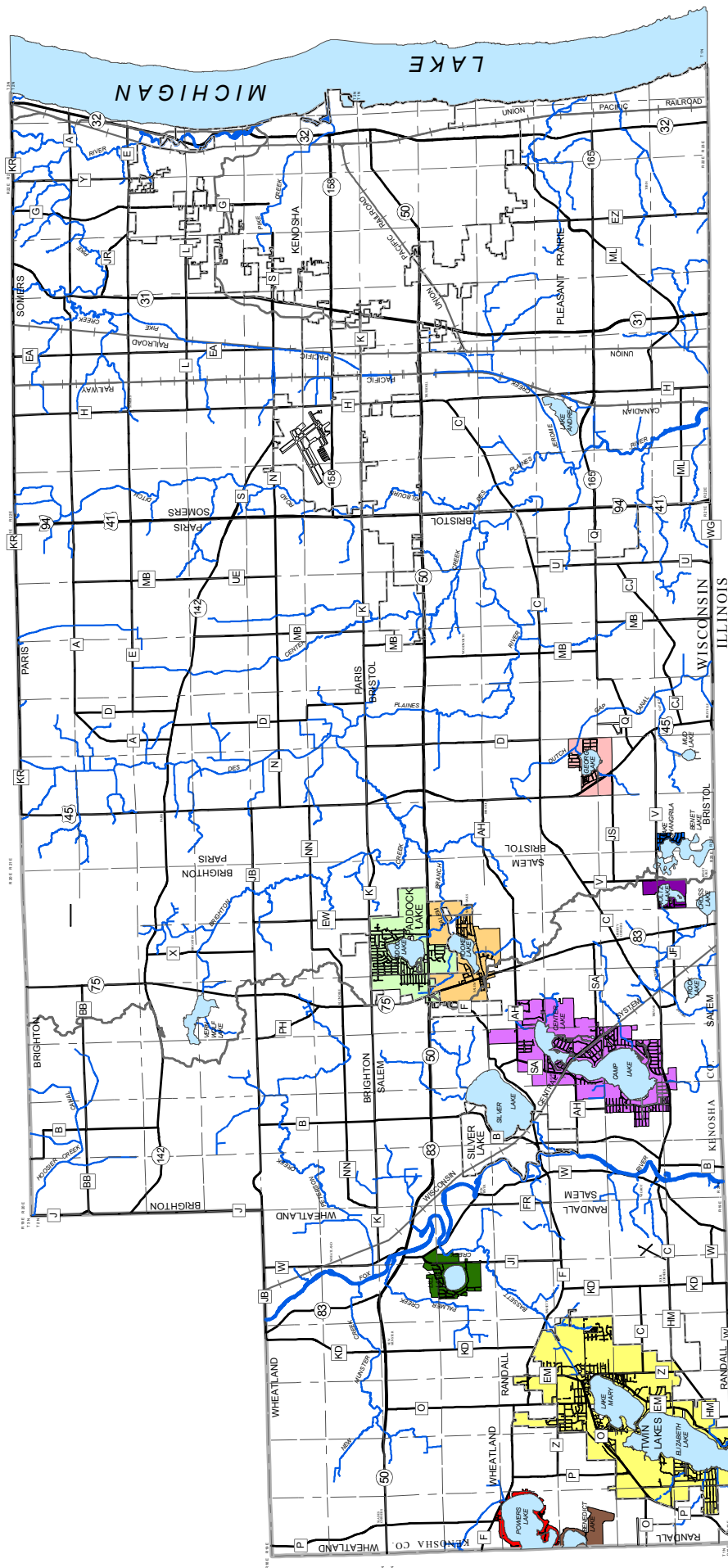
Wetlands identified in SEWRPC's regional land use inventory encompassed about 16,068 acres, or 9 percent of the County, in 2000. Wetlands, which are shown on Map 10, are identified based on the Wisconsin Wetlands Inventory completed in 1982, updated to the year 2000 as part of the regional land use inventory. It should be noted that, in addition to the wetlands shown on Map 10, certain other areas have been identified by the NRCS as farmed wetlands, which are subject to Federal wetland regulations.

Wetlands and their boundaries are continuously changing in response to changes in drainage patterns and climatic conditions. While wetland inventory maps provide a basis for areawide planning, detailed field investigations are often necessary to precisely identify wetland boundaries on individual parcels. Field investigations are generally conducted at the time a parcel is proposed to be developed or subdivided.

¹⁶*SEWRPC Memorandum Report No. 93, A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report, March 1995.*

¹⁷*The definition of "wetlands" used by SEWRPC is the same as that of the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency (USEPA). Under this definition, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency, and with a duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. This definition differs somewhat from the definition used by the WDNR. Under the WDNR definition, wetlands are areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions. As a practical matter, application of either the WDNR definition or the USEPA-Army Corps of Engineers-SEWRPC definition has been found to produce relatively consistent wetland identification and delineations in the majority of the situations in southeastern Wisconsin.*

Map 12
LAKE PROTECTION DISTRICTS IN KENOSHA COUNTY: 2006



Shoreland and Floodplain

Shorelands are defined by the *Wisconsin Statutes* as lands within the following distances from the ordinary high water mark of navigable waters: 1,000 feet from a lake, pond, or flowage; and 300 feet from a river or stream, or to the landward side of the floodplain, whichever distance is greater. In accordance with the requirements set forth in Chapters NR 115 (shoreland regulations) and NR 116 (floodplain regulations) of the *Wisconsin Administrative Code*, the Kenosha County shoreland and floodplain zoning ordinance restricts uses in wetlands located in the shorelands, and limits the uses allowed in the 100-year recurrence interval floodplain to prevent damage to structures and property and to protect floodwater conveyance areas and the storage capacity of floodplains. The ordinance also limits the removal of vegetation and other activities in shoreland areas and requires most structures to be set back a minimum of 75 feet from navigable waters. State law requires that counties administer shoreland and floodplain regulations in unincorporated areas.

Floodplains in Kenosha County were identified as part of the Kenosha County Flood Insurance Study (FIS)¹⁸ and the accompanying Flood Insurance Rate Map and through comprehensive watershed plans conducted by SEWRPC.¹⁹ Flood elevations and floodplain limits were identified through detailed studies along the Des Plaines River, Fox River, and Pike River and many of their tributaries. The FIS also depicts “approximate” floodplains along streams and lakes where no detailed engineering studies were conducted. Floodplain delineations developed as part of the FIS and the Des Plaines River, Fox River, and Pike River comprehensive watershed plans are shown on Map 10. In 2004, Kenosha County updated its shoreland and floodplain zoning map to incorporate the floodplains developed under the 2003 SEWRPC comprehensive plan for the Des Plaines River watershed. The floodplains shown on Map 10 encompass an area of approximately 14,218 acres, or 8 percent of the County. Chapter III provides additional information about the County shoreland and floodplain zoning ordinance and lake and stream classification study, including a map of shoreland areas in unincorporated portions of the County.

Groundwater Resources

Groundwater resources constitute another key element of the natural resource base of the County. Groundwater not only sustains lake levels and wetlands and provides the base flow of streams, but also serves as the water supply for domestic, municipal, and industrial water users in Kenosha County, with the exception of the City of Kenosha, the Village of Pleasant Prairie, and the Town of Somers, which obtain their water from Lake Michigan. Map 13 depicts the depth to the water table, or groundwater, in Kenosha County.

The subsurface units within Kenosha County that supply useable amounts of groundwater to wells are known as aquifers, and they differ widely in their ability to store and transport water. There are three major aquifers within Kenosha County. From the ground surface downward, they include: 1) the sand and gravel aquifer, 2) the Niagara dolomite aquifer, and 3) the sandstone aquifer. The first two aquifers are commonly referred to as the “shallow” aquifer, because of their proximity to the land surface and their intimate hydraulic interconnection. The latter, accordingly, is commonly known as the “deep” aquifer.

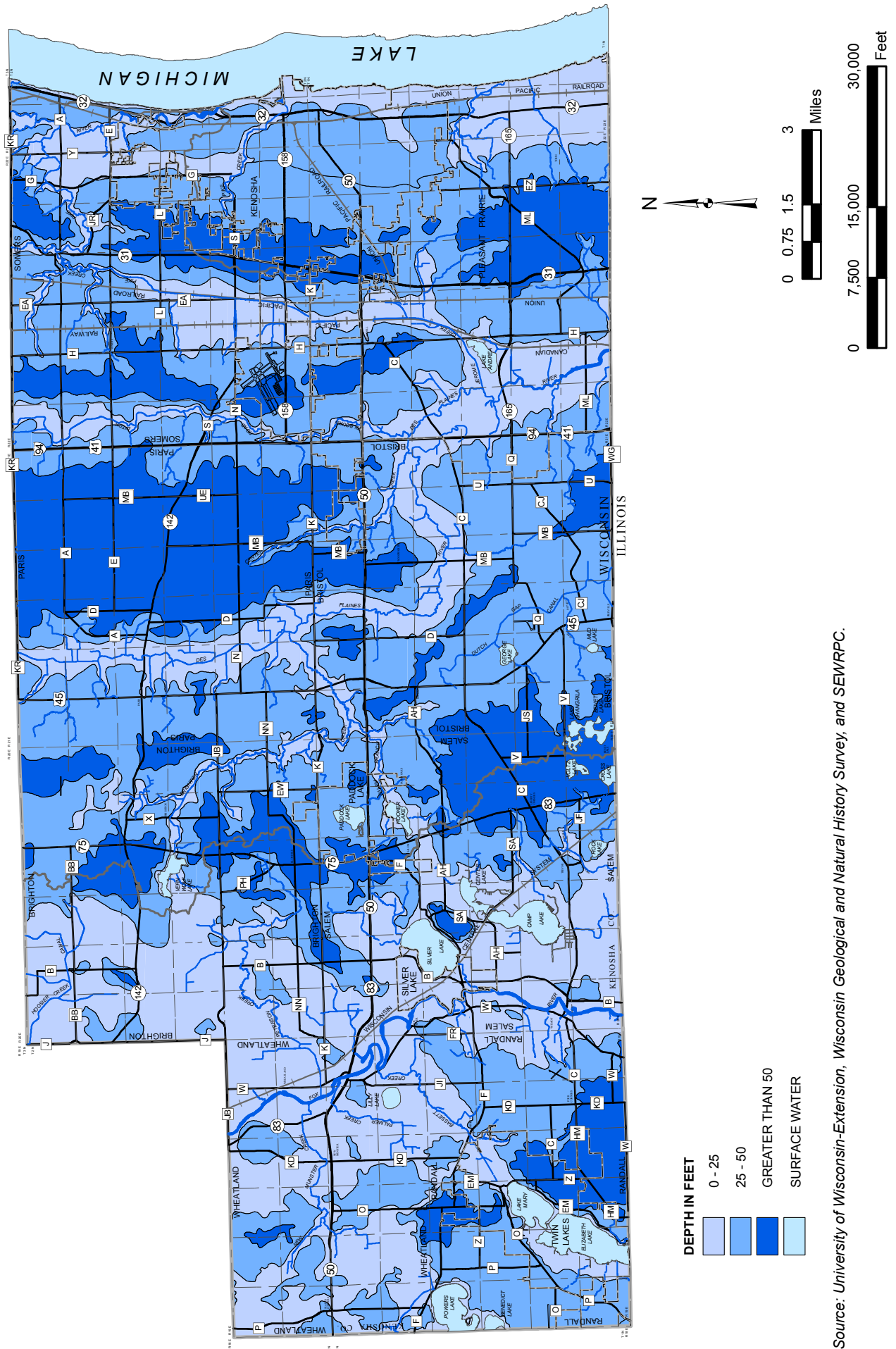
The sand and gravel aquifer consists of unconsolidated sand and gravel deposits in glacial drift and alluvium. These deposits occur over much of the County, either at the land surface or buried beneath less permeable drift, such as glacial till.

The Niagara dolomite aquifer in Kenosha County consists of Silurian Age dolomite, which overlies Maquoketa shale. The Maquoketa shale separates the Niagara and sandstone aquifers. The shale layer has very low permeability which restricts the vertical movement of water and largely confines water within the sandstone aquifer. The bottom of the sandstone aquifer is the surface of the impermeable Precambrian rocks. This aquifer is

¹⁸Federal Emergency Management Agency, Flood Insurance Study, County of Kenosha, Wisconsin, Unincorporated Areas, 1981.

¹⁹*Documented in SEWRPC Planning Report No. 44, op. cit., June 2000; SEWRPC Planning Report No 12, op. cit.; and SEWRPC Planning Report No 35, op. cit.. The Pike River plan was amended in 1996.*

Map 13
DEPTH TO SEASONAL HIGH GROUNDWATER TABLE IN KENOSHA COUNTY



continuous throughout the County and is a part of a large regional aquifer that is used as a source of water supply for major concentrations of urban development throughout southeastern Wisconsin and northeastern Illinois.

The source of most groundwater that is contained in the shallow aquifer is precipitation, which infiltrates and recharges this groundwater reservoir. The amount of infiltration largely depends on the type of soils that cover the land surface. Towards the eastern half of the County, the soils are high in clay content and have a high density, which reduces infiltration and permeability. The soils in the western half of the County, especially around the Fox River basin, are predominately composed of glacial outwash which is an assortment of stratified sands and gravel, and thus, have a higher infiltration rate and much greater permeability. The deep sandstone aquifer is primarily recharged west of Kenosha County, where the confining shale layer is absent. Discharge primarily occurs from pumping of wells, with some discharge directed towards surface water resources directly or through wetlands.

Two of the greatest concerns of the groundwater supply include contamination and over-usage. The vulnerability of groundwater to contamination is a combination of several factors; however, two of the most important elements are soil and subsurface material characteristics and depth to groundwater levels. Since the eastern half of the County is largely covered by glacial till soils with high clay content, contamination is not as much of a concern compared to the western part of the County. As illustrated on Map 13, a large portion of the western part of Kenosha County has depths to groundwater that range from zero to 25 feet. The shallowness to groundwater, in combination with the stratified sand and gravel characteristics of glacial outwash soils, make the Fox River basin the most sensitive to contamination.

Over the last century, the sandstone aquifer has seen a drawdown of its water levels. In the latter part of the 1800s and the early part of the 1900s, Racine and Kenosha Counties began to experience a decline in groundwater levels. The water levels in the sandstone aquifer are declining at a rate of up to six feet per year in some areas. Over time, this has led to more wells being drilled, deeper wells, and greater economic costs associated with supplying water to residents and industries in the County.

Like surface water, groundwater is susceptible to depletion in quantity and to deterioration in quality as a result of urban and rural development. Consequently, comprehensive planning must appropriately consider the potential impacts of urban and rural development on this important resource. Land use planning must also take into account, as appropriate, natural conditions that may limit the use of groundwater as a source of water supply, including the relatively high levels of naturally occurring radium that may occur in groundwater in the deep sandstone aquifer. More detailed information on groundwater conditions in the Southeastern Wisconsin Region, including Kenosha County is set forth in SEWRPC Technical Report No. 37, *Groundwater Resources of Southeastern Wisconsin*, June 2002, SEWRPC Technical Report No. 41, *A Regional Aquifer Simulation Model for Southeastern Wisconsin*, June 2005, and SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, in progress.

Forest Resources

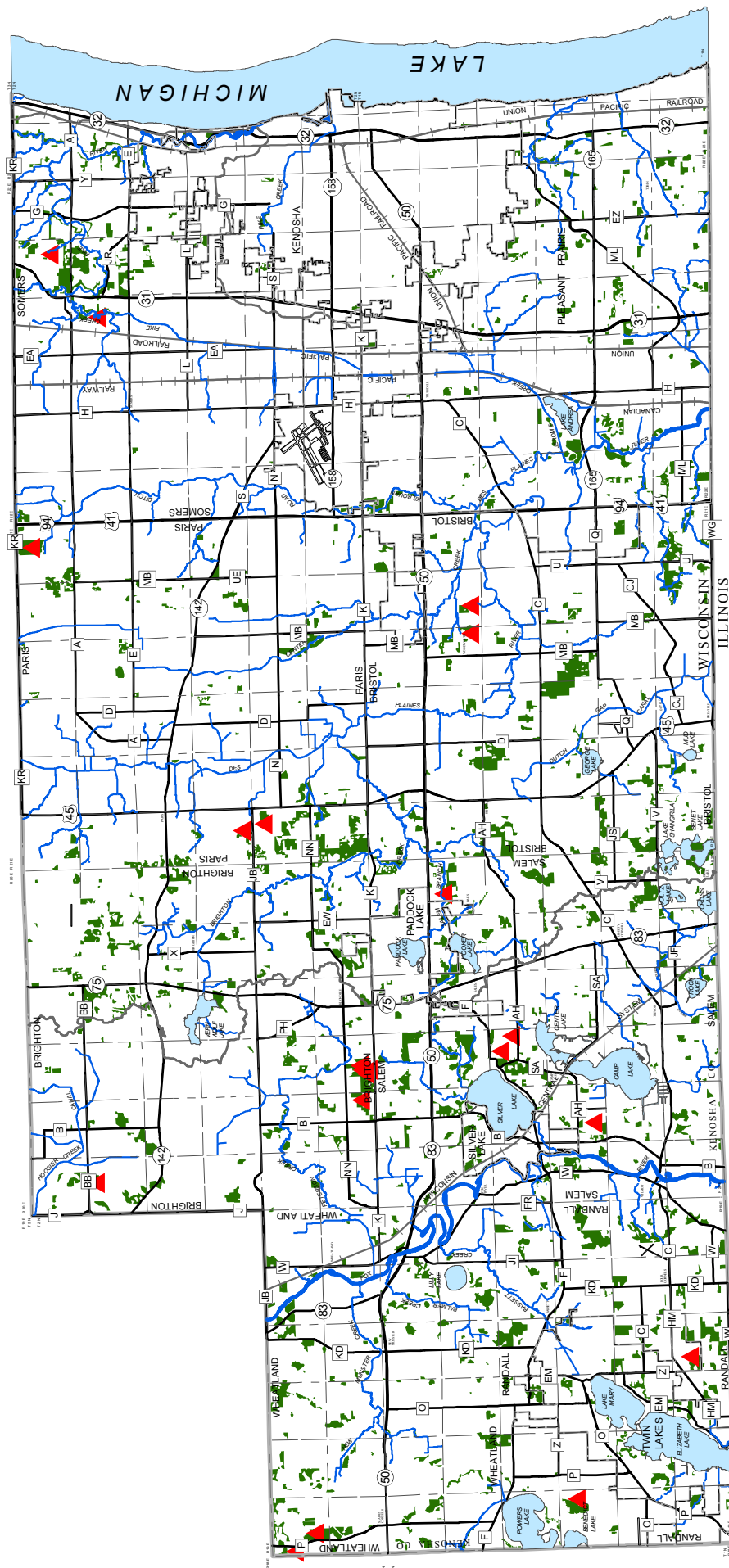
Woodlands

With sound management, woodlands can serve a variety of beneficial functions. In addition to contributing to clean air and water and regulating surface water runoff, woodlands help maintain a diversity of plant and animal life. The destruction of woodlands, particularly on hillsides, can contribute to excessive stormwater runoff, siltation of lakes and streams, and loss of wildlife habitat. Woodlands identified in the SEWRPC land use inventory are shown on Map 14. Woodlands are defined as upland areas of one acre or more in area, having 17 or more trees per acre (each deciduous tree measuring at least four inches in diameter 4.5 feet above the ground), and having canopy coverage of 50 percent or greater. Coniferous tree plantations and reforestation projects are also classified as woodlands. Table 12 lists the number of acres of woodlands in the County and each civil division. In 2000, woodlands encompassed over 9,243 acres, or about 5 percent of the County.²⁰

²⁰This data includes upland woods only, not lowland woods classified as wetlands, such as tamarack swamps. Lowland woods may be enrolled in the Managed Forest Law program as discussed in the following section.

Map 14

UPLAND WOODLANDS AND MANAGED FOREST LANDS IN KENOSHA COUNTY: 2000 AND 2006



UPLAND WOODLANDS: 2000



LANDS ENROLLED IN THE
DEPARTMENT OF NATURAL RESOURCES
MANAGED FOREST LAND PROGRAM: 2006



NOTE: Upland woods do not include lowland woods classified as wetlands, such as tamarack swamps. Lowland woods may be enrolled in the Managed Forest Land Program.



0 0.75 1.5 3



0 7,500 15,000 30,000



Source: Kenosha County and SEWRPC.

Table 12**WOODLANDS AND MANAGED FOREST LANDS IN
KENOSHA COUNTY COMMUNITIES: 2000 AND 2006**

Civil Division	Woodlands (acres in 2000)	Managed Forest Lands (acres in 2006)
City of Kenosha	138	--
Village of Pleasant Prairie	940	--
Village of Silver Lake.....	59	--
Town of Brighton	1,375	130
Town of Bristol	1,344	23
Town of Paris	997	121
Town of Salem	1,514	87
Town of Somers	603	63
Town of Wheatland	1,008	93
Village of Genoa City.....	4	--
Village of Paddock Lake.....	86	--
Village of Twin Lakes	265	38
Town of Randall	912	19
Kenosha County	9,243	574

Source: Kenosha County, Wisconsin Department of Natural Resources, and SEWRPC.

The Kenosha County C-2 Upland Resource Conservancy Zoning District helps to preserve, protect, enhance and restore all significant woodlands, areas of rough topography, and related scenic areas. Regulation of these areas also serves to control erosion and sedimentation and promote and maintain natural beauty. Specific principal and accessory uses, parcel area and width, setbacks, building height and square footage, and design standards apply in this zoning district.

Natural Areas and Critical Species Habitat Sites

A comprehensive inventory of natural resources and important plant and animal habitats was conducted by SEWRPC in 1994 as part of the regional natural areas and critical species habitat protection and management plan. The inventory systematically identified all remaining high-quality natural areas, critical species habitat, and sites having geological significance within the Region. Ownership of identified natural areas and critical species habitat sites in the County were reviewed and updated in 2006.

Natural Areas

Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. Natural areas are classified into one of three categories: natural areas of statewide or greater significance (NA-1), natural areas of countywide or regional significance (NA-2), and natural areas of local significance (NA-3). Classification of an area into one of these three categories is based on consideration of the diversity of plant and animal species and community type present, the structure and integrity of the native plant or animal community, the uniqueness of the natural features, the size of the site, and the educational value. A total of 39 natural areas, encompassing about 3,500 acres, or about 2 percent of the County, have been identified as natural areas. Of the 39 identified sites, six are classified as NA-1 sites and encompass about 600 acres, 16 are classified as NA-2 sites and encompass about 1,800 acres, and 17 are classified as NA-3 sites and encompass about 1,100 acres. Natural areas are shown on Map 15 and described in Table 13.

Critical Species Habitat and Aquatic Sites

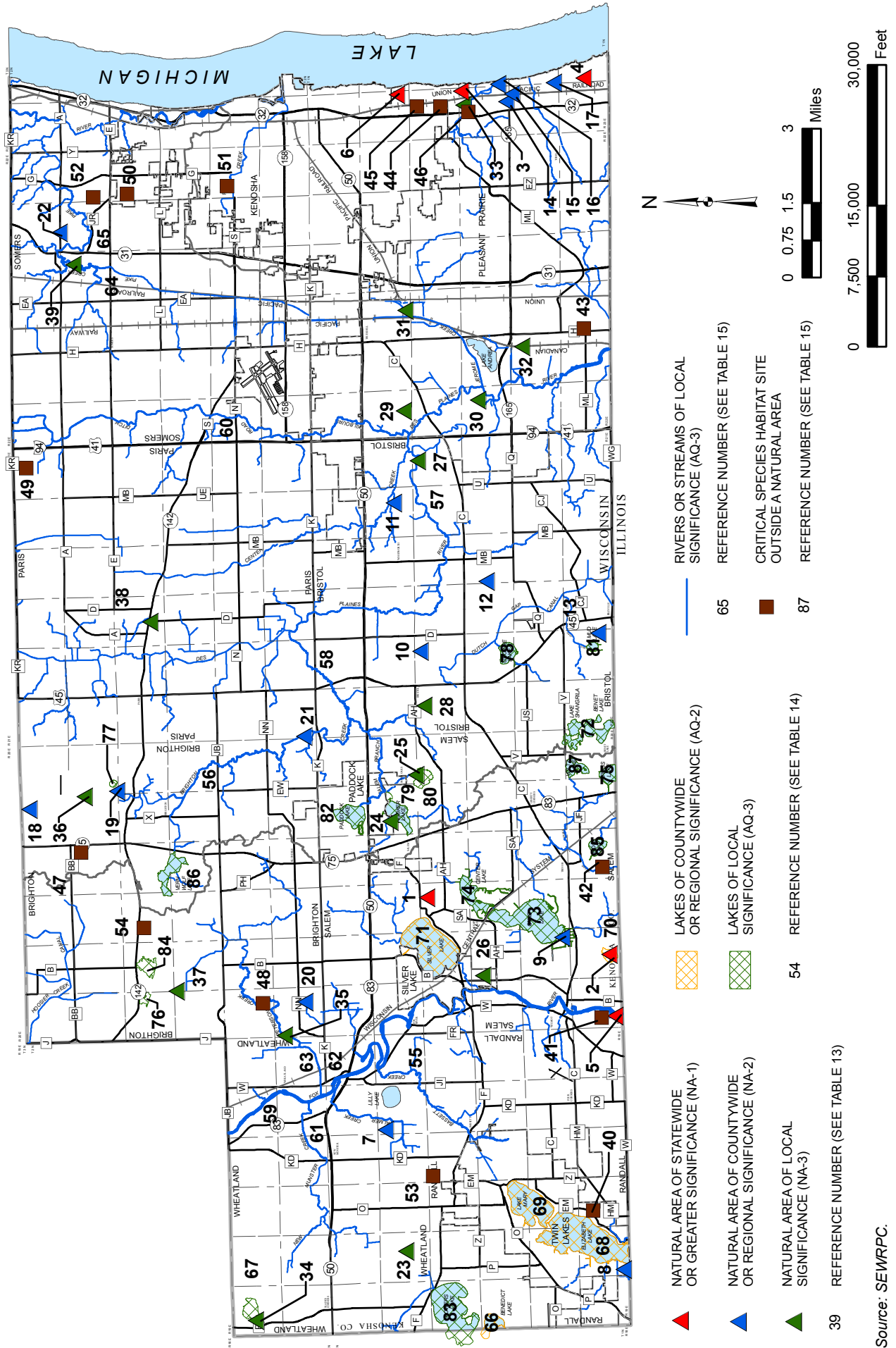
Critical species habitat sites consist of areas outside natural areas that are important for their ability to support rare, threatened, or endangered plant or animal species. Such areas constitute "critical" habitat considered to be important to the survival of a particular species or group of species of special concern. Fifteen sites supporting rare or threatened plant and animal species have been identified in Kenosha County. These sites encompass an area of 5,329 acres, or 3 percent of the County, and are shown on Map 15 and described in Table 14. There are also 33 aquatic habitat sites supporting threatened or rare fish, reptile, amphibian, or mussel species in the County, including 77 miles of rivers and streams and 3,567 acres of lake waters. Aquatic habitat sites are shown on Map 15 and described in Table 15.

Wisconsin Legacy Places

In 2006, the WDNR completed an inventory intended to identify the places believed to be most critical to meet the State's conservation and recreation needs over the next fifty years. The resulting report provides background information for use by landowners, nonprofit conservation groups, local governments, State and Federal agencies, and other interests in decision-making about land protection and management in the vicinity of the identified legacy places. A total of 229 such legacy places were identified statewide. The study is documented in a report entitled *Wisconsin Land Legacy Report*, dated 2006.

Map 15

NATURAL AREAS AND CRITICAL SPECIES HABITAT SITES IN KENOSHA COUNTY: 1994



Source: SEWRPC.

Table 13

NATURAL AREAS IN KENOSHA COUNTY: 2006^a

Number on Map 15	Area Name	Classification Code ^b	Location	Ownership	Size (acres)	Description and Comments
1	Silver Lake Bog State Natural Area	NA-1 (SNA, RSH)	T1N, R20E, Section 16; Town of Salem	Silver Lake Sportsmen's Club and other private	18	Lacking many of the typical northern bog species, this area nevertheless remains one of the better acid bogs in the Region. Few bogs of this quality occur this far south. Typical species include tamarack, pitcher plant, round-leaved sundew, cranberry, winterberry, and bog buckbean
2	Peat Lake State Natural Area	NA-1 (SNA)	T1N, R20E, Section 32; Town of Salem	Department of Natural Resources and private	140	One of the few undeveloped lakes in Kenosha County, isolated from roads and houses. Shallow and somewhat alkaline, it is bordered by a wide belt of shallow marsh and sedge meadow. Important nesting and feeding refuge for waterfowl. Site also contains a colony of the rare bird species black tern
3	Carol Beach Low Prairie and Panné State Natural Area	NA-1 (SNA, RSH)	T1N, R23E, Sections 18 and 19; Village of Pleasant Prairie	Department of Natural Resources, Village of Pleasant Prairie, and private	40	A rich low prairie and calcareous fen on dune-and-swale topography. A number of rare plant species, including the State-designated endangered smooth phlox (<i>Phlox glaberrima</i>), are present
4	Chiwaukee Prairie State Natural Area	NA-1 (SNA, RSH)	T1N, R23E, Sections 31 and 32; Village of Pleasant Prairie	Department of Natural Resources, The Nature Conservancy, University of Wisconsin-Parkside, and other private	308	Extremely rich prairie and marsh on gentle swell-and-swale topography created when the level of glacial Lake Michigan was lowered in stages. The resulting different micro-environments help support great species diversity. Over 400 plant species have been documented in the prairie, some of which are very rare in the State. Scattered oaks in portions of the site give it a savanna-like aspect locally. An incomparable site, it is a National Natural Landmark
5	Stopa Fen	NA-1 (RSH)	T1N, R20E, Section 31; Town of Salem	Wilmot Ski Hill	9	High-quality fen with both seeping and bubbling springs, located adjacent to the Fox River. A large number of unusual species are present, such as beaked spike-rush (<i>Eleocharis rostellata</i>), tussock bulrush (<i>Scirpus cespitosus</i>), Ohio goldenrod (<i>Solidago ohioensis</i>), false asphodel (<i>Tofieldia glutinosa</i>), and common bog arrow-grass (<i>Triglochin maritimum</i>). Threatened by ski-hill operations

Table 13 (continued)

Number on Map 15	Area Name	Classification Code ^b	Location	Ownership	Size (acres)	Description and Comments
6	Kenosha Sand Dunes and Low Prairie	NA-1 (RSH)	T1N, R23E, Sections 7 and 8; City of Kenosha	City of Kenosha, Department of Natural Resources, and private	99	One-half mile of Lake Michigan frontage containing well-developed dunes and dune succession patterns (fore dunes to swale to wet prairie). The dunes are disturbed by off-road vehicle use, and the shore has been ripped. An ancient hardwood forest lies beneath the dunes. This is one of the few dune systems in Southeastern Wisconsin. Several uncommon species are present, including sea rocket (<i>Cakile edentula</i>), sand reed (<i>Calamovilfa longifolia</i>), seaside spurge (<i>Euphorbia polygonifolia</i>), common bugseed (<i>Corispermum hyssopifolium</i>), smooth phlox (<i>Phlox glaberrima</i>), and marsh blazing-star (<i>Liatris spicata</i>)
--	Subtotal: 6 sites	NA-1	--	--	614	--
7	New Munster Shrub-Carr and Tamarack Relict	NA-2 (SNA, RSH)	T1N, R19E, Sections 2, 3, 10, 11; Town of Wheatland	Department of Natural Resources and private	384	Wetland complex of shrub-carr, sedge meadow, relict tamaracks, and stream, with an upland dry-mesic wooded island. Site is recovering from past disturbance. Some northern relicts, such as winterberry, yellow birch, and starflower are present. Many species of nesting birds use the area
8	Elizabeth Lake Lowlands	NA-2	T1N, R19E, Section 31; Town of Randall T1N, R19E, Section 32; Village of Twin Lakes	Private	48	Good-quality wetland complex at the southwest end of Elizabeth Lake, consisting of sedge meadow, shallow marsh, and shrub-carr. The wetland continues south into Illinois
9	Camp Lake Marsh	NA-2	T1N, R20E, Sections 20, 21, 28, 29, 32, 33; Town of Salem	Department of Natural Resources, Kenosha County, Town of Salem, and private	293	Deep and shallow marsh dominated by cattails and soft-stem bulrush. The lake itself is especially rich in aquatic plant species, including a large population of ditch-grass (<i>Ruppia maritima</i>), a coastal plain plant of brackish waters. The marsh has been extensively ditched. Site also contains a colony of the rare bird species black tern
10	Merkel Woods	NA-2	T1N, R21E, Sections 8 and 17; Town of Bristol	Private	91	A relatively large, good-quality dry-mesic woods, dominated by oaks but with numerous smaller ashes, basswoods, and yellow bud hickories. The ground flora is diverse. One of the larger intact woods in this part of the Region
11	Benedict Prairie	NA-2 (RSH)	T1N, R21E, Section 11; Town of Bristol	University of Wisconsin-Milwaukee	6	A small, but rich, wet-mesic to mesic prairie remnant located along an abandoned railway right-of-way. The site is burned periodically to reduce weedy invaders
12	Bristol Woods	NA-2 (RSH)	T1N, R21E, Sections 21 and 22; Town of Bristol	Kenosha County and private	181	The largest block of woods remaining in this part of the Region. This is a rich and diverse xeric to dry-mesic woods that is recovering from past grazing and selective cutting. Important as nesting habitat for forest-interior-breeding birds

Table 13 (continued)

Number on Map 15	Area Name	Classification Code ^b	Location	Ownership	Size (acres)	Description and Comments
13	Mud Lake Sedge Meadow	NA-2 (RSH)	T1N, R21E, Sections 32 and 33; Town of Bristol	Town of Bristol and private	55	Good-quality wetland complex consisting of shallow marsh, sedge meadow, low prairie, fresh (wet) meadow, and shrub-carr. Species diversity is good, including a number of uncommon ones
14	104th Street Mesic Prairie	NA-2 (RSH)	T1N, R23E, Section 19; Village of Pleasant Prairie	Department of Natural Resources and private	10	Good-quality patch of mostly mesic prairie, with good species diversity. Critical plant species are present
15	Carol Beach Prairie	NA-2 (RSH)	T1N, R23E, Sections 19, 20, 29, 30; Village of Pleasant Prairie	Department of Natural Resources, Village of Pleasant Prairie, and private	71	A rich complex of low to dry prairie, with fresh (wet) meadow, sedge meadow, shrub-carr, and shallow marsh communities on dune-and-swale topography. Critical plant species are present
16	Barnes Creek Dunes and Panné	NA-2 (RSH)	T1N, R23E, Section 20; Village of Pleasant Prairie	Village of Pleasant Prairie, Department of Natural Resources, and private	9	An unusual mixture of dry prairie and calcareous fen plant species on dune-and-swale topography, adjacent to Barnes Creek. Several critical species are present
17	Tobin Road Prairie	NA-2 (RSH)	T1N, R23E, Sections 29 and 30; Village of Pleasant Prairie	Department of Natural Resources and private	14	A portion of the northern Chiwaukee Prairie area containing rich low and dry prairies on dune- and-swale topography
18	Schroeder Road Marsh	NA-2	T2N, R20E, Sections 1 and 2; Town of Brighton	Private	111 ^C	Large wetland area of shallow cattail marsh and sedge meadow that extend into Racine County. Perimeter has been disturbed but interior is intact.
19	Friendship Lake Marsh	NA-2	T2N, R20E, Sections 11, 12, 13, 14; Town of Brighton	Private	119	Large cattail marsh and sedge meadow surrounding a small, but good-quality, kettle lake. Valuable feeding and nesting habitat for a variety of marshland birds. Recent shoreline construction activities have lowered the ecological value
20	CTH NN Sedge Meadow	NA-2	T2N, R20E, Section 31; Town of Brighton	Private	61	Good-quality sedge meadow, with little evidence of past disturbance and few nonnative species. A good example of this community type
21	Harris Marsh and Oak Woods	NA-2	T2N, R20E, Section 36; Town of Brighton T2N, R21E, Section 31; Town of Paris T1N, R20E, Section 1; Town of Salem	University of Wisconsin-Parkside and private	225	A large, good-quality marsh adjacent to Brighton Creek. A grazed former oak opening forms the eastern upland border
22	Petrifying Springs Woods	NA-2 (RSH)	T2N, R22E, Sections 2 and 11; Town of Somers	Kenosha County, University of Wisconsin-Parkside, and private	145	A rich southern mesic to dry-mesic hardwood forest dominated by white and red oaks, white ash, sugar maple, and basswood. The undulating topography is covered by a very diverse spring flora, including a large population of twinleaf (<i>Jeffersonia diphylla</i>), a State-designated species of special concern. One of the better woodland areas remaining in Southeastern Wisconsin
--	Subtotal: 16 sites	NA-2	--	--	1,820	--

Table 13 (continued)

Number on Map 15	Area Name	Classification Code ^b	Location	Ownership	Size (acres)	Description and Comments
23	Powers Lake Tamarack Relict	NA-3	T1N, R19E, Sections 8 and 9; Town of Wheatland	Twin Lakes Sportsmen's Club and other private	152	A large but disturbed wetland complex of marsh, sedge meadow, shrub-carr, and relict tamaracks. Agricultural use on the periphery has adversely affected the area
24	Hooker Lake Marsh	NA-3	T1N, R20E, Section 11; Town of Salem	Department of Natural Resources	47	Deep and shallow cattail marsh on the northwest side of Hooker Lake
25	Montgomery Lake Marsh	NA-3	T1N, R20E, Sections 12 and 13; Town of Salem	Town of Salem and private	47	Cattail-dominated deep and shallow marsh bordering Montgomery Lake
26	CTH B-CTH AH Sedge Meadow	NA-3	T1N, R20E, Section 20; Town of Salem	Private	12	Located near the intersection of CTH B and CTH AH, this small but good-quality sedge meadow contains a large number of native species. Disturbance is limited to the wetland borders
27	Des Plaines River Wetlands	NA-3	T1N, R21E, Sections 12, 13, 14; Town of Bristol	Private	66	A one-mile stretch of the Des Plaines River west of IH 94. Wetlands include sedge meadow, shallow marsh, and lowland hardwoods
28	Salem Road Marsh	NA-3	T1N, R21E, Section 18; Town of Bristol	Conservation Club of Kenosha	27	Shallow, cattail-dominated marsh
29	Lake Russo Prairie Remnant	NA-3 (RSH)	T1N, R22E, Section 7; Village of Pleasant Prairie	Private	6	A small, moderate- to good-quality wet-mesic prairie remnant that is suffering disturbance by local residents
30	Des Plaines River Lowlands	NA-3 (RSH)	T1N, R22E, Sections 17, 18, 19, 20; Village of Pleasant Prairie	Village of Pleasant Prairie and private	413	Extensive wetland and upland complex along the Des Plaines River, significant because of its open space and wildlife habitat. Contains xeric oak woods, mesic and wet-mesic prairie, fresh (wet) meadow, and riverine forest. The State-designated endangered prairie white-fringed orchid (<i>Platanthera leucophaea</i>) has been found here
31	Bain Station Railroad Prairie	NA-3 (RSH)	T1N, R22E, Section 9; Village of Pleasant Prairie	Des Plaines Wetland Conservancy	5	A small, moderate- to good-quality mesic to wet-mesic prairie remnant along an abandoned railway right-of-way. Dominated by big bluestem, Indian grass, prairie dock, and goldenrods
32	Pleasant Railroad Prairie	NA-3 (RSH)	T1N, R22E, Sections 29 and 32; Village of Pleasant Prairie	Des Plaines Wetland Conservancy	5	Discontinuous remnants of the once-extensive wet-mesic prairie of southern Kenosha County, bordering double tracks. Small patches are of good quality, containing some regionally uncommon species
33	Carol Beach Estates Prairie	NA-3 (RSH)	T1N, R23E, Section 19; Village of Pleasant Prairie	Private	7	A rich wet to wet-mesic prairie on sandy soils that is threatened by shrub invasion. Critical plant species are present
34	Dyer Lake Sedge Meadow	NA-3	T2N, R19E, Section 30; Town of Wheatland	Kenosha Boy Scouts and other private	40	Good-quality wetland complex on west side of Dyer Lake. Consists of sedge meadow, shrub-carr, and deep and shallow marsh. The site is somewhat alkaline. Good native species diversity

Table 13 (continued)

Number on Map 15	Area Name	Classification Code ^b	Location	Ownership	Size (acres)	Description and Comments
35	Peterson Creek Sedge Meadow	NA-3	T2N, R19E, Section 36; Town of Wheatland T2N, R20E, Section 31; Town of Brighton	Private	69	This moderate- to good-quality wetland complex bordering Peterson Creek consists of sedge meadow and cattail marsh. The highest-quality area lies southeast of the creek, where calciphilic species are present
36	Section 11 Wetlands and Oak Woods	NA-3	T2N, R20E, Sections 11 and 12; Town of Brighton	Private	130	A moderate-quality wetland complex, consisting of sedge meadow and cattail marsh, bordered by a disturbed oak woods
37	Bong Low Prairie	NA-3 (RSH)	T2N, R20E, Sections 19 and 20; Town of Brighton	Department of Natural Resources	2	A series of small patches of remnant low prairie within the Bong State Recreation Area. Disturbance history varies, but the two areas adjacent to north-south road are of good quality. Good display of the marsh blazing-star (<i>Liatris spicata</i>)
38	Paris (Ehlen) Prairie Remnant	NA-3 (RSH)	T2N, R21E, Section 16; Town of Paris	Private	1	A small but generally good-quality remnant of the once-extensive mesic prairie that formerly occupied central Kenosha County. Critical plant species are present
39	Pike River Low Woods	NA-3 (RSH)	T2N, R22E, Sections 3 and 10; Town of Somers	Hawthorn Hollow Nature Sanctuary and private	66	Good-quality wet-mesic forest in lowlands and dry-mesic forest on uplands bordering the Pike River. Contains a rich and diverse ground flora. A small prairie remnant is present within the Hawthorn Hollow Nature Sanctuary. This is probably the most natural remaining stretch of the Pike River
--	Subtotal: 17 sites	NA-3	--	--	1,095	--
--	Total: 39 sites	NA-3	--	--	3,530	--

^aSites were initially identified as part of the regional natural areas plan, documented in SEWRPC Planning Report No. 42, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, September 1997 Inventory conducted in 1994; ownership and area information were updated in 2006.

^bNA-1 identifies Natural Area sites of Statewide or greater significance

NA-2 identifies Natural Area sites of countywide or regional significance

NA-3 identifies Natural Area sites of local significance

SNA, or State Natural Area, identifies those sites officially designated as State Natural Areas by the State of Wisconsin Natural Areas Preservation Council

RSH, or Rare Species Habitat, identifies those sites which support rare, threatened, or endangered animal or plant species officially designated by the Wisconsin Department of Natural Resources.

^cSchroeder Road Marsh straddles the county line between Kenosha and Racine Counties. An additional 77 acres are located within Racine County.

Source: Wisconsin Department of Natural Resources, Wisconsin Geological and Natural History Survey, and SEWRPC.

The inventory identified five legacy places in Kenosha County. As identified in the report, the following five legacy sites are part of the Southeast Glacial Plains and Southern Lake Michigan Coastal Landscape areas located wholly or partially within Kenosha County: Illinois Fox River, Bong Grasslands, Des Plaines River Floodplain and George Lake Wetland, Pike River, and Chiwaukee Prairie. In addition to the statewide legacy sites, the study also identified “other areas of interest” including Dyer Lake Area, Elizabeth Lake Wetlands, and the Southeast Prairie Pothole Area.

Table 14

CRITICAL SPECIES HABITAT SITES LOCATED OUTSIDE NATURAL AREAS IN KENOSHA COUNTY: 2006^a

Number on Map 15	Site Name and Classification Code ^b	Location	Site Area (acres)	Ownership	Species of Concern ^c
40	Hamilton Woods (CSH-P)	T1N, R19E, Section 33; Village of Twin Lakes	18	Private	<i>Trillium recurvatum</i> (R)
41	Wilmot Ski Hill Prairie (CSH-P)	T1N, R20E, Section 31; Town of Salem	104	Wilmot Ski Hill and other private	<i>Liatris spicata</i> (R) and <i>Solidago ohioensis</i> (R)
42	Trevor Creek Wet Prairie (CSH-P)	T1N, R20E, Section 34; Town of Salem	43	Private	<i>Solidago ohioensis</i> (R)
43	Piela Property (CSH-P)	T1N, R22E, Section 33; Village of Pleasant Prairie	5	Private	<i>Agrimonia parviflora</i> (R)
44	Martin Band Parcel (CSH-P)	T1N, R23E, Section 18; City of Kenosha	9	Private	<i>Phlox glaberrima</i> (E)
45	Nedweski Parcel (CSH-P)	T1N, R23E, Section 18; City of Kenosha	16	Private	<i>Calamoviifa longifolia</i> (T)
46	Barnes Creek (CSH-P)	T1N, R23E, Section 19; Village of Pleasant Prairie	29	Village of Pleasant Prairie and private	<i>Trillium recurvatum</i> (R) and <i>Solidago ohioensis</i> (R)
47	Brighton-Dale Woods (CSH-P)	T2N, R20E, Section 10; Town of Brighton	55	Kenosha County	<i>Eupatorium sessilifolium</i> (R) and <i>Trillium recurvatum</i> (R)
48	Peterson Creek Wetland (CSH-P)	T2N, R20E, Section 30; Town of Brighton	84	Private	<i>Solidago ohioensis</i> (R)
49	Poisl Woods (CSH-P)	T2N, R21E, Section 1; Town of Paris	82	Private	<i>Trillium recurvatum</i> (R)
50	Thompson Woods (CSH-P)	T2N, R22E, Section 13; City of Kenosha	8	Private	<i>Trillium recurvatum</i> (R)
51	Bradford School Woods (CSH-P)	T2N, R22E, Section 25; City of Kenosha	21	Kenosha County, Kenosha Unified School District, Gateway Technical College, and private	<i>Trillium recurvatum</i> (R)
52	Parkside Woods (CSH-P)	T2N, R22E, Section 12; Town of Somers	15	University of Wisconsin-Parkside	<i>Trillium recurvatum</i> (R)
53	Unnamed Wetland (CSH-B)	T1N, R19E, Sections 10 and 15; Towns of Randall and Wheatland	35	Kenosha County	Forster's tern (E) and Great egret (T)
54	Bong State Recreation Area (CSH-B)	T2N, R19E, Sections 12 and 13 and T2N, R20E, Sections 3, 4, 7, 9, 10, 15-23; Town of Brighton	4,807	Wisconsin Department of Natural Resources, Kenosha County, Kenosha Unified School District, and private	Forster's tern (E); Piping plover (E); Yellow-throated warbler (E); Loggerhead shrike (E); Great egret (T); Black tern (R) (Colony); Henslow's sparrow (R); Northern harrier (R); Grasshopper sparrow (R); Bobolink (R); Upland sandpiper (R); Northern goshawk (R); American black duck (R); Short-eared owl (R); American bittern (R); Swainson's thrush (R); Lark sparrow (R); Sedge wren (R); Blackburnian warbler (R); Yellow-bellied flycatcher (R); Merlin (R); Common moorhen (R); Least bittern (R); Common merganser (R); Black-crowned night heron (R); Wilson's phalarope (R); Prothonotary warbler (R); Louisiana waterthrush (R); and Dickcissel (R)
--	Total: 15 Sites	--	5,329	--	--

^aSites were initially identified as part of the regional natural areas plan, documented in SEWRPC Planning Report No. 42, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, September 1997. Inventory conducted in 1994; ownership and area information were updated in 2006.

^bCSH-P identifies a critical plant species habitat site; CSH-B identifies a critical bird species habitat site.

^c"R" refers to species designated as rare or special concern; "T" refers to species designated as threatened, "E" refers to species designated as endangered.

Source: Wisconsin Department of Natural Resources, Wisconsin Geological and Natural History Survey, and SEWRPC.

Table 15

AQUATIC HABITAT AREAS IN KENOSHA COUNTY: 2006^a

Number on Map 15	River, Stream, or Lake	Size ^b	Rank ^c	Description ^d and Comments
55	Bassett Creek	4.9 miles	AQ-3 (RSH)	Records of critical fish species; good water quality
56	Brighton Creek and Salem Branch	14.2 miles	AQ-3 (RSH)	Critical fish species present
57	Des Plaines River downstream from STH 50	14.2 miles	AQ-3 (RSH)	Bisects a large wetland complex supporting critical herptile species habitat
58	Des Plaines River upstream from STH 50	1.8 miles	AQ-3 (RSH)	Critical fish species present
59	Fox River downstream from CTH JB to Wisconsin-Illinois state line	12.5 miles	AQ-3 (RSH)	Good mussel species assemblage and population of the river redbreast, a threatened fish species
60	Kilbourn Road Ditch	11.5 miles ^e	AQ-3 (RSH)	Sedimentation and other water quality problems exist, but this reach is an important reservoir for the pirate perch, a "special concern" fish species
61	New Munster Creek downstream from CTH KD	1.7 miles	AQ-3	Good water quality
62	Palmer Creek	3.1 miles	AQ-3	Class III trout stream
63	Peterson Creek	5.1 miles	AQ-3 (RSH)	Critical fish species present
64	Pike Creek	4.1 miles	AQ-3 (RSH)	Bisects identified Natural Area
65	Pike River downstream from Pike Creek (includes Sorenson Creek)	4.3 miles ^e	AQ-3 (RSH)	Bisects identified Natural Area; critical fish species present
- -	Subtotal (11 river and stream reaches)	77.4 miles	- -	- -
66	Benedict Lake	78 acres ^e	AQ-2 (RSH)	A drained lake with good overall fish populations; critical fish species present
67	Dyer Lake	56 acres	AQ-2 (RSH)	A shallow drainage lake with critical fish species present; adjacent wetlands are good habitat for waterfowl and other wildlife
68	Elizabeth Lake	682 acres ^e	AQ-2 (RSH)	A drainage lake with critical fish, herptile, and bird species present
69	Lake Mary	315 acres	AQ-2 (RSH)	A drained lake with critical fish species present; good overall fishery
70	Peat Lake	92 acres ^e	AQ-2	A drained lake which is the central feature of Peat Lake Scientific Area; important nesting and feeding refuge for waterfowl
71	Silver Lake	464 acres	AQ-2 (RSH)	A drainage lake with critical fish species present; adjacent wetlands to north are valuable for wildlife
72	Benet Lake-Lake Shangrila	180 acres ^e	AQ-3 (RSH)	A shallow drained lake with critical fish species present
73	Camp Lake	461 acres	AQ-3 (RSH)	A shallow drainage lake with critical fish species present; ideal conditions for waterfowl and marsh furbearers
74	Center Lake	129 acres	AQ-3 (RSH)	A drainage lake; well-rounded fishery; critical fish species present
75	Cross Lake	62 acres ^e	AQ-3 (RSH)	A drained lake with critical fish species present
76	Four Dollar Flowage	20 acres	AQ-3 (RSH)	Within the Bong State Recreation Area; good wildlife habitat
77	Friendship Lake	11 acres	AQ-3	A drainage lake encompassed by Friendship Lake Marsh, an identified Natural Area
78	George Lake	59 acres	AQ-3 (RSH)	A drainage lake with critical fish species present; good waterfowl habitat
79	Hooker Lake	87 acres	AQ-3 (RSH)	A drainage lake with critical fish species present
80	Montgomery Lake	46 acres	AQ-3 (RSH)	A drained lake with critical fish species present
81	Mud Lake	22 acres	AQ-3	A drained lake adjacent to an identified Natural Area, Mud Lake Sedge Meadow
82	Paddock Lake	112 acres	AQ-3 (RSH)	A drained lake with critical fish species present
83	Powers Lake	459 acres ^e	AQ-3	A drainage lake with good water quality
84	Refuge Flowage	11 acres	AQ-3 (RSH)	Within the Bong State Recreation Area; good wildlife habitat

Table 15 (continued)

Number on Map 15	River, Stream, or Lake	Size ^b	Rank ^c	Description ^d and Comments
85	Rock Lake	46 acres	AQ-3 (RSH)	A drained lake with critical fish species present
86	Vern Wolf Lake	123 acres	AQ-3	A drainage lake with good wildlife habitat
87	Voltz Lake	52 acres	AQ-3 (RSH)	A drained lake with critical fish species present
- -	Subtotal (22 lakes)	3,567 acres	- -	- -

^aSites were initially identified as part of the regional natural areas plan, documented in SEWRPC Planning Report No. 42, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, September 1997. Inventory conducted in 1994; ownership and area information were updated in 2006.

^bSize is listed as stream miles for rivers and streams and lake surface area (in acres) for lakes.

^cAQ-1 identifies Aquatic Area sites of statewide or greater significance.

AQ-2 identifies Aquatic Area sites of countywide or regional significance.

AQ-3 identifies Aquatic Area sites of local significance.

RSH, or Rare Species Habitat, identifies those aquatic areas which support rare, endangered, threatened, or "special concern" species officially designated by the Wisconsin Department of Natural Resources.

^d"Seepage lakes" are lakes which have no inlet or outlet and whose main source of water is direct precipitation and runoff supplemented by groundwater. "Spring lakes" are lakes which have no inlet but do have an outlet and whose main source of water is groundwater flowing directly into the basin and from the immediate drainage area. "Drainage lakes" are lakes that have both an inlet and an outlet and whose main water source is a river or stream. "Drained lakes" are lakes which have no inlet but do have an outlet and which are not groundwater-fed; their primary source of water is from precipitation and runoff from the immediate drainage area.

^eLake or stream is located partially within Kenosha County. Number refers to stream miles or acreage located within the County.

Source: Wisconsin Department of Natural Resources, Wisconsin Geological and Natural History Survey, and SEWRPC.

Reestablishment of Grasslands

In addition to setting forth recommendations for the protection of existing areas with important biological resources, the regional natural areas and critical species habitat protection and management plan also recommends that efforts be made to reestablish relatively large tracts of grasslands and forest interiors in the Region. Reestablishment of such tracts would serve to provide additional habitat for bird populations, which have been adversely affected by loss of habitat due to development in the Region.

One site in Kenosha County, shown on Map 15, was identified for reestablishment of grasslands. The grassland reserve site would center on the Bong State Recreation Area and the adjoining Kenosha and Salem School Forest properties in the Town of Brighton. It is envisioned that this site could serve as one of several relatively large grassland reserve sites proposed to be established in Wisconsin by the WDNR. Such sites would consist of at least 10,000 acres of land that are as treeless and open in character as possible, although not all such land would have to be in public ownership. The present Bong State Recreation Area and adjacent public landholdings, which approximate 4,780 acres, or about 7.5 square miles, could serve as the core area of one such large site. To supplement the present publicly owned lands, it is proposed that the WDNR enter into appropriate land management agreements with landowners in the environs of the Bong site with a view toward meeting the goal of establishing a minimum area of 10,000 acres to serve as suitable habitat for grassland birds. Recently, the Bong Naturalist Association has applied for an NRCS Wildlife Quality Incentives Program (WHIP) grant for habitat restoration on 175 acres of tall grass prairie.

Environmental Corridors and Isolated Natural Resource Areas

One of the most important tasks completed under the regional planning program for southeastern Wisconsin has been the identification and delineation of those areas in which concentrations of the best remaining elements of the natural resource base occur. It has been recognized that preservation of these areas is essential to both the maintenance of the overall environmental quality of the Region and to the continued provision of the amenities required to maintain a high quality of life for residents.

Seven elements of the natural resource base are considered essential to the maintenance of the ecological balance and the overall quality of life in the Region, and served as the basis for identifying the environmental corridor

network. These seven elements are: 1) lakes, rivers, and streams and associated shorelands and floodplains; 2) wetlands; 3) woodlands; 4) prairies; 5) wildlife habitat areas; 6) wet, poorly drained, and organic soils; and 7) rugged terrain and high relief topography. In addition, there are certain other features which, although not a part of the natural resource base, are closely related to the natural resource base and were used to identify areas with recreational, aesthetic, ecological, and natural value. These features include existing park and open space sites, potential park and open space sites, historic sites, scenic areas and vistas, and natural areas.

These natural resource elements and resource-related features, when mapped on the landscape, concentrate in an essentially linear pattern of relatively narrow, elongated areas that have been termed “environmental corridors” by SEWRPC. Primary environmental corridors include a wide variety of the most important natural resources and are at least 400 acres in size, two miles long, and 200 feet wide. Secondary environmental corridors serve to link primary environmental corridors, or encompass areas containing concentrations of natural resources between 100 and 400 acres in size. Where secondary environmental corridors serve to link primary corridors, no minimum area or length criteria apply. Secondary environmental corridors that do not connect primary corridors must be at least 100 acres in size and one mile long. An isolated concentration of natural resource features, encompassing at least five acres but not large enough to meet the size or length criteria for primary or secondary environmental corridors, is referred to as an isolated natural resource area. Environmental corridors and isolated natural resource areas in Kenosha County in 2000 are shown on Map 16.

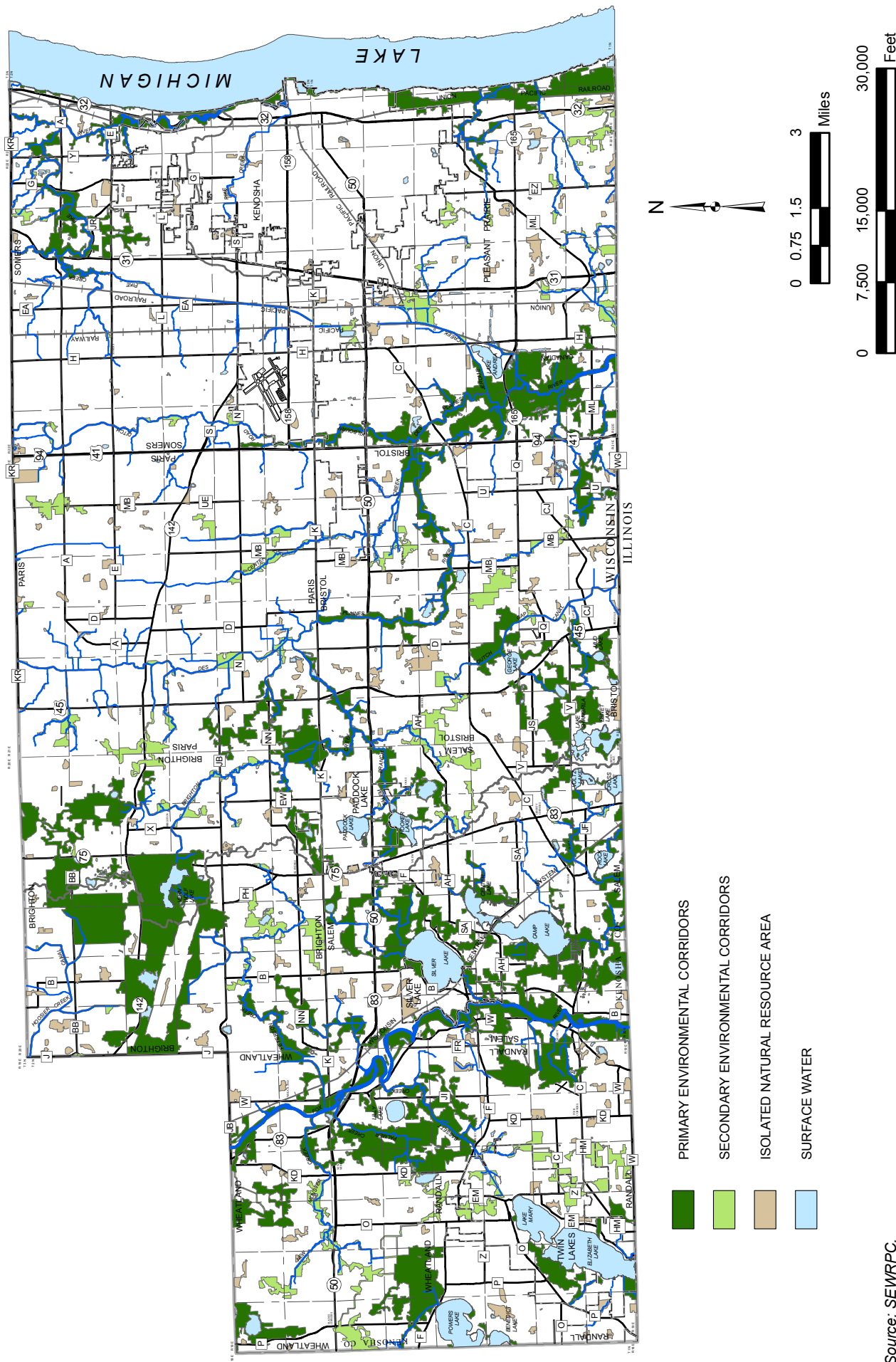
The preservation of environmental corridors and isolated natural resource areas in essentially natural, open uses can help reduce flood flows, reduce noise pollution, and maintain air and water quality. Corridor preservation is important to the movement of wildlife and for the movement and dispersal of seeds for a variety of plant species. In addition, because of the many interacting relationships between living organisms and their environment, the destruction and deterioration of any one element of the natural resource base may lead to a chain reaction of deterioration and destruction. For example, the destruction of woodland cover may result in soil erosion and stream siltation, more rapid stormwater runoff and attendant increased flood flows and stages, as well as destruction of wildlife habitat. Although the effects of any single environmental change may not be overwhelming, the combined effects will eventually create serious environmental and developmental problems. These problems include flooding, water pollution, deterioration and destruction of wildlife habitat, reduction in groundwater recharge, as well as a decline in the scenic beauty of the County. The importance of maintaining the integrity of the remaining environmental corridors and isolated natural resource areas thus becomes apparent.

As shown on Map 16, the primary environmental corridors in Kenosha County generally lie along major stream valleys, surround lakes, found in conjunction with wetlands and woodlands, and wildlife habitat areas. Table 16 sets forth the amount of land encompassed by primary and secondary environmental corridors and isolated natural resource areas in each civil division. In 2000, about 28,000 acres, comprising about 16 percent of the County, were encompassed within primary environmental corridors. Secondary environmental corridors are located chiefly along the smaller perennial streams and intermittent streams in the County. About 6,400 acres, comprising about 4 percent of the County, were encompassed within secondary environmental corridors in 2000. Isolated natural resource areas within the County include a geographically well-distributed variety of isolated wetlands, woodlands, and wildlife habitat. These areas encompassed about 3,870 acres, or about 2 percent of the County, in 2000.

Park and Open Space Sites

A comprehensive regionwide inventory of park and open space sites was conducted in 1973 under the initial regional park and open space planning program conducted by SEWRPC. The inventory is updated periodically, and was most recently updated in 2006. The inventory identified all park and open space sites owned by a public agency, including Federal, State, County, and local units of government and school districts. The inventory also included privately owned outdoor recreation sites such as golf courses, campgrounds, boating access sites, hunting clubs, group camps, and special use outdoor recreation sites. Sites owned by nonprofit conservation organizations, such as The Nature Conservancy and the Conservancy Club of Kenosha, were also identified. As of 2006, there were 17,800 acres of park and open space land in fee simple ownership in Kenosha County. An additional 23 acres were under conservation or other easements intended to protect the natural resources of a site.

Map 16
 ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS IN KENOSHA COUNTY: 2000



Source: SEWRPC.

Table 16

**EXISTING ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL
RESOURCE AREAS IN KENOSHA COUNTY COMMUNITIES: 2000^a**

Civil Division	Primary Environmental Corridors (acres)	Secondary Environmental Corridors (acres)	Isolated Natural Resource Areas (acres)
City of Kenosha.....	479	113	256
Village of Pleasant Prairie.....	3,524	977	601
Village of Silver Lake	193	--	71
Town of Brighton.....	5,439	964	474
Town of Bristol	2,932	946	701
Town of Paris	684	1,089	447
Town of Salem	6,498	334	407
Town of Somers.....	1,228	381	196
Town of Wheatland	3,451	760	210
Village of Genoa City	--	--	5
Village of Paddock Lake	371	15	37
Village of Twin Lakes	1,383	403	61
Town of Randall	1,778	391	408
Kenosha County	27,960	6,373	3,874

^aInventory conducted in 2000; based on 2006 civil divisions.

Source: SEWRPC.

Park and Open Space Sites Owned by Kenosha County

Park and open space sites owned by Kenosha County in 2006 are shown on Map 17 and listed in Table 17. In 2006 Kenosha County owned 13 such sites, including six major²¹ parks encompassing 1,679 acres, and seven other park and outdoor recreation sites encompassing 251 acres. In all, these 13 sites encompass 1,930 acres, or about 1 percent of the County.

The six existing major parks are Brighton Dale Park and Golf Course in the Town of Brighton, Bristol Woods Park in the Town of Bristol, a currently undeveloped County park in the Towns of Randall and Wheatland, Fox River Park and Silver Lake Park in the Town of Salem, and Petrifying Springs Park in the Town of Somers.

In addition to the existing major parks, the County also owns seven other park and outdoor recreation sites. These sites include: Kemper Center, Old Settler's Park, Fox River Flood Mitigation Open Space Lands, Kenosha County Bike Trail, and three other unnamed open space sites.

Park and Open Space Sites Owned by the State of Wisconsin

As indicated in Table 18 and shown on Map 17, in 2006 there were 27 State-owned park and open space sites in Kenosha County, encompassing 7,480 acres, or about 4 percent of the County. Of the 25 sites, 17 sites encompassing 6,653 acres were owned by the WDNR; six sites, encompassing 429 acres were owned by the Wisconsin Department of Transportation; and four sites, encompassing 397 acres, were owned by the University of Wisconsin.

²¹Major parks are defined as large, publicly owned outdoor recreation sites containing significant natural resource amenities which provide opportunities for such resource-oriented activities as camping, golfing, picnicking, and swimming. Major parks include both Type I, or regional parks, which are those having an area of 250 acres or more, and Type II, or multi-community parks, which are those having an area of generally 100 to 250 acres.

Map 17

COUNTY- AND STATE-OWNED PARK AND OPEN SPACE SITES IN KENOSHA COUNTY: 2006

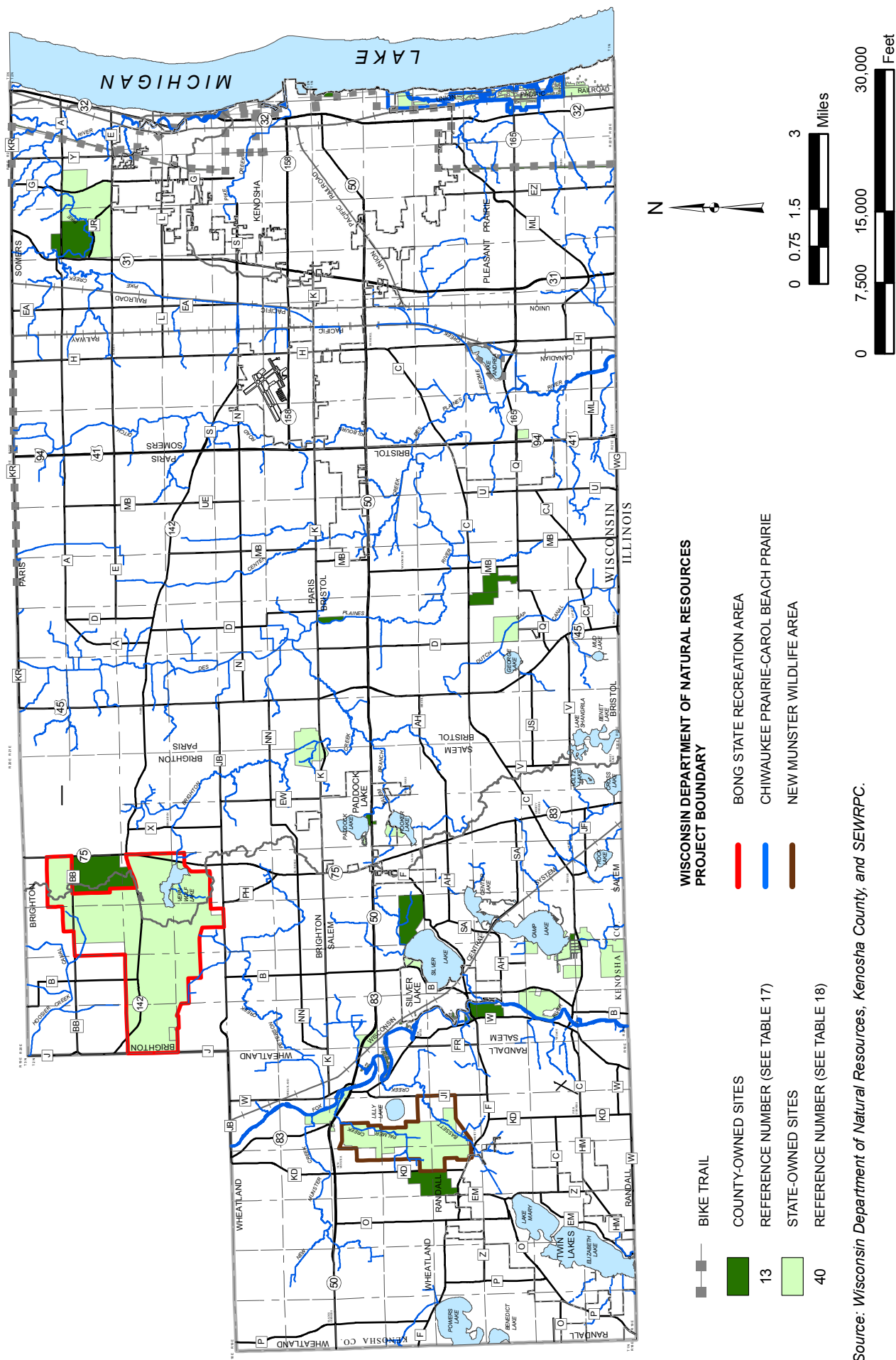


Table 17

PARK, OUTDOOR RECREATION, AND OPEN SPACE SITES OWNED BY KENOSHA COUNTY: 2006

Number on Map 17	Site Name	Location	Size (acres)
1	Kemper Center	T1N, R23E, Section 5, City of Kenosha	16
2	Old Settler's Park	T1N, R20E, Sections 2 and 11, Village of Paddock Lake	16
3	Brighton Dale Park and Golf Course	T2N, R20E, Sections 10 and 15, Town of Brighton	509
4	Bristol Woods Park	T1N, R21E, Sections 21 and 22, Town of Bristol	198
5	Open Space Site	T1N, R21E, Section 4, Town of Bristol	33
6	Open Space Site	T1N, R21E, Section 12, Town of Bristol	5
7	Undeveloped County Park	T1N, R19E, Section 15, Town of Randall and Section 10, Town of Wheatland	235
8	Fox River Park	T1N, R20E, Sections 18 and 19, Town of Salem	129
9	Open Space Site	T1N, R20E, Section 28, Town of Salem	8
10	Silver Lake Park	T1N, R20E, Section 9, Town of Salem	259
11	Petrifying Springs Park	T2N, R22E, Sections 2 and 11, Town of Somers	349
12	Fox River Flood Mitigation Open Space Lands	T1N, R19E, Sections 1 and 12, Town of Wheatland; T1N, R20E, Sections 7, 29, and 30, Town of Salem; and T1N, R20E, Sections 7 and 18, Village of Silver Lake	83
13	Kenosha County Bike Trail ^a	T1N, R22E, Section 13; T1N, R23E, Sections 5, 7, 8, and 18; T2N, R22E, Sections 13, 24, and 25; and T2N, R23E, Sections 18, 29, 30, 31, and 32, City of Kenosha; T1N, R22E, Sections 13, 24, 25, and 36 and T1N, R23E, Section 18 - Village of Pleasant Prairie; and T2N, R22E, Section 24 and T2N, R23E, Sections 6 and 7, Town of Somers	90
--	Total: 13 Sites	--	1,930

^aThe trail includes approximately four miles within an abandoned railway right-of-way in the City of Kenosha and Village of Pleasant Prairie and approximately four miles within the Wisconsin Electric utility right-of-way in the City of Kenosha and Town of Somers. The trail also includes about a six mile portion of Pike Bike Trail within the City of Kenosha and Village of Pleasant Prairie. Altogether, the trail measures approximately 14 linear miles.

Source: SEWRPC.

Wisconsin Department of Natural Resources

The WDNR has acquired large areas of park and open space lands in Kenosha County for a variety of resource protection and recreational purposes. Sites acquired for natural resource preservation and limited recreational purposes include the New Munster Wildlife Area, Carol Beach Prairie, Peat Lake Extensive Wildlife Habitat and Wildlife Area, Hooker Lake Marsh, Silver Lake Marsh, Paddock Lake Marsh, scattered wetland sites, and portions of Bong State Recreation Area.

WDNR-owned sites associated with more intensive recreational activities include public access sites on Camp Lake, Hooker Lake, and Powers Lake. Bong State Recreation Area, while preserving and protecting selected natural resource areas, also offers a wide range of recreation activities and facilities, including: hiking, horseback, and all-terrain vehicle trails; areas where visitors may fly model airplanes, rockets, hang gliders, and hot air

Table 18

**EXISTING STATE-OWNED PARK, OUTDOOR RECREATION,
AND OPEN SPACE SITES IN KENOSHA COUNTY: 2006**

Number on Map 17	Site Name	Location	Size (acres)
14	Wisconsin Department of Natural Resources Sites Carol Beach Prairie	T1N, R23E, Sections 7, 8, 18, 19, 20, 29, and 30, Village of Pleasant Prairie	280
15	Hooker Lake Marsh.....	T1N, R20E, Section 11, Village of Paddock Lake and Town of Salem	44
16	Paddock Lake Marsh	T1N, R20E, Section 2, Village of Paddock Lake	5
17	Silver Lake Marsh	T1N, R20E, Section 8, Village of Silver Lake and Town of Salem	38
18	Bong State Recreation Area	T2N, R20E, Sections 3, 4, 9, 10, 15, 16, 17, 18, 19, 20, 21, and 22, Town of Brighton	4,519
19	Public Access, Powers Lake	T1N, R19E, Section 18, Town of Randall	1
20	Camp Lake Access	T1N, R20E, Section 28, Town of Salem	4
21	Camp Lake Marshland Preservation Area	T1N, R20E, Sections 28, 29, and 32, Town of Salem	123
22	Peat Lake Extensive Wildlife Habitat	T1N, R20E, Sections 19, 20, 29, and 30, Town of Salem	224
23	Peat Lake Wildlife Area	T1N, R20E, Section 32, Town of Salem	180
24	Public Access, Hooker Lake	T1N, R20E, Section 11, Town of Salem	1
25	Scattered Wetland.....	T1N, R20E, Sections 29 and 32, Town of Salem	58
26	Scattered Wetland.....	T1N, R20E, Sections 32 and 33, Town of Salem	48
27	WDNR Site.....	T1N, R20E, Section 32, Town of Salem	51
28	New Munster Wildlife Area.....	T1N, R19E, Sections 2, 3, 10, and 11, Town of Wheatland and T1N, R19E, Sections 14 and 15, Town of Randall	1,054
29	WDNR Easement.....	T1N, R23E, Section 32, Village of Pleasant Prairie	1
30	WDNR Easement.....	T2N, R19E, Section 30, Town of Wheatland	22 ^a
--	Subtotal: 17 Sites	--	6,653
31	Wisconsin Department of Transportation Sites Kenosha Information Tourist Center	T1N, R22E, Section 30, Village of Pleasant Prairie	12
32	Wayside.....	T1N, R23E, Section 19, Village of Pleasant Prairie	1
33	WisDOT Site	T2N, R20E, Section 18, Town of Brighton	25
34	WisDOT Site	T1N, R21E, Section 21, Town of Bristol	161
35	WisDOT Site	T1N, R20E, Section 6, Town of Salem	56
36	WisDOT Site	T1N, R19E, Sections 1 and 2 and T2N, R19E, Sections 35 and 36, Town of Wheatland	174
--	Subtotal: Six Sites	--	429
37	University of Wisconsin Sites University of Wisconsin-Chiwaukee Prairie	T1N, R23E, Sections 31 and 32, Village of Pleasant Prairie	90
38	University of Wisconsin-Benedict Prairie	T1N, R21E, Section 11, Town of Bristol	6
39	University of Wisconsin Nature Area	T1N, R20E, Section 1, Town of Salem; T1N, R21E, Section 6, Town of Bristol; T2N, R20E, Section 36, Town of Brighton; and T2N, R21E, Section 31, Town of Paris	246
40	University of Wisconsin-Parkside.....	T2N, R22E, Sections 11 and 12, Town of Somers	55
--	Subtotal: Four Sites	--	397
--	Total: 27 Sites	--	7,479

^aIncludes only those lands located in the Town of Wheatland. Approximately 109 acres of the site are located in the Town of Lyons, Walworth County. The site totals 131 acres.

Source: Wisconsin Department of Natural Resources and SEWRPC.

balloons; dog and falcon training areas; multiple camping areas; a beach with a bath house; and fishing and picnicking areas.

Map 17 also reflects project boundaries approved by the Wisconsin Natural Resources Board for State forests, parks, and wildlife areas within the County. Lands within the approved project boundaries have been identified by the Board as appropriate additions to adjacent forests, natural areas, or wildlife areas and are intended to be acquired by the WDNR, on a “willing seller-willing buyer” basis, for recreational or open space purposes as funding permits.

Wisconsin Department of Transportation

The Wisconsin Department of Transportation in 2006 owned six sites within the County, four of which are used for open space protection. The open space sites are located in the Towns of Brighton, Bristol, Salem, and Wheatland. The remaining two sites owned by the Wisconsin Department of Transportation are a wayside and the Kenosha Information Tourist Center, both located in the Village of Pleasant Prairie.

University of Wisconsin

In 2006 there were four park and open space sites affiliated with the University of Wisconsin. The site of the University of Wisconsin-Parkside in the Town of Somers encompasses about 55 acres and is used for institutional, recreational, and open space purposes. The University of Wisconsin-Parkside also owns 90 acres within the Chiwaukee Prairie in the Village of Pleasant Prairie and the 246-acre University of Wisconsin Nature Area located in the Towns of Brighton, Bristol, Paris, and Salem. Both the Chiwaukee Prairie and University of Wisconsin Nature Area are known natural areas. The University of Wisconsin-Milwaukee owns Benedict Prairie, a six acre natural area site in the Town of Bristol.

Private and Public-Interest Resource Oriented Park and Open Space Sites

There are a number of conservation organizations active in Kenosha County, including the Kenosha/Racine Land Trust, Conservation Club of Kenosha, Des Plaines Wetlands Conservancy, The Nature Conservancy, and other nonprofit conservation organizations. These organizations acquire lands for resource protection purposes. As shown on Map 18 and Table 19, such organizations owned 5 sites encompassing 1,049 acres in 2006. The Des Plaines Wetlands Conservancy owns 624 acres in the Village of Pleasant Prairie for resource protection purposes. The Conservation Club of Kenosha owns a site of 227 acres in the Town of Bristol, also for resource protection purposes. The Nature Conservancy owns two sites in Kenosha County, both in the Village of Pleasant Prairie, encompassing 159 acres. The Hyslop Foundation owns a 38-acre site in the Town of Somers known as Hawthorn Hollow. Finally, the Lake Benedict Land Conservation owns a one-acre site in the Town of Randall.

WDNR and Land Trust Focus Areas

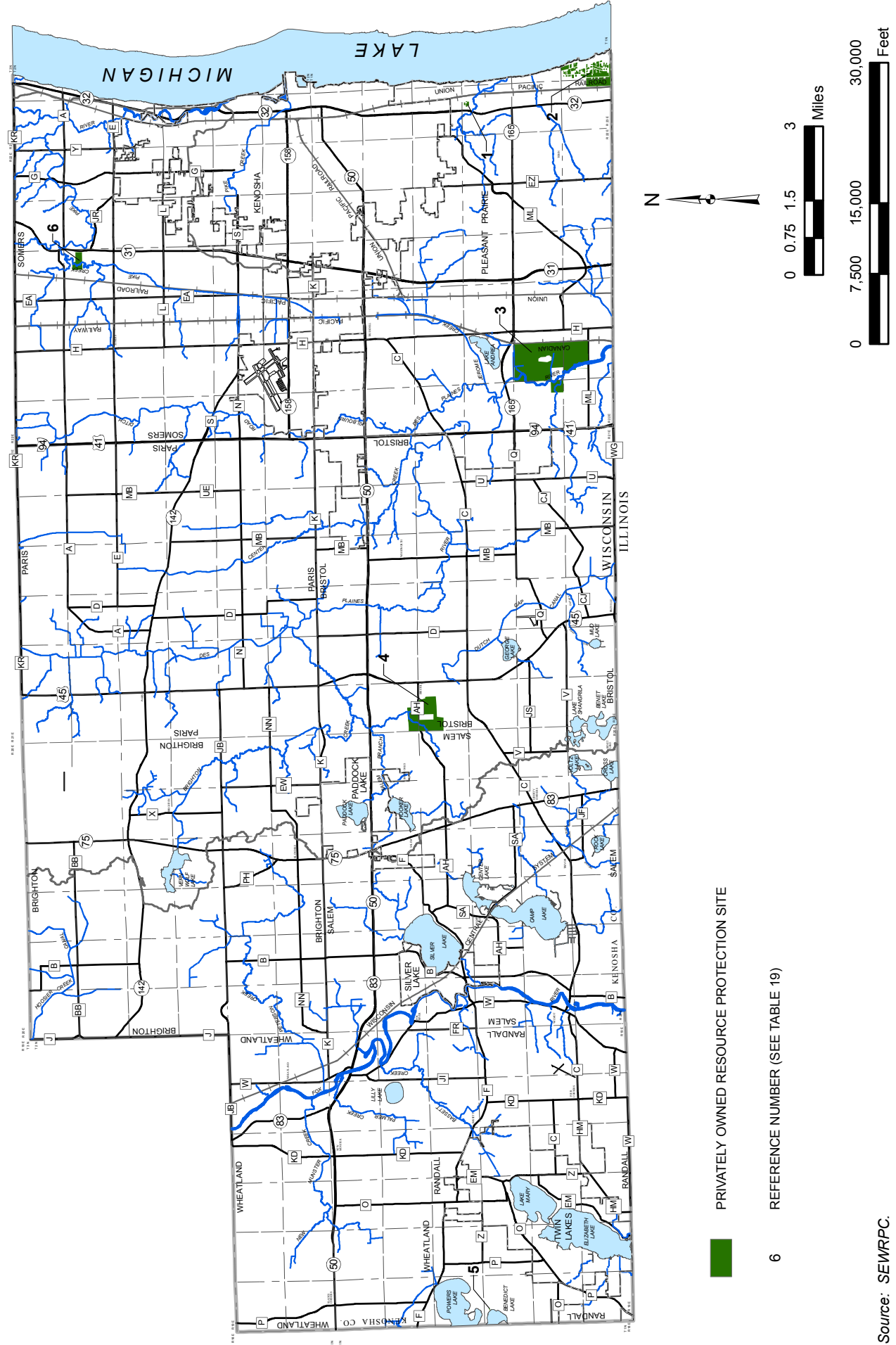
The Wisconsin Natural Resources Board has approved project boundaries for State forests and wildlife areas in the County, which include Bong State Recreation Area; Carol Beach Prairie; Camp Lake Marshland Preservation Area; Hooker Lake Marsh; New Munster and Peat Lake Wildlife Areas; and a scattered wetland site in the Town of Salem. The project boundaries and land currently owned by the WDNR are shown on Map 17. As noted in a previous section of this chapter, lands within the approved project boundaries are intended to be acquired by the WDNR in fee-simple ownership on a “willing seller-willing buyer” basis. The WDNR has identified other priority areas with important natural resources in addition to the areas described in the preceding paragraph.

The Kenosha/Racine Land Trust has also identified 450 acres for land acquisition in the Upper Des Plaines River watershed. The Kenosha/Racine Land Trust has set up a land acquisition fund to restore and preserve this project area, known as the Des Plaines River Lowlands, in the Village of Pleasant Prairie. The Land Trust project will connect existing public and private conservation areas to create an environmental corridor of approximately 2,000 acres.

Park and Open Space Sites Owned by Local Governments and Public School Districts

In addition to County and State-owned park and open space sites, there were 294 park and open space sites owned by local governments, public schools, or other public agencies in Kenosha County in 2006. Those sites

Map 18
PRIVATELY OWNED RESOURCE PROTECTION SITES IN KENOSHA COUNTY: 2006



Source: SEWRPC.

Table 19

PRIVATELY OWNED RESOURCE PROTECTION SITES IN KENOSHA COUNTY: 2006

Number on Map 18	Site Name	Owner	Location	Size (acres)
1	Barnes Prairie	The Nature Conservancy	T1N, R23E, Section 19, Village of Pleasant Prairie	4
2	Chiwaukee Prairie	The Nature Conservancy	T1N, R23E, Sections 31 and 32, Village of Pleasant Prairie	155
3	Des Plaines Wetlands Conservancy	Des Plaines Wetlands Conservancy, Inc.	T1N, R22E, Sections 29, 30, and 32, Village of Pleasant Prairie	624
4	Conservation Club of Kenosha	Conservation Club of Kenosha	T1N, R21E, Sections 7 and 18, Town of Bristol	227
5	Lake Benedict Land Conservation Foundation	Lake Benedict Land Conservation Foundation	T1N, R19E, Section 19, Town of Randall	1
6	Hawthorn Hollow	Hyslop Foundation, Inc.	T2N, R22E, Section 10, Town of Somers	38
--	Total: Six Sites	--	--	1,049

Source: SEWRPC.

encompassed about 3,814 acres, or about 2 percent of the County. Local governments owned 248 of the park and open space sites, public schools owned 46 of the sites, and a lake management district owned one site. The area attributed to school district sites includes only those portions of the site used for recreational purposes or in open space.

Community, Commercial, and Organizational Park and Open Space Sites

In 2006 there were 77 park and open space sites owned by organizations and/or owned for commercial purposes encompassing about 3,551 acres, or about 2 percent of the County. These sites include privately owned golf courses, schools, subdivision parks, hunting clubs, campgrounds, boat access sites, horse stables, and soccer parks. Local communities own 204 park and open space sites encompassing 2,885 acres; public school districts own 44 sites, encompassing 676 acres; and organizations and commercial entities own 63 private sites, encompassing 3,036 acres. Appendices C through K of SEWRPC Community Assistance Report No. 299, *Kenosha County Comprehensive Plan*, (in preparation) further describe park and open space sites located throughout Kenosha County.

CULTURAL RESOURCES

Cultural resources are evidence of past human activities and they are unique and nonrenewable. Cultural resources encompass historic buildings, structures and sites; and archeological sites. Cultural resources in Kenosha County have important recreational and educational value. Cultural resources help to provide the County and each of its distinct communities with a sense of heritage, identity, and civic pride. Resources such as historical and archeological sites and historic districts can also provide economic opportunities through tourism.

NRCS is specifically required by the National Historical Preservation Act, the National Environmental Policy Act, and various other State and Federal laws to consider the impacts its conservation programs may have on cultural resources. To insure protection, NRCS may require a cultural resource inventory as part of the conservation planning process. A qualified professional cultural resource consultant will prepare an inventory and report, which is submitted to the Wisconsin State Historic Preservation Office (SHPO). SHPO determines the eligibility of historical or archaeological site(s). The USCOE is also required by Federal law to protect cultural resources and cannot permit a wetland disturbance without a cultural resource assessment. One of the intents of the Kenosha County Department of Planning and Development is to preserve historical and archaeological sites. New development, therefore, requires a detailed description of all structures or areas of archeological or historic interest on the proposed site, and a detailed explanation of how the development will affect such structures or areas. To protect and preserve cultural resources, recommendations are made during the preliminary planning process to move roads, redesign structures, or change practices to avoid adverse effects to cultural resources.

Historical Resources

In 2006 there were 25 historic places and districts in the County listed on the National Register of Historic Places and the State Register of Historical Places. Of the 25 historic places and districts listed on the National and State Registers, 16 are historic buildings or structures, three are historic districts, and six are historic sites. Sites and districts listed on the National and State Registers of Historic Places have an increased measure of protection against degradation and destruction. Listing on the National or State Register requires government agencies to consider the impact of their activities, such as the construction or reconstruction of a highway, or a permit which they issue, on the designated property. If the property would be adversely affected, the agency must work with the State Historic Preservation Officer to attempt to avoid or reduce adverse effects.

The 25 historic places and districts listed on the National and State registers of historic places are only a small fraction of the buildings, structures, and districts listed in the Wisconsin Architecture and History Inventory. The Wisconsin Architecture and History Inventory is a database administered by the State Historical Society of Wisconsin that contains historical and architectural information on approximately 120,000 properties statewide. The listed sites have architectural or historical characteristics that may make them eligible for listing on the National and State registers of historic places. In 2006 there were 969 properties in Kenosha County included in the Wisconsin Architecture and History Inventory. The inventory can be accessed through the State of Wisconsin Historical Society website at www.wisconsinhistory.org/ahi.

Archaeological Resources

Preservation of archaeological resources is also important in preserving the cultural heritage of Kenosha County. Like historical sites and districts, significant prehistoric and historic archaeological sites provide the County and each of its communities with a sense of heritage and identity, which can provide for economic opportunities through tourism if properly identified and preserved. Archaeological sites found in Kenosha County fall under two categories: prehistoric sites and historic sites. Prehistoric sites are defined as those sites which date from before written history. Historic sites are sites established after history began to be recorded in written form (the State Historical Society of Wisconsin defines this date as A.D. 1650).

As of 2006, there were 438 known prehistoric and historic archaeological sites in Kenosha County listed in the State Historical Society's Archaeological Sites Inventory, including prehistoric and historic camp sites, villages, and farmsteads; marked and unmarked burial sites; and Native American mounds. The Wehmhoff Mound in the Town of Wheatland is listed on the National Register of Historic Places.

DEMOGRAPHICS AND LAND USE

Demographics

The historical and current population of Kenosha County is set forth in Table 20 and historical urban growth is shown on Map 19. Between 1860 and 1890, the total population in Kenosha County increased modestly from 13,900 to 15,581 residents. The County experienced rapid growth rates in the decades between 1890 and 1930, including population gains of almost 40 percent between 1890 and 1900 and over 50 percent in each of the two decades between 1900 and 1920. Growth stagnated during the 1930s Depression Era, but picked up again during the decades from 1940 to 1970, including a population gain of almost 34 percent from 1950 to 1960. Rapid growth during this period can be attributed to both the migration of new residents to Kenosha County and the natural increase of the existing population (more births than deaths). After World War II, the existing population grew as soldiers returned home and began families, creating the baby-boom generation. Federal subsidies for home ownership led to suburban migration, as families sought newer single-family homes outside the central city. Federal legislation adopted in 1956 led to the construction of a new network of freeways and expressways, providing convenient highway access between suburbs and the central city. The County continued to grow between 1970 and 2000 at more modest rates of around 4 percent in each of the decades between 1970 and 1990 and almost 17 percent between 1990 and 2000. The Wisconsin Department of Administration (DOA) estimates that the County population grew almost six percent between 2000 and 2005, from 149,577 to 158,219 residents.

Table 20

**HISTORICAL POPULATION OF
KENOSHA COUNTY: 1850-2000**

Year	Population	Change from Preceding Census	
		Number	Percent
1850	10,734	--	--
1860	13,900	3,166	29.5
1870	13,147	-753	-5.4
1880	13,550	403	3.1
1890	15,581	2,031	15.0
1900	21,707	6,126	39.3
1910	32,929	11,222	51.7
1920	51,284	18,355	55.7
1930	63,297	12,013	23.4
1940	63,505	208	0.3
1950	75,238	11,733	18.5
1960	100,615	25,377	33.7
1970	117,917	17,302	17.2
1980	123,137	5,220	4.4
1990	128,181	5,044	4.1
2000	149,577	21,396	16.7

Source: U.S. Census Bureau and SEWRPC.

Kenosha County's population grew by 86,072 people, or about 136 percent, between 1940 and 2000. During this same period, the Southeastern Wisconsin Region²² experienced an increase of 863,466 residents, or about 81 percent; the State experienced an increase of 2,226,088 residents, or about 71 percent; and the United States experienced an increase of about 150 million residents, or about 113 percent. Thus, Kenosha County experienced a higher rate of growth than the Region, State, and Nation during this period. A summary of significant demographic information in Kenosha County is presented below.

- In 2000, about 30 percent of the County population was under the age of 20; about 58 percent was between the ages of 20 and 64; and about 12 percent was age 65 and over.
- In 2000, there were 56,057 households with an average size of 2.60 persons per household in Kenosha County. The number of households, or occupied housing units, is important

to land use and public facility planning. Households directly influence the demand for urban land as well as the demand for transportation and other public facilities and services, such as public sewer, water, and parks.

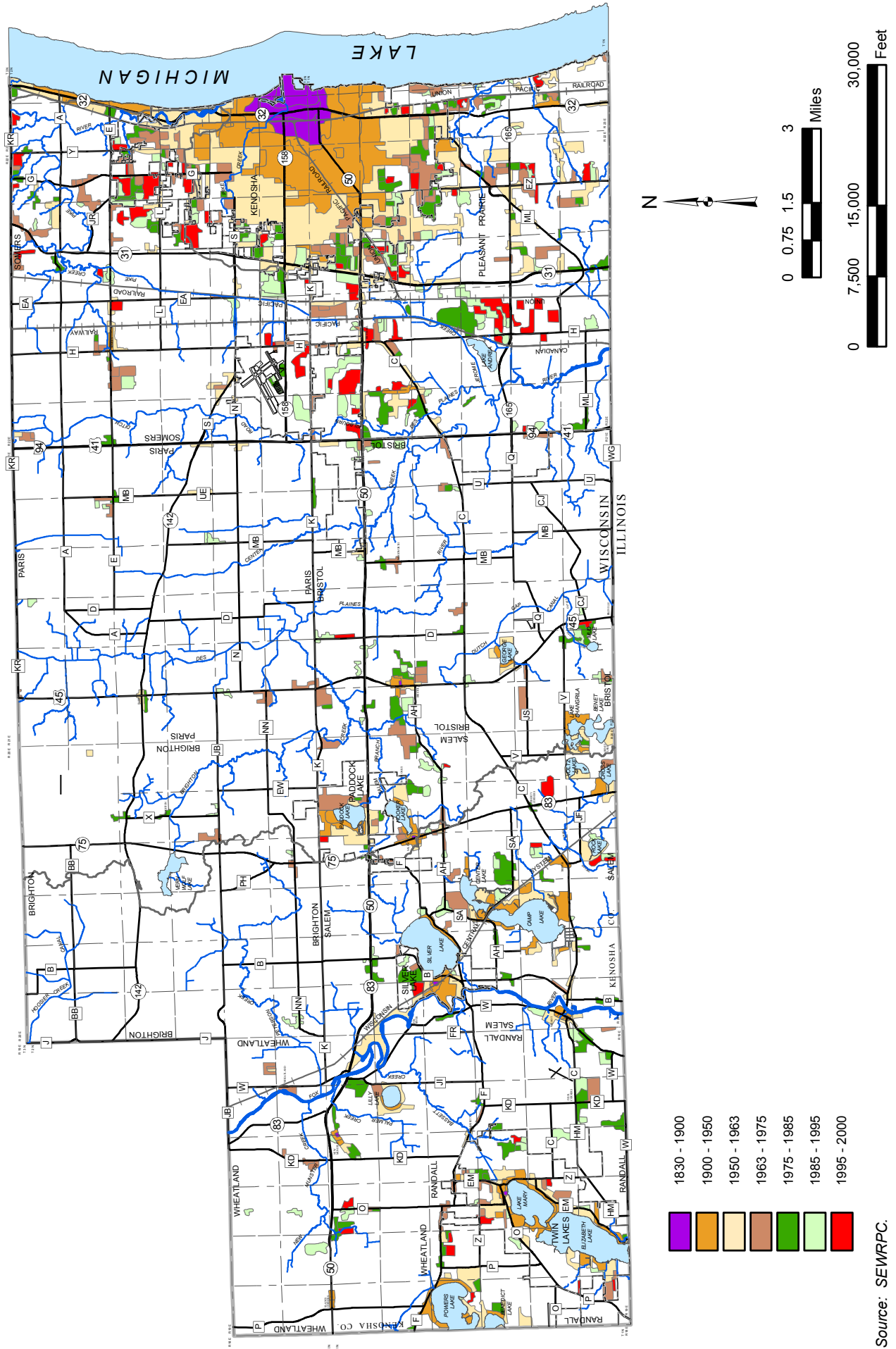
- The 1999 median annual household income was \$46,970 for Kenosha County. Median annual household income has a significant effect on the type, size, and location of housing.
- In 2000, about 69 percent of all County residents 16 years of age and older were employed. The majority of County workers were employed in management or professional occupations (about 29 percent), sales and office occupations (about 27 percent), and production, transportation, and material moving occupations (about 20 percent).
- In 2000, just over 50 percent of County residents 25 years of age and older had attended some college or attained an associates, bachelor, or graduate degree.
- Over 56 percent of employed Kenosha County residents worked in Kenosha County in 2000. More people commuted out of the County for work than commuted into the County. Of County residents who commuted out of the County for work, the largest percentage went to work in Lake County, Illinois.

Land Use

Soil erosion problems, water pollution problems, land use conflicts, including recreational use and the risk of damage to the environment, as well as the ultimate means for abatement of these problems, are primarily a function of human activities within the County, and of the ability of the underlying natural resource base to sustain those activities. This becomes especially significant in areas that are in close proximity to lakes, wetlands, and rivers and streams. Accordingly, the land uses and attendant population levels in the County are important

²²The Southeastern Wisconsin Region includes Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties.

Map 19
HISTORICAL URBAN GROWTH IN KENOSHA COUNTY: 1830-2000



considerations in the development of Kenosha County's land and water resource management plan. The land use information presented here is derived from inventories developed by the Southeastern Wisconsin Regional Planning Commission.

Urban Land Uses

Urban land uses consist of residential; commercial; industrial; governmental and institutional; and transportation, communication, and utility uses. As indicated in Table 21 and on Map 20, urban land uses encompassed about 38,051 acres, or about 21 percent of the County, in 2000. Residential land comprised the largest urban land use category in the County, encompassing 18,597 acres, or about 49 percent of all urban land and about 10 percent of the County. Commercial land encompassed about 1,443 acres or about 4 percent of all urban land and less than 1 percent of the County. Industrial land encompassed about 1,436 acres or about 4 percent of all urban land and less than 1 percent of the total County. Land used for transportation, utilities, and communications facilities encompassed about 11,475 acres, or about 30 percent of all urban land and about 6 percent of the County. Land used for government and institutional uses encompassed about 1,691 acres, or about 4 percent of all urban land and less than 1 percent of the County. Intensively used recreational land encompassed about 3,409 acres, or about 9 percent of all urban land and about 2 percent of the County

Nonurban Land Uses

Nonurban land uses consist of agricultural lands; natural resource areas, including surface waters, wetlands, and woodlands; quarries and landfills; and unused land. As indicated in Table 21 and on Map 20, nonurban land uses encompassed about 140,150 acres, or about 79 percent of the County in 2000. Agricultural land was the predominant land use in the County in 2000. It encompassed 94,716 acres, or about 68 percent of nonurban land uses and 53 percent of the County. Much of the existing agricultural land is outside the urban service areas in the Towns of Brighton, Bristol, Paris, Somers, and Wheatland and in the southern and western portions of the Village of Pleasant Prairie. Agricultural lands include all croplands, pasture lands, orchards, nurseries, and nonresidential farm buildings.

Natural resource areas, consisting of surface water, wetlands, and woodlands, combined to encompass 30,367 acres, or about 22 percent of nonurban land uses and about 17 percent of the County in 2000. Natural resource areas are located throughout the County, in both rural areas and within established urban service areas. Quarries²³ encompassed about 518 acres, or less than 1 percent of nonurban land uses and less than 1 percent of the County in 2000. There were 12 nonmetallic mining sites and three landfill sites located in Kenosha County in 2000. The largest landfill site is the Pheasant Run Recycling and Disposal Facility in the Town of Paris, owned and operated by Waste Management, which encompassed 349 acres in 2000.

Open lands encompassed about 14,181 acres, or about 10 percent of nonurban land and about 8 percent of the County, in 2000. Open lands include lands in rural areas that are not being farmed, and other lands that have not been developed. Examples of lands in the latter category include undeveloped portions of park sites, excess transportation rights-of-way, lots that have been platted but not yet developed, subdivision outlots, and undeveloped portions of commercial and industrial lots.

Recent Development (2000 to 2006)

The 2000 land use inventory was supplemented by identifying major development projects that occurred between 2000 and 2006, based on the 2005 digital orthophotography prepared by SEWRPC, field checks, and consultation with local and County officials and staff. Subdivision and condominium plats and certified survey maps recorded with the County between 2000 and 2006 were also used to update existing land use information. Map 21 shows the locations of residential development activity in the County between 2000 and 2006. The map shows areas that have been developed or subdivided for residential development, including subdivision plats that were recorded

²³For purposes of the regional land use inventory, a quarry is defined as an open pit from which stone, sand, gravel, or fill is extracted.

Table 21

LAND USES IN KENOSHA COUNTY: 2000

Land Use Category ^a	Area (acres)	Percent of Subtotal (urban or nonurban)	Percent of Total
Urban			
Residential			
Single-Family	17,264	45.4	9.7
Two-Family	325	0.9	0.2
Multi-Family	728	1.9	0.4
Mobile Homes	280	0.7	0.2
Subtotal	18,597	48.9	10.4
Commercial	1,443	3.8	0.8
Industrial	1,436	3.8	0.8
Transportation, Communications, and Utilities			
Arterial Street Rights-of-Way	4,052	10.6	2.3
Nonarterial Street Rights-of-Way	5,576	14.7	3.1
Railroad Rights-of-Way	647	1.7	0.4
Communications, Utilities, and Other Transportation ^c	1,200	3.2	0.7
Subtotal	11,475	30.2	6.4
Governmental and Institutional ^d	1,691	4.4	0.9
Recreational ^e	3,409	9.0	1.9
Urban Subtotal	38,051	100.0	21.4
Nonurban			
Natural Resource Areas			
Woodlands	9,243	6.6	5.2
Wetlands	16,068	11.5	9.0
Surface Water	5,056	3.6	2.8
Subtotal	30,367	21.7	17.0
Agricultural	94,716	67.6	53.2
Quarries	518	0.4	0.3
Landfills	369	0.3	0.2
Open Lands ^f	14,181	10.1	8.0
Nonurban Subtotal	140,150	100.0	78.6
Total	178,202	--	100.0

^aParking included in associated use.

^bLess than 0.05 percent.

^c"Other Transportation" includes bus depots, airports, truck terminals, and transportation facilities not classified as street or railroad rights-of-way.

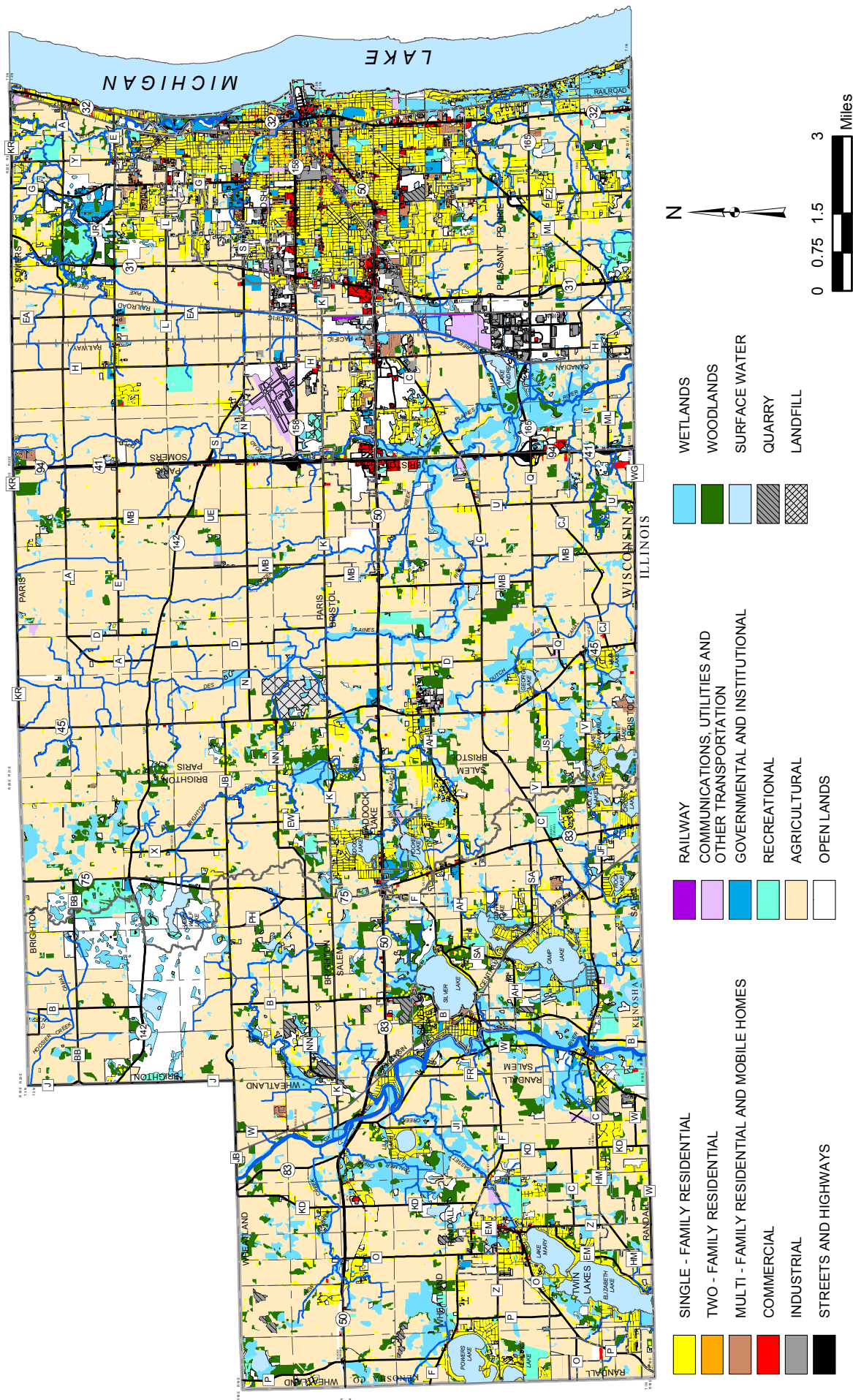
^dIncludes public and private schools, government offices, police and fire stations, libraries, cemeteries, religious institutions, hospitals, nursing homes, and similar facilities.

^eIncludes only that land which is intensively used for recreational purposes.

^fOpen lands includes lands in rural areas that are not being farmed, and other lands that have not been developed including residual lands or outlots attendant to existing urban development that are not expected to be developed.

Source: SEWRPC.

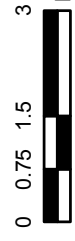
Map 20
LAND USE IN KENOSHA COUNTY: 2000



Source: SEWRPC 2000 Land Use Inventory.

This map displays the Kalamazoo, Michigan region, highlighting the Kalamazoo River and its tributaries. Major roads, including I-196 and I-69, are shown. The map is overlaid with a grid system, with letters A through Z along the top and bottom, and numbers 1 through 95 along the left and right sides. Numerous blue dots, each accompanied by a number, are scattered across the map, indicating specific points of interest or data locations. Key locations labeled include Kalamazoo, Holland, Spring Lake, and various smaller communities and lakes. The map also shows the proximity to the Indiana border and Lake Michigan.

99 REFERENCE NUMBER (SEE TABLE 22)



with the Kenosha County Register of Deeds from 2000 through 2006. The locations of recent multi-family developments are also shown. Table 22 lists residential subdivisions recorded with the County from 2000 through 2006. Additionally, between 2000 and 2006 there were several major nonresidential development projects that occurred within Kenosha County, including the following:

- City of Kenosha
 - Continued development of the HarborPark project in Downtown Kenosha, including completion of the Kenosha Public Museum, Celebration Park
 - The Mahone Middle School located at 6900 60th Street
 - The YMCA Callahan Family Branch at 7101 53rd Street
 - New manufacturing and industrial developments in the Business Park of Kenosha just south of the Kenosha Regional Airport
 - New commercial developments at the intersection of IH 94 and STH 50 and also at STH 50 and STH 31
 - Strawberry Creek Golf Course located along 75th Street west of IH 94
 - Kenosha Area Transit garage and maintenance facility located at 4303 39th Avenue
- Village of Pleasant Prairie
 - St. Catherine's Hospital located at 9555 76th Street
 - New manufacturing and industrial developments in the LakeView Corporate Park East

Table 22

RESIDENTIAL SUBDIVISIONS IN KENOSHA COUNTY: 2000-2006

Number on Map 21	Name of Single-Family Subdivision	Number of Lots	Size (gross acres)	Density ^a
1	City of Kenosha			
2	45th Street Station Estates	20	3.7	5.46
3	Bentz Estates	11	5.4	2.04
4	Bradford Estates	62	24.6	2.52
5	Cavanagh Court Subdivision	27	13.8	1.96
6	Cavanagh Court West	17	8.9	1.90
7	Fireside Estates	18	6.6	2.71
8	Heritage Heights	101	39.9	2.53
9	Horizons at Whitecaps-Phase 1	59	43.8	1.35
10	Horizons at Whitecaps-Phase 2	75	23.6	3.18
11	Horizons at Whitecaps-Phase 3	53	16.0	3.31
12	Indian Trail Estates ^b	70	30.9	2.27
13	Indian Trail Plaza	6	66.1	0.09
14	Kilbourn Woods	98	71.4	1.37
15	Leona's Rolling Meadows	88	76.1	1.16
16	Leona's Rolling Meadows, Addition No. 1	27	10.0	2.71
17	Leona's Rolling Meadows, Addition No. 2	76	26.9	2.83
18	Meadows Height Subdivision	27	8.4	3.21
19	Neuvillage	49	16.4	3.00
20	North Pointe Subdivision ^c	68	22.3	3.05
21	Peterson's Golden Meadows	86	31.0	2.78
22	Peterson's Golden Meadows, Addition No. 1	70	21.0	3.33
23	Peterson's Golden Meadows South	65	24.9	2.61
24	Peterson's Golden Meadows South, Addition Number 1	11	4.9	2.26
25	Peterson's Golden Meadows South, Addition Number 2	105	30.4	3.46
26	Shopko Kenosha Subdivision	5	11.2	0.45
27	Stone Creek Subdivision	112	68.8	1.63
28	Strawberry Creek	16	320.9	0.05
29	Strawberry Creek, Addition 1	120	36.2	3.31
30	Strawberry Creek, Addition 2	62	25.9	2.40
31	The Meadows at Hunger Ridge	51	23.7	2.15
32	Tyler's Ridge	154	57.6	2.67
33	Walnut Grove, Addition No. 1	36	13.6	2.65
34	Walnut Grove, Addition No. 2	28	15.0	1.86
35	Whitecaps Unit 10	50	12.0	4.18
36	Whitecaps Unit 11	65	17.2	3.78
	Whitecaps Unit 12	49	11.6	4.24
37	Village of Paddock Lake Willowwood Subdivision	70	55.3	1.27
38	Village of Pleasant Prairie			
39	Cooper Heights Subdivision	15	8.0	1.87
40	Country Lane Subdivision	33	44.6	0.74
41	Creekside Crossing	15	122.1	0.12
42	King's Cove Subdivision	12	10.0	1.20
43	Mayberry Pond	2	11.5	0.17
44	Meadowdale Estates	72	63.5	1.13
45	Meadowdale Estates, Addition No. 1	41	45.0	0.91
46	Meadowlands	37	30.1	1.23
47	Meadowlands, Addition No. 1 ^d	8	4.1	1.95
48	Mission Hills, Addition No. 2	31	25.1	1.24
49	Mission Hills, Addition No. 3	34	21.8	1.56
50	Springbrook Meadows	31	29.8	1.04
51	Tobin Creek Subdivision	58	52.9	1.10
52	Tobin Creek Subdivision North	40	22.5	1.78
53	Village Green Heights	135	109.2	1.24
54	Village Green Heights, Addition No. 1	83	82.2	1.01
55	Westfield Heights	21	82.2	0.26
56	Whispering Knoll	34	18.6	1.83
	Woodfield Estates	7	33.0	0.21
57	Village of Silver Lake Woodlake Meadows Subdivision	30	18.4	1.63
58	Woodlake Meadows, Addition No. 1	30	16.1	1.87

Table 22 (continued)

Number on Map 21	Name of Single-Family Subdivision	Number of Lots	Size (gross acres)	Density ^a
59	Village of Twin Lakes			
60	Arrowhead South, Addition No. 2	25	10.7	2.33
61	Arrowhead South, Addition No. 3	30	12.2	2.45
62	Arrowhead South, Addition No. 4	61	32.1	1.90
63	Blueberry Hill, Addition No. 2	39	12.8	3.06
63	Whispering Trails, Addition No. 2	33	15.1	2.19
64	Town of Bristol			
65	Bristol Bay	3	65.9	0.05
66	Chaucer Woods	42	38.7	1.09
66	Hazeldell Estates	9	59.7	0.15
67	Town of Randall			
68	Arrowhead	18	22.3	0.81
68	Blackhawk Acres	49	74.3	0.66
69	Randall Farm Estates West and East	129	175.4	0.74
70	Town of Salem			
71	Falcon Heights	34	44.1	0.77
72	Hawk's Run	58	100.6	0.58
73	Hickory Hollow Subdivision	50	49.1	1.02
74	New Sunrise Properties	8	6.3	1.26
75	Rock Lake Meadows	70	74.6	0.94
76	Salem Hills Subdivision	32	45.2	0.71
77	Salem Stream Estates	56	50.7	1.10
78	Sunset Ridge Estates	36	90.4	0.40
79	The Meadows of Mill Creek	24	39.8	0.60
80	Victoria Oaks Subdivision	14	32.6	0.43
80	Woodhaven Meadows	45	225.0	0.20
81	Town of Somers			
82	Covelli Heights	23	15.3	1.50
83	Golf Glen Estates	47	36.0	1.31
84	Hideaway Homes	15	4.9	3.04
85	Oak Forest Estates	14	18.1	0.77
85	Somers Estates	64	43.0	1.49
86	Town of Wheatland			
87	High Street Subdivision	20	39.5	0.51
88	Hillside Heights Estates	10	19.3	0.52
89	Koch's Meadowbrooke Farms, Addition No. 1	21	37.7	0.56
90	Koch's Meadowbrooke Farms, Addition No. 2	25	38.3	0.65
90	Prairie View Subdivision	14	22.5	0.62
--	Total: 90 Single-Family Subdivisions	3,994	3,698.9	1.08
Number on Map 21	Name of Multi-Family Subdivision/Condominium Plat	Number of Units	Size (gross acres)	Density ^e
11	City of Kenosha			
19	Indian Trail Estates ^b	-- f	13.5	--
19	North Pointe Subdivision ^c	-- f	7.6	--
46	Village of Pleasant Prairie			
91	Meadowlands, Addition No. 1 ^d	12	3.5	3.43
91	Meadowlands, Addition No. 2 ^g	-- f	20.9	--
92	Town of Bristol			
92	Bristol Bay Condominiums	172	27.7	6.21
93	Town of Salem			
93	The Meadows of Mill Creek Condominiums	68	18.8	3.61
94	Town of Somers			
95	Avalon Parc	96	18.9	5.09
96	Berryville Apartments	36	1.8	19.82
97	Carrington Court	108	21.5	5.01
97	Somers Estates Condominium Homes	38	10.1	3.77
--	Total: 10 Multi-Family Subdivisions/Condominiums	--	144.3	--

NOTE: Includes subdivisions recorded by plat between 2000 and 2006.

Table 22 Footnotes

^aHomes per gross acre.

^bIndian Trail Estates includes 70 single-family lots encompassing 30.9 acres and two lots containing 112 condominiums encompassing an additional 13.5 acres.

^cNorth Pointe Subdivision includes 68 single-family lots encompassing 22.3 acres, two outlots containing 85 condominiums encompassing an additional 7.6 acres, and a third outlot encompassing 9.0 acres occupied by a church.

^dMeadowlands Addition No. 1 includes eight single-family lots encompassing 4.1 acres and 12 condominium units (eastern half of Trillium Condominium at the Meadowlands) encompassing 3.5 acres.

^eUnits per gross acre.

^fThe number of units contained within these developments was unavailable at the time this table was prepared.

^gMeadowlands Addition No. 2 includes 12 two-family condominiums (western half of Trillium Condominium at the Meadowlands) and the Meadowlands Villa Condominiums.

Source: Kenosha County Planning and Development and SEWRPC.

Chapter III

RELATED PLANS, REGULATIONS, AND PROGRAMS

The updated Kenosha County land and water resource management plan is built upon the initial plan and it complements other planning and resource management efforts and programs linking local level planning with regional and watershed level plans. The plan, therefore, provides an integrated framework within which Kenosha County will conduct activities to protect and rehabilitate the land and water resource base of the County and contribute to the environmentally sound management of these valuable resources in a coordinated and compatible manner with watershedwide needs and resource management programs. One of the first steps to be undertaken in the land and water resource management planning program is the inventory, collation, and review of the recommendations of relevant previously prepared reports and plans.

A number of plans currently exist which focus on the natural resources of Kenosha County. These plans include programs which address the interconnection of the natural resources of Kenosha County with those of the related watersheds and the Southeastern Wisconsin Region, as well as the importance of natural resources at the County and community level. The plans collated and reviewed for input into this current planning program were generally most relevant to actions undertaken by the County or potentially to be undertaken by the County. In addition, selected plans prepared at the local level, including local land use plans, park and open space plans, lake and water quality management plans, and sewer service area plans prepared for individual communities or for special-purpose units of government were considered. All of these documents provide the basis for developing an integrated scheme for the sustainable management of the natural resources of Kenosha County through the coordinated efforts of Federal, State, County, and local governments, special-purpose units of government, and community groups. The land and water resource management plan provides an opportunity to promote detailed action at the local level while achieving strategic objectives within the boundaries of Kenosha County, its watersheds, and the Southeastern Wisconsin Region. This plan takes into account planning objectives identified by local officials and also those reflected in locally adopted land use plans and ordinances. Accordingly, an important step in the planning process was a review of the existing framework of areawide and local plans and related land use regulations. This chapter presents a summary of that review.

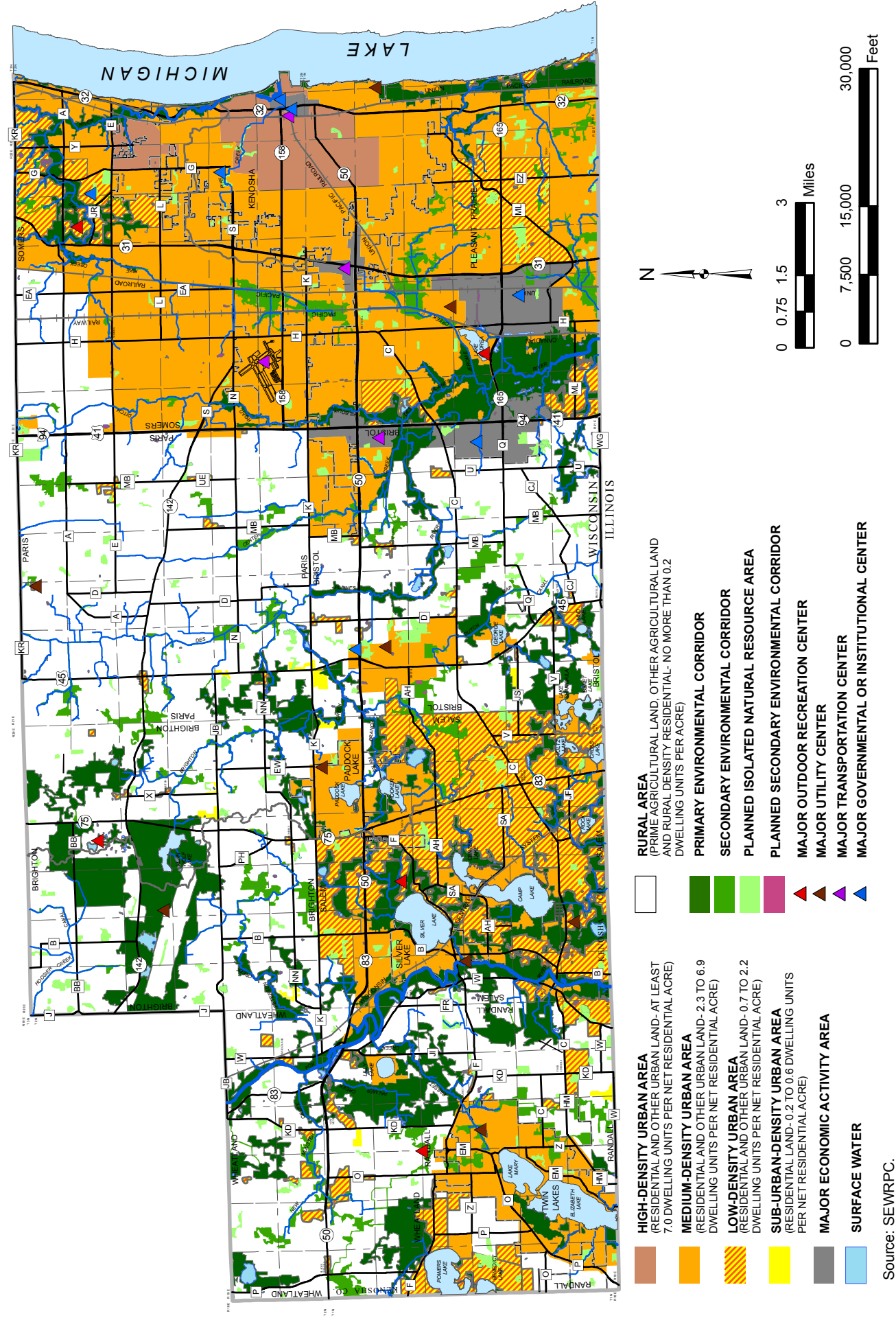
REGIONAL PLANS

Regional Land Use Plan

The regional land use plan sets forth the fundamental concepts that are recommended to guide the development of the seven-county Southeastern Wisconsin Region. The recommended regional land use plan¹ map, as it pertains to Kenosha County, is shown on Map 22. The key recommendations of the plan include:

¹*Documented in SEWRPC Planning Report No. 48, A Regional Land Use Plan for Southeastern Wisconsin: 2035, June 2006.*

Map 22
2035 REGIONAL LAND USE PLAN AS IT PERTAINS TO KENOSHA COUNTY



- ***Environmental Corridors***
The regional land use plan recommends that development within primary environmental corridors be limited to transportation and utility facilities, compatible outdoor recreational facilities, and, on a limited basis, rural density housing located at the fringes of upland environmental corridor using conservation design principles at a maximum density of one dwelling unit per five acres. The plan further recommends the preservation, to the extent practicable, of the remaining secondary environmental corridors and isolated natural resource areas, as determined through county and local planning efforts. Primary environmental corridors are shown on Map 16 in Chapter II of this report. The regional land use plan recommends preservation of the remaining primary environmental corridors in essentially natural and open land uses.
- ***Urban Development***
The regional land use plan recommends a centralized regional settlement pattern within defined urban service areas. New urban development is encouraged to occur largely as infill in existing urban centers and in urban growth areas emanating outward from existing urban centers. The regional plan also recommends that existing developed areas be conserved and enhanced; that new urban development occur at densities which can efficiently and effectively support public sanitary sewerage, water supply, and other services; and that urban development occur only in those areas that are covered by soils suitable for such development and which are not subject to special hazards such as flooding or erosion.
- ***Prime Agricultural Land***
The regional land use plan recommends that prime agricultural land be preserved for long-term agricultural use and not be converted to either urban development or to other forms of rural development. An exception is prime agricultural land located adjacent to existing urban centers and within planned urban growth/sewer service areas, which is proposed to be converted to urban use to provide for orderly growth of those urban centers. The regional plan defers to county plans to identify prime agricultural land. Prime agricultural land is identified by the Kenosha County farmland preservation plan,² which was adopted in 1981. The Kenosha County park and open space plan,³ adopted in 1987 and amended in 1999, updated farmland preservation areas to reflect farmland converted to urban uses since 1981.
- ***Other Agricultural and Rural-Density Residential Lands***
In addition to preserving prime agricultural lands and environmental corridors, the regional land use plan seeks to maintain the rural character of other lands located outside planned urban service areas. The plan encourages continued agricultural and other open space uses in such areas. The plan seeks to limit development in such areas primarily to rural-density residential development, with an overall density of no more than one dwelling unit per five acres. Where rural residential development is accommodated, the regional plan encourages the use of conservation design, with homes grouped together on relatively small lots surrounded by permanently preserved agricultural, recreational, or natural resource areas such as woodlands, wetlands, or prairies sufficient to maintain the maximum recommended density of no more than one home per five acres.

²*Documented in SEWRPC Community Assistance Planning Report No. 45 A Farmland Preservation Plan for Kenosha County, Wisconsin, June 1981.*

³*Documented in SEWRPC Community Assistance Planning Report No. 131, A Park and Open Space Plan for Kenosha County, Wisconsin, November 1987, amended October 1999.*

Regional Transportation System Plan

The regional transportation system plan⁴ is intended to provide a vision for, and guide to, transportation system development in the Region for 20 or more years into the future. It is a multimodal plan of recommended transportation actions designed to address existing and anticipated future transportation problems and needs. The plan consists of four principal elements: public transit, systems management, bicycle and pedestrian facilities, and arterial streets and highways. Future needs for transit, street and highway, and other transportation improvements considered in the regional transportation planning process are derived from the future growth proposed in the regional land use plan. The 2035 regional transportation system plan elements include arterial street and highway, public transit, transportation systems management, and bicycle and pedestrian facilities.

Regional Natural Areas Plan

The regional natural areas plan as it pertains to Kenosha County is depicted in Map 15 in Chapter II of this report. The natural areas plan⁵ identifies the most significant remaining natural areas, critical species habitats, geological sites, and archaeological sites in the Region, and recommends means for their protection and management. The plan identifies potential sites to be placed in public or private protective ownership, and other sites to be protected, insofar as it is possible, through zoning or other regulatory means without protective ownership. It also recommends that a detailed management plan be prepared and implemented for each site placed under protective ownership. The Kenosha County Board adopted the natural areas plan in 1999. An inventory of natural areas, critical species habitat sites, and geological areas in the County is included in Chapter II.

Regional Water Quality Management Plan

In 1979, the SEWRPC completed and adopted a regionwide water quality management plan for southeastern Wisconsin as a guide to achieving clean and healthy surface waters within the seven-county Region. The plan was designed, in part, to meet the Congressional mandate that the waters of the United States be made “fishable and swimmable” to the extent practical. It is set forth in SEWRPC Planning Report No. 30, *A Regional Water Quality Management Plan for Southeastern Wisconsin: 2000*, Volume One, *Inventory Findings*, September 1978; Volume Two, *Alternative Plans*, February 1979; and Volume Three, *Recommended Plan*, June 1979. Subsequently, SEWRPC completed a report documenting the updated content and implementation status of the regional water quality management plan: SEWRPC Memorandum Report No. 93, *A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report*, March 1995. This status report also documents the extent of progress, which had been made toward meeting the water use objectives and supporting water quality standards set forth in the regional plan.

The regional water quality management plan update,⁶ which is currently in progress, will result in the reevaluation and, as necessary, revision of the three major elements comprising the original plan including; the land use element, the point source pollution abatement element, and the nonpoint source pollution abatement element. The original plan and its subsequent update and status reports include specific recommendations for reduction of nonpoint source pollutant levels. These levels of reduction were determined by detailed modeling needed to achieve the adopted water use objectives for the Southeastern Wisconsin Region. The water quality plan update study area only includes a relatively small area in Kenosha County which is in the Root River watershed.

⁴Documented in SEWRPC Planning Report No. 49, *A Regional Transportation System Plan for Southeastern Wisconsin: 2035*, June 2006.

⁵Documented in SEWRPC Planning Report No. 42, *A Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin*, September 1997. *The plan is currently being updated.*

⁶SEWRPC Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*, in progress.

Regional Water Supply Plan

The Commission is conducting a regional water supply study for the Southeastern Wisconsin Region.⁷ The regional water supply plan together with past SEWRPC groundwater inventories and a ground water simulation model^{8,9} will form the SEWRPC regional water supply management program. The preparation of these three elements includes interagency partnerships with the U.S. Geological Survey (USGS), the Wisconsin Geological and Natural History Survey, the University of Wisconsin-Milwaukee, the Wisconsin Department of Natural Resources (WDNR), and many of the area's water supply utilities.

The regional water supply plan will include the following major components:

- Water supply service areas and forecast demand for water use.
- Recommendations for water conservation efforts to reduce water demand.
- Evaluation of alternative sources of supply, recommended sources of supply, and recommendations for development of the basic infrastructure required to deliver that supply.
- Identification of groundwater recharge areas to be protected from incompatible development.
- Specification of new institutional structures necessary to carry out plan recommendations.
- Identification of constraints to development levels in certain areas of the Region due to water supply sustainability concerns.

The recommendations and guidance for groundwater sustainability set forth in SEWRPC Planning Report No. 52 should be considered by municipalities in Kenosha County when evaluating the sustainability of proposed developments and in conducting local land use planning. The plan is expected to be completed in 2008.

COUNTY AND MULTI-JURISDICTIONAL PLANS

Kenosha County Multi-Jurisdictional Comprehensive Plan

Kenosha County was awarded a \$364,000 grant from the Wisconsin Department of Administration in March 2006. The grant will be used to prepare a comprehensive plan for Kenosha County and nine participating local governments: the City of Kenosha; the Villages of Pleasant Prairie and Silver Lake; and the Towns of Brighton, Bristol, Paris, Salem, Somers, and Wheatland. Kenosha County staff and officials will work with local governments, SEWRPC, and UW-Extension to produce the comprehensive plan. SEWRPC staff will draft the plan chapters for review by County and UW-Extension staff, an advisory committee composed of local government representatives, local and County officials, and County residents and landowners. Under the grant, the County and participating local governments will have three years to prepare and adopt the comprehensive plan. The grant period began on June 1, 2006, and will end on May 31, 2009. The comprehensive plan must be adopted by an ordinance of the governing body. The Kenosha County Board and the Common Council, Village Board, or Town Board of each participating city, village, and town must adopt a comprehensive plan by the end of the grant period. The County is providing the entire local match required by the grant.

⁷*SEWRPC Planning Report No. 52, A Regional Water Supply Plan for Southeastern Wisconsin, in progress.*

⁸*SEWRPC Technical Report No. 37, Groundwater Resources of Southeastern Wisconsin, June 2002.*

⁹*SEWRPC Technical Report No. 41, A Regional Aquifer Simulation Model for Southeastern Wisconsin, June 2005.*

Kenosha County Park and Open Space Plan

A County park and open space plan¹⁰ was adopted by the Kenosha County Board in October 1988 and amended in October 1999 to include a proposed major park in the western portion of the County. Kenosha County, has acquired the West End park site in the far western portion of the County, however proposed facility development awaits funding. The site is bounded approximately by CTH F on the south, CTH O on the west, STH 50 on the north, and CTH KD on the east. The site contains an abandoned gravel pit that is proposed to be developed for a swimming beach and nonmotorized boating access. Existing site amenities include a wetland providing habitat for two critical bird species and steep and rolling topography uncommon in Kenosha County. In addition to the swimming beach and nonmotorized boating access, proposed facility development includes informal and group picnicking facilities, primitive group camping facilities, trails for hiking and cross-country skiing, soccer fields, ball diamonds, and an ADA-accessible walking path and fishing pier. That plan consists of both an open space preservation element intended to protect areas containing important natural resources and an outdoor recreation element intended to provide major parks, areawide trails, and resource-oriented recreational facilities. Major parks are defined as publicly owned parks at least 100 acres in size providing opportunities for such resource-oriented activities as camping, golfing, picnicking, and swimming. Responsibility for providing community parks, neighborhood parks, and local trails is assigned to cities, villages, and towns.

The Kenosha County Park and Open Space Plan provides for new facilities and improvements at three existing regional park sites—Brighton Dale Park, Petrifying Springs Park, and Silver Lake Park—and two additional major county parks—Bristol Woods Park and Fox River Park. The plan recommends that the County acquire a new major county park site located along the Des Plaines River in the Village of Pleasant Prairie, separate from the new park site proposed in the 1999 amendment. The plan further recommends the development of areawide trails, recreation corridors, and boat access facilities to major inland lakes.

The open space preservation element of the plan recommends that the County acquire about 2,800 acres of land within a variety of park, parkway, and other open space sites in the County.

Kenosha County Farmland Preservation Plan

Prime agricultural lands are those lands which, in terms of farm size, the aggregate area being farmed, and soil characteristics, are best suited for the production of food and fiber. A number of important public purposes are served by the preservation of prime agricultural lands. Such public purposes include maintenance of agricultural reserves; maintenance of open space; control of public costs by avoiding the need to provide urban services such as sanitary sewer, public water, and full-time police and fire protection; and preservation of the local economic base.

Prime agricultural lands in Kenosha County were identified under the Kenosha County farmland preservation plan,¹¹ which was adopted by the Kenosha County Board in June 1981. In this plan, prime agricultural land must meet the following criteria: the farm unit must be at least 35 acres in size; at least 50 percent of the farm unit must be covered by soils which meet Soil Conservation Service (now the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS)) criteria for “Prime Farmland” or “Farmland of Statewide Importance” (generally Class I, II, or III soils); and the farm should be located in a contiguous farming area at least 100 acres in size.

¹⁰*Documented in SEWRPC Community Assistance Planning Report No. 131, A Park and Open Space Plan for Kenosha County, Wisconsin, November 1987, amended October 1999.*

¹¹*Documented in SEWRPC Community Assistance Planning Report No. 45 A Farmland Preservation Plan for Kenosha County, Wisconsin, June 1981.*

Kenosha County Land and Water Resources Management Plan

A land and water resources management plan¹² was adopted by the County Board in September 2000. The plan identifies a set of priority issues related to County land and water resources, including: stormwater management, sedimentation, animal waste runoff, yard waste management, illicit dumping of waste, excessive fertilizer and pesticide application, wetland resource protection, groundwater degradation, loss of farmland and open space, and lack of riparian buffers. These concerns and issues were used as a basis for developing the goals, objectives, and recommended actions for the plan. Recommendations specific to each of the County's five watersheds were divided into the following categories: agricultural land use, nonagricultural and urban land use, water quality and wildlife habitat, educational programming, and groundwater. To address these issues the plan identifies the following goals: reduce agricultural and nonagricultural nonpoint source pollution; reduce sedimentation in agricultural drainageways; encourage urban density land use only within identified urban service areas; improve the overall water quality and wildlife habitat; continue to implement and enhance the County's shoreland management program; reduce the threat to groundwater contamination; and increase educational efforts related to groundwater resources, natural resources, and the environment. The plan defines a work plan, which sets forth the objectives and actions that will be carried out in order to achieve the goals associated with each issue and identifies the agency or organization responsible for carrying out the listed action steps.

Comprehensive Watershed and Basin Plans

The Regional Planning Commission has developed comprehensive plans for the Fox River watershed,¹³ Pike River watershed,¹⁴ and the Des Plaines River watershed.¹⁵ The Fox River Watershed encompasses 96 square miles, or about 35 percent of the total land area of Kenosha County. The Pike River Watershed encompasses 30 square miles, or about 11 percent of the total land area of Kenosha County. The Des Plaines River Watershed encompasses 122 square miles, or about 44 percent of the total land area of Kenosha County. Together these comprehensive watershed plans cover approximately 90 percent of the land area of Kenosha County. These plans include delineations of new floodplain boundaries and updates to existing boundaries along many streams in each watershed. Plan recommendations were developed for future land use, park and open space needs, stormwater and floodland management, water quality management, and fisheries management. These watershed plans also recommend the continued maintenance and preservation in open uses of primary and secondary environmental corridors and isolated natural resource areas, and the preservation and restoration of potential wetland and prairie areas. The WDNR also prepares State of the Basin Reports for each basin in the County to provide an overview of land and water resource quality, identify challenges facing these resources, and outlining future actions for the WDNR. The State of the Basin reports for Kenosha County includes the Southeastern Fox basin¹⁶ and the Root-Pike basin.¹⁷ Both of these reports have identified the high priority issues and actions that will need to be monitored and managed to restore and protect the basin's resources for the present and future.

¹²*Documented in SEWRPC Community Assistance Planning Report No. 255, A Land and Water Resources Management Plan for Kenosha County, Wisconsin, September 2000.*

¹³*Documented in SEWRPC Planning Report No. 12, A Comprehensive Plan for the Fox River Watershed, April 1969, and amended September 1973.*

¹⁴*SEWRPC Planning Report No. 35, A Comprehensive Plan for the Pike River Watershed, June 1983.*

¹⁵*Documented in SEWRPC Planning Report No. 44, A Comprehensive Plan for the Des Plaines River Watershed, June 2003.*

¹⁶*Wisconsin Department of Natural Resources, The State of the Southeast Fox River Basin, February 2002 PUBL WT-701-2002.*

¹⁷*Wisconsin Department of Natural Resources, The State of the Root-Pike River Basin, May 2002 PUBL WT-700-2002.*

Flood Mitigation Plan for Kenosha County

The Kenosha County Board of Supervisors adopted a Flood Mitigation Plan¹⁸ for Kenosha County in December 2001. The plan is designed to update flood mitigation recommendations and minimize flood damage in the County. The study area for the plan includes the unincorporated areas within the Des Plaines River watershed, the Fox River watershed, the Pike River watershed, and that portion of the Fox River watershed within the Village of Silver Lake.

The primary objective of the flood mitigation plan is to mitigate damages to buildings located adjacent to the streams and lakes of the County. Consistent with regional, State, and Federal flood mitigation standards, the plan addresses floods with recurrence intervals up to, and including, 100-years. Because of the relatively severe and frequent flooding of houses along the Fox River, the plan assigns a high priority to mitigating flood damages along the Fox River. The plan assigns a low priority to flood mitigation along the Des Plaines and Pike Rivers and their tributaries. Removal of structures within the Fox River floodplain was identified as a high priority. To enable the County to accomplish its flood mitigation goal, the following five objective were identified: 1) continue the voluntary acquisition/relocation program of residential and commercial properties in the Fox River floodplain; 2) ensure that all property acquired in the Fox River floodplain is set aside as permanent open space; 3) maintain stringent zoning regulations that prohibit the expansion of existing and the development of new residential and commercial structures in the 100-year floodplain; 4) maintain an inventory of structures at risk of flooding; and 5) disseminate information related to floodprone areas.

CITY, TOWN, AND VILLAGE PLANS

Local Land Use, Master, and Comprehensive Plans

Section 62.23 of the *Wisconsin Statutes* grants cities and villages the authority to prepare and adopt local master plans or plan elements, such as a community land use plan. Section 60.10(2)(c) of the *Statutes* gives towns the authority to prepare and adopt a local master plan under Section 62.23, provided a town adopts village powers and creates a town plan commission. Section 66.1001 of the *Statutes* defines elements a comprehensive plan must contain. All of the towns in Kenosha County have adopted village powers and created a plan commission.

The Villages of Paddock Lake and Twin Lakes and the Town of Randall all have adopted a comprehensive plan as defined in Section 66.1001 of the *Statutes*. Each of the other villages and towns in the County, except for the City of Kenosha, Village of Silver Lake, and the Towns of Brighton and Wheatland, has prepared and adopted a local land use or master plan under Section 62.23.

City and Village Land Use, Master, and Comprehensive Plans

Kenosha County's city and village future land use plans provide for a variety of land uses such as residential, commercial, industrial, parks, environmental corridors, government and institutional, and other uses. City and village planning areas generally extend beyond corporate boundaries to include areas outside of those boundaries that are expected to be annexed by the city or village within the planning period. Planning areas are often related to the extraterritorial plat approval area granted to cities and villages under Section 236.10 of the *Statutes*. Both the Village of Paddock Lake and the Village of Twin Lakes (partnering with the Town of Randall) have adopted comprehensive plans.

Town Land Use and Comprehensive Plans

Town land use and comprehensive plans provide for a variety of recommended land uses, including agricultural, residential, commercial, industrial, parks, environmental corridors, government and institutional, and other uses. Because towns do not have extraterritorial planning authority, town planning areas do not extend beyond town boundaries. The overlapping planning authority demonstrates the importance of intergovernmental cooperation in the comprehensive planning process.

¹⁸*Documented in SEWRPC Community Assistance Planning Report No. 269, Flood Mitigation Plan for Kenosha County, Wisconsin, December 2001, with assistance from the Kenosha County Housing Authority.*

COUNTY AND LOCAL ORDINANCES

Good community development depends not only on quality planning at all levels of government, but on practical implementation measures as well. Land use and development regulations affect the type of uses allowed, as well as the detailed design and site layout of proposed developments. The following presents a summary of general zoning, subdivision, and official mapping regulations adopted by the county and local governments.

General Zoning

Zoning is a tool used to regulate the use of land in Kenosha County in a manner that serves to promote the general welfare of its citizens, the quality of the environment, and the conservation of its resources. Zoning also is used to implement a land use plan. Zoning in and of itself is the delineation of areas or zones into specific districts which provides uniform regulations and requirements that govern the use, placement, spacing, and size of land and buildings. The Kenosha County Department of Planning and Development, Division of County Development, administers the zoning maps and the zoning ordinance for the unincorporated areas of Kenosha County including the Towns of Brighton, Bristol, Paris, Randall, Salem, Somers, and Wheatland. The regulations and requirements for zoning districts and land use are encompassed within the Kenosha County General Zoning and Shoreland/Floodplain Zoning Ordinance, which is Chapter 12 of the Kenosha County Code of Ordinances. Each city and village in Kenosha County has adopted and enforces its own zoning ordinance.

Floodland Zoning

The Floodplain Overlay District was created pursuant to the mandates of *Wisconsin Statute* Section 87.30 for the purpose of regulating all floodplains where serious flood damage may occur. The regulations govern filling and development within a regulatory floodplain, which is defined as the area subject to inundation by the 100-year recurrence interval flood event, which has a one percent chance of occurring in any given year. No structures shall be located, moved or placed on lands in the Floodplain Overlay District. Obstructions to flood flows are not permitted on lands lying within the Floodplain Overlay District, and dumping of any material or substance is not permitted on such lands. The County Shoreland and Floodplain Zoning Ordinance applies in all of the unincorporated areas in Kenosha County. That ordinance exceeds the minimum requirements of the State by regulating the entire floodplain area to preserve floodwater storage. By preventing the loss of floodwater storage, potentially damaging increases in flood flows and stages have been avoided. Existing floodplains in the County are illustrated on Map 10 in Chapter II of this report.

In the Camp Lake/Center Lake Floodplain Fringe Overlay District, County zoning allows for development and filling, as permitted, and structures within the floodplain fringe, provided that the structure is adequately floodproofed. The Villages of Pleasant Prairie, Silver Lake, and Twin Lakes and the City of Kenosha have their own general floodplain zoning ordinances. The Village of Pleasant Prairie's ordinance requires that compensatory floodwater storage be provided to offset the effects of any fill placement in the 100-year floodplain. The City of Kenosha, and the Villages of Silver Lake and Twin Lakes allow for development, as permitted, within the floodplain fringe. Additionally, the Village of Silver Lake allows for structures in the floodway, provided that they are used for nonresidential purposes, are anchored in place, the longitudinal axis is parallel to the flow of water, and that the structure does not increase the flood elevations by any more than 0.01 foot.

Shoreland and Wetland Zoning

Under Section 59.692 of the *Wisconsin Statutes* and Chapter NR 115 of the *Wisconsin Administrative Code*, counties are responsible for regulating shoreland areas within unincorporated town areas. The Kenosha County shoreland zoning ordinances are in effect in all unincorporated areas of Kenosha County. Additionally, all of the incorporated municipalities within the County have adopted shoreland zoning ordinances. The shoreland is defined as those lands that are within 1,000 feet of the ordinary high water mark of a navigable lake, pond, or flowage, 300 feet of the ordinary high water mark of a navigable stream, or to the landward side of the floodplain, whichever distance is greater. Minimum standards for county shoreland zoning ordinances are set forth in Chapter NR 115 of the *Wisconsin Administrative Code*. Chapter NR 115 sets forth requirements regarding lot sizes and building setbacks; restrictions on cutting of trees and shrubbery; and restrictions on filling, grading, lagooning, dredging, ditching, and excavating that must be incorporated into county shoreland zoning regulations. A

comprehensive list of permissible projects within the shoreland zoning jurisdiction is set forth in the Kenosha County General Zoning and Shoreland Floodplain Zoning Ordinance. Most projects requiring a shoreland permit from Kenosha County will require a corresponding permit from the WDNR and, possibly, a permit from the U.S. Army Corps of Engineers. Kenosha County shoreland permits are not valid without the necessary Town, State, or Federal permits.

NR 115 also requires that counties place all wetlands five acres or larger and within the statutory shoreland zoning jurisdiction area into a wetland conservancy zoning district to ensure their preservation after completion of appropriate wetland inventories by the WDNR. Aside from wetlands within the shoreland zone, in the unincorporated areas of Kenosha County, wetlands five acres and larger are also placed into the C-1 Lowland Conservancy District. The C-1 Lowland Resource Conservancy District is intended to prevent destruction of valuable natural or manmade resources and to protect watercourses and marshes, including the shorelands of navigable waters and areas that are not naturally drained or which are subject to periodic flooding, where development would result in hazards to health or safety, would deplete or destroy natural resources, or would otherwise be incompatible with public welfare. Construction, filling, flooding, draining, dredging, ditching, tiling, or excavating are generally prohibited in a C-1 Lowland Resource Conservancy District, unless a conditional use permit is issued following review, public hearing, and approval by the Kenosha County Land Use Committee. As noted previously, the Kenosha County shoreland, wetland, and floodplain zoning ordinance is set forth in Chapter 12 of the County Code of Ordinances. Map 10 in Chapter II of this report shows those areas in the County regulated under Chapter 12. The WDNR has approved the County shoreland ordinance and the local shoreland-wetland ordinances.

Subdivision Regulations

Chapter 236 of the *Wisconsin Statutes* requires the preparation of a subdivision plat whenever five or more lots of 1.5 acres or less in area are created either at one time or by successive divisions within a period of five years. The *Statutes* set forth requirements for surveying lots and streets, for plat review and approval by State and local agencies, and for recording approved plats. Section 236.45 of the *Statutes* allows any city, village, town, or county that has established a planning agency to adopt a land division ordinance, provided the local ordinance is at least as restrictive as the State platting requirements. Local land division ordinances may include the review of other land divisions not defined as “subdivisions” under Chapter 236, such as when fewer than five lots are created or when lots larger than 1.5 acres are created.

The subdivision regulatory powers of towns and counties are confined to unincorporated areas. City and village subdivision control ordinances may be applied to extraterritorial areas, as well as to incorporated areas.¹⁹ It is possible for both a county and a town to have concurrent jurisdiction over land divisions in unincorporated areas, or for a city or village to have concurrent jurisdiction with a town or county in the city or village extraterritorial plat approval area. In the case of overlapping jurisdiction, the most restrictive requirements apply. Each of the incorporated communities in Kenosha County has adopted its own subdivision ordinance.

On August 6, 2002, the Rural Cluster Development Overlay District was approved to preserve rural landscape character, sensitive natural areas, farmland, and other large areas of open land, while permitting residential development at low, rural densities, in an open space setting located and designed to reduce the perceived intensity of development and provide privacy for dwellings. Rural Cluster Development attempts to preserve important landscape elements, including those areas containing unique and environmentally sensitive natural features such as woodlands, hedgerows, stream corridors, wetlands, floodplains, shorelands, prairies, ridge tops, steep slopes, and critical species habitat by setting them aside from development. Such areas are contained in primary environmental corridors as identified by the Regional Planning Commission and are of particular significance for conservation.

¹⁹*Under Section 236.02 of the Wisconsin Statutes, the extraterritorial plat approval jurisdiction is the area within three miles of the corporate limits of a first-, second-, or third-class city and within 1.5 miles of a fourth-class city or village.*

Agricultural Zoning District

Kenosha County regulates the A-3 Agricultural Zoning District to provide for the proper location and regulation of manufacturing, warehousing, storage, and related industrial, commercial, marketing, and service activities that are dependent upon, or closely allied to, the agricultural industry. Accessory uses in the A-3 District include commercial feedlots. The following facilities are considered commercial feedlots: 1) any tract of land or structure wherein any type of fowl or the by-products thereof are raised for sale at wholesale or retail; 2) any structure, pen, or corral wherein cattle, horses, sheep, goats, and swine are maintained in close quarters for the purpose of fattening such livestock for final shipment to market; 3) an animal confinement facility used or designed for the feeding or holding of 500 or more animal units for a period of 30 days or more. All new and expanding commercial feedlot facilities must comply with special requirements, set forth in Chapter 12 of the County Code of Ordinances, to receive approval.

Nonmetallic Mining Reclamation Ordinance

Effective June 1, 2002, *Chapter 13 Kenosha County Non-Metallic Mining Reclamation Ordinance* establishes a local program to ensure effective reclamation, including, but not limited to, the control and prevention of soil erosion, the prevention of water pollution of the surface and subsurface waters, and the promotion of sound future land use on nonmetallic mining sites in Kenosha County.

The Village of Pleasant Prairie adopted and administers a nonmetallic mining ordinance that requires nonmetallic mining restoration plans for nonmetallic mining sites within the Village.

STATE NONPOINT SOURCE POLLUTION CONTROL STANDARDS AND PROHIBITIONS

Construction Site Erosion Control

Sections 62.234 and 61.354 of the *Wisconsin Statutes* grant authority to cities and villages, respectively, to adopt ordinances for the prevention of erosion from construction sites and the management of stormwater runoff from lands within their jurisdiction. Under Section 60.627 of the *Wisconsin Statutes* towns may adopt village powers and subsequently utilize the authority conferred on cities and villages to adopt their own erosion control and stormwater management ordinances, subject, however, to county board approval where a county ordinance exists. A construction site erosion control and stormwater management ordinance is not in effect for the unincorporated areas of the County,²⁰ with the exception of the Towns of Bristol, Salem, and Somers which each having their own general ordinance regulating erosion within construction areas. The City of Kenosha, and the Villages of Paddock Lake, Pleasant Prairie, Silver Lake, and Twin Lakes have adopted erosion control and stormwater management ordinances. These ordinances require persons engaging in land disturbing activities to apply erosion control practices, as set forth in the WDNR “Storm Water Management and Post-Construction Technical Standards,”²¹ which specify the minimum requirements needed to plan, design, install, and maintain a wide array of conservation practices aimed at controlling erosion from construction sites, abating urban nonpoint source pollution, and promoting infiltration of stormwater.

²⁰Although Kenosha County does not have an ordinance for stormwater management and construction site erosion control, the County reviews the stormwater management and construction site erosion control aspects of land development projects, as required by Section 12.08-2 of the Kenosha County General Zoning and Shoreland/Floodplain Zoning Ordinance. Those reviews are made for development in the business, industrial, and manufacturing zoning districts established under the ordinance. Subdivision developments are also reviewed for stormwater management and erosion control as required by Chapters 14.08-8 and 14.09-5 of the Subdivision Control Ordinance.

²¹The WDNR technical standards can be accessed at:
<http://www.dnr.state.wi.us/org/water/wm/nps/stormwater/techstds.htm>

State Standards and Regulations for Control of Nonpoint Source Pollution

Through 1997 Wisconsin Act 27, the State Legislature required the WDNR and DATCP to develop performance standards for controlling nonpoint source pollution from agricultural and nonagricultural land and from transportation facilities.²² The performance standards are set forth in Chapter NR 151, "Runoff Management," of the *Wisconsin Administrative Code*, which became effective on October 1, 2002, and was revised in July 2004. Below is a summary of the standards and prohibitions that apply to the Kenosha County Land and Water Resource Management plan:

Agricultural Regulations, Performance Standards, and Prohibitions

Performance standards relate to four areas of agriculture: cropland soil erosion control, soil loss from riparian lands, manure management, and nutrient management.

The agricultural performance standards are:

- Soil erosion rates on all cropland must be maintained at or below "T" (Tolerable Soil Loss).
- Starting in 2005 for high priority areas such as impaired or exceptional waters, and 2008 for all other areas, application of manure or other nutrients to croplands must be done in accordance with a nutrient management plan, designed to meet state standards for limiting the entry of nutrients into groundwater or surface water resources.
- Clean water runoff must be diverted away from contacting feedlots, manure storage facilities, and barnyards in water quality management areas (areas within 300 feet of a stream, 1,000 feet from a lake, or areas susceptible to groundwater contamination).
- All new or substantially altered manure storage facilities must meet current engineering design standards to prevent surface or groundwater pollution.

The manure management prohibitions are:

- No direct runoff from animal feedlots to "waters of the state."
- No overflowing manure storage facilities.
- No unconfined manure piles in shoreland areas (areas within 300 of a stream, 1,000 feet from lakes).
- No unlimited livestock access to "waters of the state" where the livestock prevent sustaining an adequate vegetative cover.

In general, for land that does not meet the NR 151 standards and that was cropped or enrolled in the U.S. Department of Agriculture Conservation Reserve or Conservation Reserve Enhancement Programs as of October 1, 2002, agricultural performance standards are only required to be met if cost sharing funds are

²²The State performance standards are set forth in the Chapter NR 151, "Runoff Management," of the Wisconsin Administrative Code. Additional code chapters that are related to the State nonpoint source pollution control program include: Chapter NR 152, "Model Ordinances for Construction Site Erosion Control and Storm Water Management," Chapter NR 153, "Runoff Management Grant Program," Chapter NR 154, "Best Management Practices, Technical Standards and Cost-Share Conditions," Chapter NR 155 "Urban Nonpoint Source Water Pollution Abatement and Storm Water Management Grant Program", and Chapter ATCP 50 "Soil and Water Resource Management." Those chapters of the Wisconsin Administrative Code became effective in October 2002. Chapter NR 120, "Priority Watershed and Priority Lake Program," and Chapter NR 243, "Animal Feeding Operations," were repealed and recreated in October 2002.

available. Existing cropland that met the standards as of October 1, 2002, must continue to meet the standards. New cropland must meet the standards, regardless of whether cost share funds are available.

Chapter NR 243, “Animal Feeding Operations,” of the *Wisconsin Administrative Code* sets forth rules for concentrated animal feeding operations and other animal feeding operations for the purpose of controlling the discharge of pollutants to waters of the State. Concentrated animal feeding operations are defined as livestock and poultry operations with more than 1,000 animal units. Animal units are calculated for each different type and size class of livestock and poultry. For example, facilities with 1,000 beef cattle, 700 milking cows, or 200,000 chickens each would be considered to have the equivalent of 1,000 animal units. All concentrated animal feeding operations and certain types of other animal feeding operations must obtain Wisconsin Pollutant Discharge Elimination System (WPDES) permits. In general, animal feeding operations are defined as feedlots or facilities, other than pastures, where animals are fed for a total of 45 days in any 12-month period.

Under Chapter NR 216, “Stormwater Discharge Permits” of the *Wisconsin Administrative Code* agriculture is not exempt from the requirement to submit a notice of intent (NOI) for one or more acres of land disturbance for the construction of structures such as barns, manure storage facilities or barnyard runoff control systems. Construction of an agricultural building or facility must follow an erosion and sediment control plan consistent with Section NR 216.46, *Wisconsin Administrative Code*, including meeting the performance standards of Section NR 151.11, *Wisconsin Administrative Code*. Agriculture is exempt from this requirement for activities such as planting, growing, cultivating and harvesting crops for human or livestock consumption and pasturing of livestock as well as for sod farms and tree nurseries. NR 216 establishes the criteria and procedure for issuance of stormwater discharge permits to limit the discharge of pollutants carried by stormwater runoff into waters of the State.

Nonagricultural (urban) Performance Standards and Storm water Discharge Permits

The nonagricultural performance standards set forth in Chapter NR 151 encompass two major types of land management. The first includes standards for areas of new development and redevelopment and the second includes standards for developed urban areas. The performance standards address the following areas:

- Construction sites for new development and redevelopment,
- Post construction stormwater runoff for new development and redevelopment,
- Developed urban areas, and
- Nonmunicipal property fertilizing.

Chapter NR 151 requires counties and local units of government in urbanized areas, which are identified based on population density, to obtain a WPDES stormwater discharge permit as required under Chapter NR 216.²³ Kenosha County, the City of Kenosha, and the Villages of Paddock Lake²⁴ and Pleasant Prairie will be required to obtain WPDES stormwater discharge permits.

Chapter NR 151 requires permit holders to reduce the amount of total suspended solids in stormwater runoff from areas of existing development that is in place as of October 2004 to the maximum extent practicable, according to the following standards:

²³*Chapter NR 216 of the Wisconsin Administrative Code, which is entitled “Storm Water Discharge Permits,” sets forth requirements for construction site erosion control and for industrial, municipal, and transportation-related stormwater discharge permits.*

²⁴*The Village of Paddock Lake is a member of the Round Lake Beach of Illinois stormwater management area.*

- By March 10, 2008, the NR 151 standards call for a 20 percent reduction, and
- By October 1, 2013, the standards call for a 40 percent reduction.

Permitted municipalities are required to implement the following 1) public information and education programs relative to specific aspects of nonpoint source pollution control; 2) municipal programs for collection and management of leaf and grass clippings; and 3) site-specific programs for application of lawn and garden fertilizers on municipally controlled properties with over five acres of pervious surface. Under the requirements of Chapter NR 151, by March 10, 2008, incorporated municipalities with average population densities of 1,000 people or more per square mile that are not required to obtain municipal stormwater discharge permits must implement those same three programs.

In addition, regardless of whether a municipality is required to have a stormwater discharge permit under Chapter NR 216, Chapter NR 151 requires that all construction sites that have one acre or more of land disturbance must achieve an 80 percent reduction in the amount of sediment that runs off the site. With certain limited exceptions, those sites required to have construction erosion control permits must also have post-development stormwater management practices to reduce the total suspended solids (sediment) that would otherwise run off the site by 80 percent for new development, 40 percent for redevelopment, and 40 percent for infill development occurring prior to October 1, 2012. After October 1, 2012, infill development will be required to achieve an 80 percent reduction. If it can be demonstrated that the solids reduction standard cannot be met for a specific site, total suspended solids must be controlled to the maximum extent practicable.

Section NR 151.12 of the *Wisconsin Administrative Code* requires infiltration of post-development runoff from areas developed on or after October 1, 2004, subject to specific exclusions and exemptions as set forth in Sections 151.12(5)(c)5 and 151.12(5)(c)6, respectively. In residential areas, either 90 percent of the annual predevelopment infiltration volume or 25 percent of the post-development runoff volume from a two-year recurrence interval, 24-hour storm, is required to be infiltrated. However, no more than 1 percent of the area of the project site is required to be used as effective infiltration area. In commercial, industrial and institutional areas, 60 percent of the annual predevelopment infiltration volume or 10 percent of the post-development runoff volume from a two-year recurrence interval, 24-hour storm, is required to be infiltrated. In this case, no more than 2 percent of the project site is required to be used as effective infiltration area.

Buffer Standards

Riparian buffers help to slow the velocity of water, allowing the settling of suspended soil particles, infiltration of runoff and soluble pollutants, adsorption of pollutants on soil and plant surfaces, and uptake of soluble pollutants by plants. When the administrative rules concerning the redesign of the state nonpoint pollution control program were being developed in 2000 and 2001, there was disagreement about what role vegetative buffers should have in the performance standards. In order for the rest of the administrative rules to move forward, the WDNR agreed to remove the buffer language from the draft rules and revisit the issue at a later date. The Wisconsin Buffer Initiative, led by the University of Wisconsin, was assigned the duty to conduct additional research on the topic and make recommendations for implementation. The WDNR is currently in the process of establishing a minimum State performance standard for buffers to address sediment delivery from cropland at “T” values. When the WDNR adopts a buffer standard for NR 151, the Kenosha County LWCD will evaluate the new provisions and consider how to incorporate them into its local program efforts. Until that time, Natural Resources Conservation Service technical standards will be applied through voluntary programs.

It is important to note that nonagricultural performance standards set forth in Section NR 151.12 (post-construction performance standard for new development and redevelopment) also generally requires impervious area setbacks of 50 feet from streams, lakes, and wetlands. This setback distance is increased to 75 feet to protect Chapter NR 102-designated Outstanding or Exceptional Resource Waters or Chapter NR 103-designated wetlands of special natural resource interest. Reduced setbacks from less susceptible wetlands and drainage channels of not less than 10 feet may be allowed.

CONSERVATION PROGRAMS

Coordination with Federal, State, regional, and local agencies is paramount to the protection of the land and water resources of Kenosha County. The conservation programs mentioned below are vital to the successful implementation of this plan. The positive integration of programs and funding sources administered by the county and its cooperating agencies do the most toward accomplishing the workplan objectives set forth in Chapter IV.

Federal Programs

The USDA Farm Service Agency (FSA) and NRCS have several programs directed at agricultural producers to alleviate cropland erosion, and to protect natural resources, as well as provide a financial incentive. There are four programs that help to reduce erosion, protect wildlife habitat, restore wetlands, and improve water quality. All programs involve cost-share assistance from the Federal government, provided the landowner follows the prescribed practices of each program.

Conservation Reserve Program

The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners that provide annual rental payments and cost-share assistance to establish long-term, resource-conserving covers on eligible farmland. The CRP goal is to reduce soil erosion, protect the nation's ability to produce food and fiber, reduce sedimentation in streams and lakes, improve water quality, establish wildlife habitat, and enhance forest and wetland resources. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as a prairie-compatible, noninvasive forage mix; wildlife plantings; trees; filter strips; or riparian buffers. Farmers receive an annual rental payment for the term of the multi-year contract based on the agriculture rental value of the land, and up to 50 percent Federal cost sharing is provided to establish vegetative cover. The program is administered by the FSA, an agency of the USDA, with technical assistance provided by NRCS. NRCS works with landowners to develop their application, and to plan, design, and install the conservation practices on the land.

Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program that supports agriculture and environmental quality as compatible goals. Through EQIP, farmers may receive financial and technical help with structural and management conservation practices on agricultural land. EQIP offers contracts for practice implementation for periods ranging from one to 10 years, and it pays up to 50 to 75 percent of the costs of eligible conservation practices. Incentive payments and cost share payments may also be made to encourage a farmer to adopt land management practices such as nutrient management, manure management, integrated pest management, or wildlife habitat management.

Wildlife Habitat Incentives Program

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program to develop or improve wildlife habitat on private lands. It provides both technical assistance and up to 75 percent Federal cost sharing to help establish and improve wildlife habitat. Landowners agree to work with NRCS to prepare and implement a wildlife habitat development plan which describes the landowner's goals for improving wildlife habitat, includes a list of practices and a schedule for installing them, and details the steps necessary to maintain the habitat for the life of the cost-share agreement. WHIP emphasizes re-establishment of declining species and habitats, including prairie chickens, meadowlarks, sharp-tailed grouse, Karner blue butterfly, smallmouth bass, blue-winged teal, and many other species of grassland birds, reptiles, insects, and small mammals. Some of the opportunities that exist are installing in-stream structures to provide fish habitat, restore prairie and oak savannahs, and brush management and control of invasive species.

Cost shared practices include burning, seeding, and brush management of prairies, grasslands, and savannah; installing instream structures and bank stabilization in streams; and improving timber stands and managing brush on woodlots. Federal or State wildlife agencies or private organizations may provide additional funding or expertise to help complete a project. Contracts normally last a minimum of five years from the date the contract is

signed and cost sharing does not exceed \$10,000. Eligible lands must be a minimum of five acres of agricultural or nonagricultural land, woodlots, pasture land, streambanks, and shorelands. Lands currently enrolled in other conservation programs are not eligible to participate in WHIP.

Wetlands Reserve Program

The Wetlands Reserve Program (WRP) is another voluntary program designed to restore and protect wetlands on private property. It is an opportunity for landowners to receive financial incentives to restore wetlands that have been drained for agricultural purposes. Landowners who choose to participate in WRP may sell a conservation easement or enter into a cost-share restoration agreement with USDA to restore and protect wetlands. The landowner voluntarily limits future use of the land, yet retains private ownership. The landowner and NRCS develop a plan for the restoration and maintenance of the wetland. This program offers landowners three options; permanent easements, 30-year easements, and restoration cost-share agreements of a minimum 10-year duration.

Resource Conservation and Development

The Resource Conservation and Development (RC&D) program was established by the Federal Agricultural Act of 1962. This act directs the USDA to help units of government conserve and properly utilize all resources in solving local issues. Wisconsin has seven RC&Ds, covering all Wisconsin counties. In 2005 Kenosha County became a member of the Town and Country RC&D area which was organized to cover thirteen counties in southeastern Wisconsin. The Town and Country RC&D helps to facilitate the development and coordination of existing and innovative projects, and will assist in finding funding to implement them. Town and Country RC&D has helped promote agricultural, energy, water quality, and educational projects and programs throughout the Region.

State and Local Programs

Wisconsin Farmland Preservation Program

The Wisconsin Farmland Preservation Program provides income tax credits to eligible farmland owners. The program is administered by County and local governments, but the Wisconsin Land and Water Conservation Board (LWCB) must first certify that the county farmland preservation plan meets the standards specified in Chapter 91 of the *Wisconsin Statutes*. Of the 72 counties in Wisconsin, 70 have certified farmland preservation plans. Kenosha County's farmland preservation plan was certified in 1981. To be eligible to enroll in the program, farmland must be pre-designated in the County Farmland Preservation Plan, must be a minimum of 35 contiguous acres, and must produce a minimum of \$6,000 in gross farm receipts in the previous year or \$18,000 in the previous three years. Farmland owners may participate in one of two ways: through exclusive agricultural zoning or through Farmland Preservation Agreements. Participation through exclusive agricultural zoning may occur only when the local jurisdiction having zoning authority (city, village, or county) has a zoning ordinance that is certified by the LWCB as having met the standards of Chapter 91 of the *Statutes*. The only uses permitted in exclusive agricultural zoning districts are agricultural uses and uses consistent with agricultural use, which are specified in the *Statutes*. Kenosha County and the Village of Pleasant Prairie have zoning ordinances that have been certified by the LWCB. Landowners in each of the Towns are eligible to participate in the Farmland Preservation Program because they are governed by the County zoning ordinance.

In addition to the Farmland Preservation program, landowners can also claim an income tax credit under the Wisconsin Farmland Tax Relief Credit program. The acreage and production requirements of this separate program are the same as for the Wisconsin Farmland Preservation program, indicated above; however, this is solely a tax relief program which the credit is not affected by the claimant's household income. In addition, there are no land use planning requirements or compliance with county soil and water conservation standards.

In 2005, the Department of Agriculture, Trade and Consumer Protection (DATCP) launched the Working Lands Initiative and established a steering committee to develop a consensus vision on managing Wisconsin's valuable land assets. The Working Lands Initiative Steering Committee in August 2006 issued a report with a set of recommendations intended to update and expand upon policies and programs affecting Wisconsin's working lands. The report recommends an update to the Wisconsin Farmland Preservation Program, which includes:

setting a flat per-acre tax credit for landowners instead of basing the credit on household income, requiring all land in the program to be zoned for exclusive agricultural use, and streamlining the process of applying for the program and claiming the tax credits. Proposed changes to the Farmland Preservation Program were included in DATCP's 2007-09 budget request. The Committee's report also recommends establishing the following: Working Lands Enterprise Areas program, purchase of development rights program, and beginning farmer and logger programs.

Soil and Water Resource Management Program

The Department of Agriculture, Trade and Consumer Protection administers Wisconsin's soil and water resource management program (SWRM) under the provisions of Chapter 92, Wis. Stats. and Chapter ATP 50, *Wisconsin Administrative Code*. The Soil and Water Resource Management grant program was developed to support locally led conservation efforts. Counties are awarded grant funds to pay for conservation staff and provide landowner cost-sharing to implement their LWRMP. The current version of Chapter ATP 50, *Wisconsin Administrative Code*, revised in October 2004, relates specifically to agricultural programs and it establishes requirements and/or standards for:

- Soil and water conservation on farms,
- County soil and water programs, including land and water resource management plans,
- Grants to counties to support county conservation staff,
- Cost-share grants to landowners for implementation of conservation practices,
- Design certifications by soil and water professionals,
- Local regulations and ordinances, and
- Cost-share practice eligibility and design, construction, and maintenance.

Kenosha County Tree and Shrub Program

Kenosha County Tree & Shrub Program has been offered for over 25 years and has sold nearly one million trees. The purpose of the program is to encourage area residents to plant native trees and shrubs for the purpose of conservation and wildlife enhancement. The program offers a variety of pines, hardwoods, and shrubs. This sale is open to the interested public in the area. The tree program also offers an opportunity to introduce the community to Kenosha County conservation staff and programs.

Managed Forest Law Program

A number of landowners in Kenosha County participate in the Managed Forest Law Program (MFL), a State incentive program intended to encourage sustained yield forestry on private woodlands. Under this program, lands enrolled in the "closed" category are not available to the public while the "open" lands are accessible for such recreation activities as hunting, fishing, and cross-country skiing. Enrollment is by contract between the WDNR and the landowner; the landowner can choose a 25- or 50-year contract; landowners make payments in lieu of property taxes amounting to less than what the property tax would be; and must consist of at least 10 acres of contiguous forest land located in the same municipality. Landowners must agree to follow a forest management plan. The MFL Program was created in 1985, replacing similar programs—the Wisconsin Forest Crop Law program and Wisconsin Woodland Tax Law program. Some contracts under the Forest Crop Law program remain in effect in Wisconsin; all Woodland Tax Law program contracts have expired. The locations of individuals that were enrolled in the MFL Program in Kenosha County in 2006 are presented on Map 14 in Chapter II of this report.

Lake Districts and Associations

Lake Protection and Rehabilitation Districts have been formed under Chapter 33 of the *Wisconsin Statutes* for Lake Benedict, Camp Lake, Center Lake, Elizabeth Lake and Lake Mary (Twin Lakes), George Lake, Hooker Lake, Lilly Lake, Lake Mary, Paddock Lake, Powers Lake, Lake Shangri-La, and Voltz Lake. Lake Districts are a special-purpose unit of government formed to maintain, protect, and improve the quality of a lake and its watershed. Lake Districts have offered to fund specific conservation practices and educational efforts. The Kenosha County LWCD continues to encourage mutually beneficial relationships with Lake Districts and Associations.

Targeted Runoff Management Grant Program

To help control polluted runoff from both agricultural and urban sites. Targeted Runoff Management (TRM) grants are available to address high-priority resource problems. Eligibility is limited to local units of government, special-purpose districts (i.e., school or stormwater utility districts), tribal commissions, and regional planning agencies. Governmental units may be granted 70 percent of eligible costs for various (urban or rural) best management practices (BMPs), up to a cap of \$150,000. Property purchases (from willing sellers only) granted at 50 percent of WDNR-approved appraised value can be included in the \$150,000 grant cap. Rural easements, funded at 75 percent of the WDNR-appraised value, can also be included in the \$150,000 grant cap. For rural BMPs (i.e., barnyard relocation, manure storage), units of government (county land conservation departments) hold contracts on behalf of county residents. Funds are disbursed on a reimbursement basis at completion of the project according to the two-year grant contract terms.

Urban Nonpoint Source and Storm Water Planning Program

Urban Nonpoint Source and Storm Water Planning Program (UNPS&SW) grant funds are used to control polluted runoff in urban project areas. Funds are typically awarded for either planning or construction projects. The grant period is two years. Projects funded by these grants are site-specific, serve areas generally smaller in size than a subwatershed, and are targeted to address high-priority problems. An “urban project area” must meet one of these criteria:

- Has a residential population density of at least 1,000 people per square mile,
- Has a commercial or industrial land use,
- Is a portion of a privately owned industrial site not covered by a WPDES permit issued under Chapter NR 216 of the *Wisconsin Administrative Code*, or
- Is a municipally owned industrial site (regardless of Chapter NR 216 permit requirements).

Governmental units are eligible for a grant even if the governmental unit is covered by a stormwater permit under Chapter NR 216.

UNPS&SW planning grants can be used to pay for a variety of technical assistance activities. Eligible activities such as stormwater management planning, related information and education activities, ordinance and utility development and enforcement are cost shared at 70 percent. Eligible UNPS&SW construction grant costs may include such projects as stormwater detention ponds, filtration and infiltration practices, streambank stabilization, and shoreline stabilization. Those eligible costs are cost shared at 50 percent up to a maximum of \$150,000. Additional cost-share reimbursements may be available for project design, land acquisition, and permanent easements costs with approval by the WDNR regional staff.

WATER USE OBJECTIVES AND WATER QUALITY STANDARDS

The water use objectives for the surface waters of Kenosha County are set forth in Chapters NR 102 and NR 104 of the *Wisconsin Administrative Code*. With the exception of those waters identified in Section NR 104.06 of the *Wisconsin Administrative Code*, the waters of the County are expected to meet the standards for the warmwater sport fish use objective, and be fully compliant with the fishable and swimmable goals set for the waters of the

United States by the Federal Clean Water Act. The water use objectives established for the waters of Kenosha County are shown on Map 22, and the water quality standards and criteria associated with the water use objectives are set forth in Table 23.

Those waters not meeting the standards for a warmwater sportfish use objective are also shown on Map 23. The portion of the Salem Branch of Brighton Creek from the Salem Utility District No. 1 wastewater treatment plant to 216th Street in the Town of Salem, and the South Branch Pike River (also known as Pike Creek) from Somers Tributary to the Pike River, are indicated to be Class I variance waters supporting limited forage fish. The remainder of the waters identified as not meeting the standards for warmwater sportfish within Kenosha County have been determined to be Class II variance waters supporting limited aquatic life, pursuant to Section NR 104.06 of the *Wisconsin Administrative Code*. In addition to these waters, Barnes Creek and Pike Creek, within Kenosha County, are identified in Section NR 104.06 (2) as variance waters that generally meet the requirements for supporting warmwater sportfish except that dissolved oxygen concentrations should be greater than 2.0 mg/l and fecal coliform concentrations should not exceed 1,000 cells per 100 milliliter as a monthly geometric mean based upon not less than five samples.

The progressive implementation of the recommended management measures set forth in the adopted regional water quality management plan has resulted in improvements in the water quality of the stream systems within Kenosha County. As a consequence, the WDNR has proposed modifying the water use objectives established for specific stream reaches as set forth in Table 24. While these proposals indicate the intent of the WDNR, it should be noted that Chapter NR 104 of the *Wisconsin Administrative Code* has not been formally amended. In general, the elimination of point sources of water pollution has resulted in the upgrading of variance waters identified in Section NR 104.06 from limited aquatic life and limited forage fish communities, to warmwater forage or sport fish communities that are consistent with the fishable water objective of the Federal Clean Water Act.

It is estimated that the majority of the streams and lakes within Kenosha County are fully or partially meeting recommended water use objectives based upon water quality criteria set forth in the regional water quality management plan update.²⁵ However, Elizabeth, Silver, Camp, Voltz, Shangrila, Benet, Hooker and George Lakes are major lakes that were considered to not be meeting their recommended water use objectives. Shangrila and Benet are the only major Lakes not meeting the recommended water use objectives where a fish kill has been reported to occur, which indicates that oxygen depletion is not a major problem for most of these lakes. Currently, there are nine lakes which include Paddock, George, Montgomery, Elizabeth, Silver, Powers, Mary, Voltz, and Benedict that are enrolled within the Wisconsin Volunteer Lake Monitoring (previously Self-Help Monitoring) Program. Powers Lake also continues to be sampled by the USGS under the Trophic State Index sampling protocol since March 1986. Paddock, Powers, Benedict-Tombeau, Twin Lakes, and Voltz Lakes have approved Lake Protection or Aquatic Plant Management Plans.²⁶ Lake Management Plans are in preparation for Elizabeth and Mary Lakes (Twin Lakes) and George Lake.²⁷

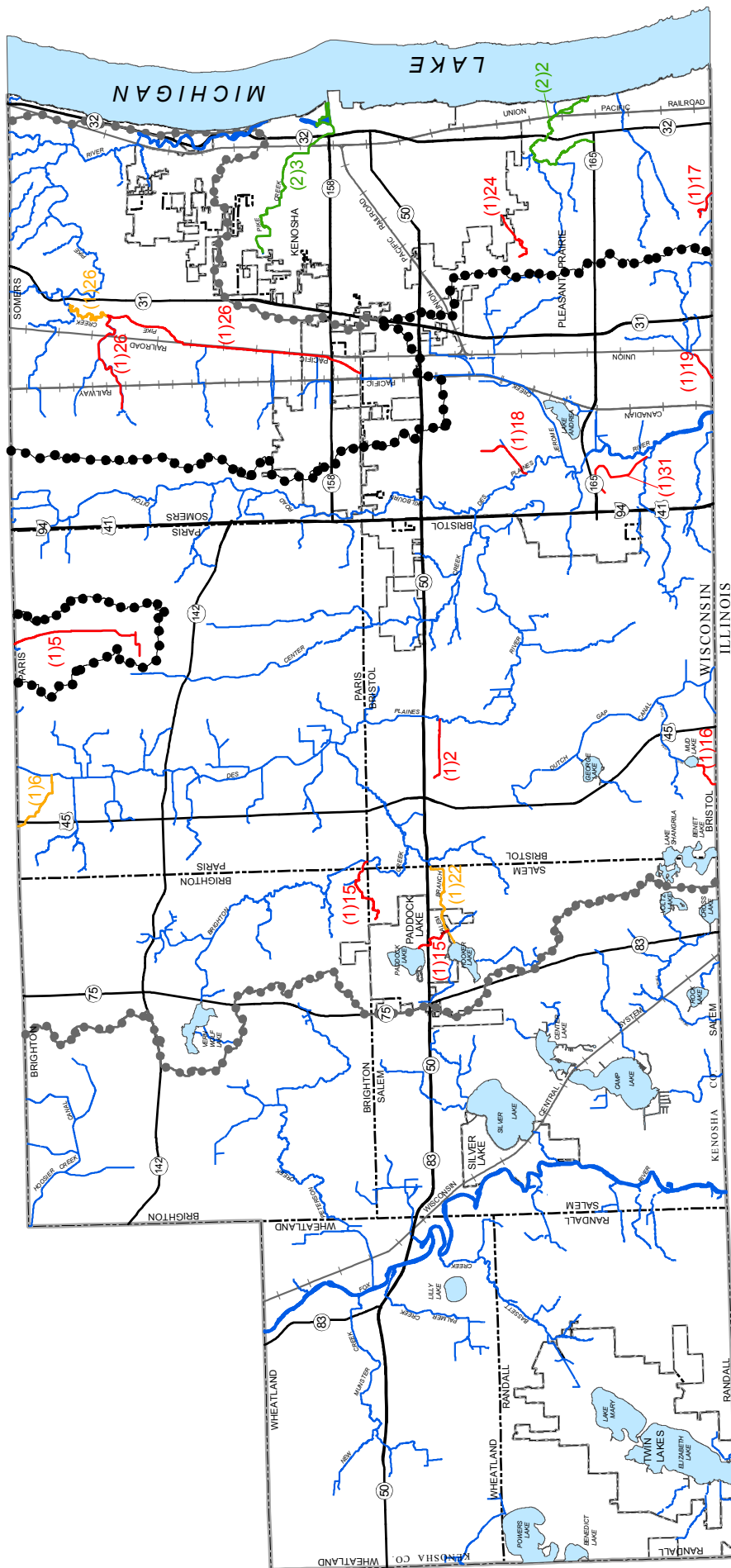
²⁵*SEWRPC Memorandum Report No. 93, A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report, March 1995.*

²⁶*Woodward-Clyde, Inc., Paddock Lake Investigations and Management Plan, February 1994; Aron & Associates, Paddock Lake Plant Management Plan, August 1993; Aron & Associates, Twin Lakes Aquatic Plant Management Plan, August 2006; SEWRPC Memorandum Report No. 140, A Lake Protection Plan for Benedict and Tombeau Lakes, Kenosha and Walworth Counties, Wisconsin, May 2001. SEWRPC Community Assistance Planning Report No. 196, A Management Plan for Powers Lake, Kenosha and Walworth Counties, Wisconsin, November 1991; SEWRPC Memorandum Report No. 159, An Aquatic Plant Management Plan for Voltz Lake, Kenosha County, Wisconsin, January 2005.*

²⁷*SEWRPC Community Assistance Planning Report No. 302, A Lake Management Plan for Elizabeth and Mary Lakes, Kenosha County, Wisconsin, in preparation; SEWRPC Community Assistance Planning Report No. 300, A Lake Management Plan for George Lake, Kenosha County, Wisconsin, October 2007.*

Map 23

CURRENT WISCONSIN DEPARTMENT OF NATURAL RESOURCES
WATER USE OBJECTIVES FOR STREAMS IN KENOSHA COUNTY: 2007



- 1(31) WATER USE DESIGNATION (See Table 24)
- LIMITED FORAGE FISH COMMUNITY
 - LIMITED AQUATIC LIFE
 - VARIANCE WATERS
 - SUBCONTINENTAL DIVIDE

NOTE: THE FIRST NUMBER OF THE STREAM REACH DESIGNATION REFERS TO THE SUBSECTION OF SECTION NR 104.06 AND THE SECOND NUMBER IS THE NUMBER ASSIGNED TO THE STREAM REACH IN TABLE 4 OF NR 104.06 or in NR 104.06 (2).

Source: SEWRPC.

Table 23

**APPLICABLE WATER USE OBJECTIVES AND WATER QUALITY STANDARDS (CRITERIA)
AND GUIDELINES FOR LAKES AND STREAMS WITHIN KENOSHA COUNTY**

Water Quality Parameter	Combinations of Water Use Objectives Adopted for Planning Purposes ^a					Source
	Warmwater Sportfish and Forage Fish Communities	Limited Forage Fish Community (variance category)	Limited Aquatic Life (variance category)	Special Variance Category A ^b	Special Variance Category B ^c	
Recreational Use	Full	Full	Full	Limited	Limited	
Maximum Temperature (°F) ^d	89.0	89.0	--	89.0 ^e	89.0	NR 102.04 (4) ^f
Dissolved Oxygen (mg/l) ^d	5.0 minimum	3.0 minimum	1.0 minimum	2.0 minimum	2.0 minimum	NR 102.04 (4) NR 104.02 (3)
pH Range (S.U.)	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0 ^e	6.0-9.0 ^e	NR 102.04 (4) ^g NR 104.02 (3)
Fecal Coliform (MFFCC) ^h						NR 102.04 (5) NR 104.06 (2)
Mean	200	200	200	1,000	1,000	
Maximum	400	400	400	2,000	--	
Ammonia Nitrogen (mg/l)	-- ⁱ	-- ⁱ	-- ⁱ	-- ⁱ	-- ⁱ	NR 105 Tables 2c and 4b
Total Phosphorus (mg/l)						Regional water quality management plan ^j
Maximum for Streams	0.1	0.1	0.1	0.1 ^e	0.1 ^e	
Maximum for Lakes during Spring Turnover	0.02	0.02	0.02	--	--	
Chloride (mg/l)	1,000 maximum	1,000 maximum	1,000 maximum	1,000 maximum ^e	1,000 maximum ^e	Regional water quality management plan

^aNR 102.04(1) All waters shall meet the following minimum standards at all times and under all flow conditions: substances that will cause objectionable deposits on the shore or in the bed of a body of water, floating or submerged debris, oil, scum, or other material, and material producing color, odor, taste, or unsightliness shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant, or aquatic life.

^bAs set forth in Chapter NR 104.06(2)(a) of the Wisconsin Administrative Code.

^cAs set forth in Chapter NR 104.06(2)(b) of the Wisconsin Administrative Code.

^dDissolved oxygen and temperature standards apply to continuous streams and the upper layers of stratified lakes and to unstratified lakes; the dissolved oxygen standard does not apply to the hypolimnion of stratified inland lakes. However, trends in the period of anaerobic conditions in the hypolimnion of deep inland lakes should be considered important to the maintenance of their natural water quality.

^eNot specifically addressed within the Wisconsin Administrative Code. For planning purposes only, these values are considered to apply.

^fNR 102.04(4) There shall be no temperature changes that may adversely affect aquatic life. Natural daily and seasonal temperature fluctuations shall be maintained. The maximum temperature rise at the edge of the mixing zone above the natural temperature shall not exceed 5°F for streams. There shall be no significant artificial increases in temperature where natural trout reproduction is to be maintained.

^gThe pH shall be within the stated range with no change greater than 0.5 unit outside the estimated natural seasonal maximum and minimum.

^hNR 102.04(5)(a) The membrane filter fecal coliform count may not exceed 200 per 100 ml as a geometric mean based on not less than five samples per month, nor exceed 400 per 100 ml in more than 10 percent of all samples during any month.

ⁱJ.E. McKee and M.W. Wolf, Water Quality Criteria, 2nd edition, California State Water Quality Control Board, Sacramento, California, 1963.

^jU.S. Environmental Protection Agency, Quality Criteria for Water, EPA-440/9-76-023, 1976.

Source: Wisconsin Department of Natural Resources and SEWRPC.

Table 24

**REVISIONS TO WATER USE OBJECTIVES SET FORTH IN CHAPTERS
NR 102 AND NR 104 OF THE WISCONSIN ADMINISTRATIVE CODE AS PROPOSED BY THE WDNR**

Number on Map 23 ^a	Stream Reach	Water Use Objective per S. NR 104.06	Proposed Water Use Objective	Notes
(1) 2	Tributary-Des Plaines River-Tributary from Bristol to the Des Plaines River	Limited aquatic life	Warmwater sport fish	Effluent limits set to be protective of the Des Plaines River
(1) 5	The Union Grove Tributary Below Fonks Tributary to the confluence with the Des Plaines River	Limited forage fish	Limited forage fish	A variance is still recommended
(1) 6	Tributary-Des Plaines River (Fonks Mobile Home Park #2 and Union Grove Industrial)-The Union Grove Tributary below Fonks Tributary	Limited forage fish	Limited forage fish	A variance is still recommended
--b	Des Plaines River tributary to Kenosha Beef International	Warmwater sport fish Warmwater sport fish	Limited aquatic life Limited forage fish	New point source
--b	Peterson Creek at Bong Recreational Area	Warmwater sport fish	Limited forage fish	New point source
--b	Tobin Creek	Warmwater sport fish	Limited forage fish	New point source
(1) 15	Drainage-Tributary Brighton Creek-Drainage at Paddock Lake STP and near Brighton Creek	Limited aquatic life	Warmwater sport fish	Point source discharge eliminated
	Brighton Creek (Paddock Lake)-Tributary between above wetlands areas	Limited aquatic life	Warmwater sport fish	Effluent limits set to be protective of the Des Plaines River
(1) 16	Drainage- Mud Lake-From the Mobile Home STP to Mud Lake	Limited aquatic life	Limited aquatic life	Revised location description
(1) 17	Tributary-Lake Michigan-From the Pleasant Park STP to the Illinois State Line	Limited aquatic life	Warmwater sport fish	Point source discharge eliminated
(1) 18	Pleasant Prairie Tributary-Pleasant Prairie Tributary from its origin to the Des Plaines River	Limited aquatic life	Warmwater sport fish	Point source discharge recommended to be eliminated
(1) 19	Tributary-Des Plaines River (Pleasant Prairie Sanitary District No. 73-1)- From its origin to the Illinois State Line	Limited aquatic life	Warmwater sport fish	Point source discharge recommended to be eliminated
(1) 22	Salem Branch-Salem Branch from Salem Utility District 1 STP downstream to 216 th Avenue	Limited forage fish	Warmwater sport fish	Point source discharge eliminated
(1) 24	Drainage-Lake Michigan (Siendale Mother house)-From the Siendale STP downstream to an intermittent stream	Limited aquatic life	Warmwater sport fish	Point source discharge eliminated
(1) 26	Tributary-South Branch Pike River-Tributary from its origin to South Branch Pike	Limited aquatic life	Warmwater forage fish	Point source discharge eliminated and revised reach limits from CTH S (formerly STH 142) and areas upstream
	River(Somers Utility District No. 1)-South Branch Pike River from Somers Tributary to Pike River	Limited forage fish	Warmwater sport fish	Point source discharge eliminated and revised reach limits from CTH S (formerly STH 142) downstream to confluence with the Pike River

Table 24 (continued)

Number on Map 23 ^a	Stream Reach	Water Use Objective per S. NR 104.06	Proposed Water Use Objective	Notes
(1) 31	Tributary-Des Plaines River (former WisDOT Kenosha Rest Area 26)-From the information Center STP to the Des Plaines River	Limited aquatic life	Warmwater sport fish	Point source discharge eliminated
(2) 2	Barnes Creek	Variance water	Warmwater forage fish	Point source discharges eliminated
(2) 3	Pike Creek, a tributary of Lake Michigan	Variance water	Warmwater forage fish	Point source discharges eliminated

^aThe first number refers to the subsection of Section NR 104.06 and the second number is the number assigned to the stream reach in Table 4 of NR 104.06 or in NR 104.06 (2).

^bNot previously identified in the Code.

Source: Wisconsin Department of Natural Resources and SEWRPC.

In terms of stream monitoring, USGS operates gauging stations at New Munster on the Fox River and at Russell Road, Illinois—immediately south of the Wisconsin State line, on the Des Plaines River. Water chemistry data are not currently collected at these stations, but streamflow is measured.

In 2003, the Commission completed a comprehensive watershed management plan for the Des Plaines River.²⁸ Studies completed pursuant to this plan and its ongoing implementation included fish and mussel surveys. Significant findings indicate that the portion of the Des Plaines River within Kenosha County contains the highest abundance and diversity of fishes compared to the downstream reaches in Cook and Lake Counties, Illinois.²⁹ Pirate perch, a special concern species, were observed in multiple locations throughout the Upper Des Plaines River. Several threatened or special-concern species, including the slippershell and round pigtoe were found in Brighton Creek, which is the highest quality major tributary to the Upper Des Plaines River in Kenosha County.

Aside from establishing water use objectives for water resources, the WDNR also characterizes water resources according to the criteria identified in Section 303(d) of the Federal Clean Water Act. This list identifies those waters, which for a variety of reasons, are not meeting water quality standards. The upper Pike River (also referred to as the North Branch of the Pike River), including the portion in Kenosha County, upstream of its confluence with Pike Creek (also referred to as the South Branch of the Pike River), is currently on the Department's 303(d) list of impaired waters. The Fox River from the State line upstream to a confluence with an unnamed tributary near CTH A in Waukesha is also on the 303(d) list.³⁰ Additionally, the WDNR's proposed 2006 Impaired Waters List identified Eichelman, Pennoyer Park, and Simmons Island Lake Michigan beaches, to be impaired based upon bacteria water quality standards.

²⁸SEWRPC Planning Report No. 44, A Comprehensive Plan for the Des Plaines River Watershed, June 2003.

²⁹Thomas M. Slawski, Francis M. Veraldi, Stephen M. Pescitelli, and Michael J. Pauers, Effects of tributary spatial position, urbanization, and multiple low-head dams on warmwater stream fish community structure in the upper Des Plaines River watershed, *North American Journal of Fisheries Management*, in press.

³⁰Wisconsin Department of Natural Resources, Approved 2004 Wisconsin 303(d) Impaired Waters List, August 2004.

SUMMARY

The Kenosha County land and water resources management plan draws on the numerous plans which focus on the natural resources of the County. Plans that have been developed at the regional level include a regional land use plan, transportation system plan, natural areas plan, and a water quality management plan. Preparation of a regional water supply plan is underway. Plans developed at the County level include a farmland preservation plan; County park and open space plan; Kenosha Urban Planning District plan; land and water resources management plan; Des Plaines, Fox, and Pike River watershed plans; and a flood mitigation plan. In addition, all but three communities in the County have adopted a land use, master, or comprehensive plan, and many communities have developed park and open space plans. The plans described above provide guidelines for natural resource management in Kenosha County and they address the interconnectedness of the natural resources of the County and the Southeastern Wisconsin Region.

The plans collated and reviewed for input into this current planning program were generally most relevant to actions undertaken by the County or potentially to be undertaken by the County. In addition, selected plans prepared at the local level, including local land use plans, park and open space plans, and lake and water quality management plans prepared for individual communities or for specific watersheds were considered. All of these documents provide the basis for developing an integrated scheme for the sustainable management of the natural resources of Kenosha County through the coordinated efforts of State, County, and local governments, special-purpose units of government, and community groups. These existing plans and programs promote detailed action at the local level while achieving strategic objectives within the boundaries of the County, its watersheds, and the Southeastern Wisconsin Region as a whole.

Chapter IV

GOALS, OBJECTIVES, AND ESTIMATED COSTS

INTRODUCTION

The Kenosha County Land and Water Resources Management Plan incorporates inventory findings, including land use, natural resource data, soil and agricultural assets, and water quality data. Additionally, the plan addresses the principal land and water resource concerns and issues that were identified by the Citizen Advisory Committee and public survey responses. A comprehensive set of goals, workplan objectives, and planned actions were developed based on the principal issues and concerns that were identified by the Citizen Advisory Committee and include the following:

- Increase Natural Resource, Environmental, and State Performance Standards Information and Education;
- Implement the State Agricultural and Nonagricultural Performance Standards and Prohibitions to Reduce Nonpoint Source Pollution;
- Control and Manage Invasive and Nonnative Species;
- Protect and Preserve Land and Water Resources, and
- Increase Cooperation with Local, State and Federal Partners.

These concerns and issues were used as a basis for developing the goals, workplan objectives, and planned actions for the Kenosha County Land and Water Resources Management Plan. To achieve these goals the Kenosha County LWCD plans to partner with State and Federal agencies and other environmental organizations on a variety of projects and programs. The objectives of the plan were divided into categories, including educational programming, agricultural and nonagricultural performance standards implementation, invasive species control, land and water quality protection, and improved partner relationships. The recommended goals, workplan objectives, and planned actions for the years 2008-2012 are summarized in the following section, and are presented in Table 25. Kenosha County's Land and Water Resource Management Plan is a long-range, living instrument to plan conservation efforts over a five-year period, therefore, the workplan activities may require amendment due to varying environmental conditions, local priorities and commitments, changing programs and policies, and funding considerations. The general goals of this plan, developed as a part of a public participation process and approved by the department, will not change and any necessary amendments to workplan activities would only be accomplished with proper approvals from the Kenosha County LWCC and DATCP.

Table 25

KENOSHA COUNTY WORKPLAN: 2008-2012

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #1 Increase Natural Resource, Environmental, and State Performance Standards Information and Education (0.2 FTE and 10 percent of Budget per year)	Enhance the general public's appreciation and involvement in natural resource protection and restoration	1) Conduct two Rural Landowner workshops annually on important conservation issues 2) Make available informational brochures and fact sheets to walk-ins 3) Provide and keep up-to-date information on the county website 4) Use radio, newspaper, and cable TV to deliver environmental programming	Ongoing	LWCD, UW-Ext
	Provide I & E to rural landowners and farm operators on the agricultural performance standards	Inform new and existing landowners about their obligation to maintain compliance with performance standards through personal contact, direct mail notifications, newsletters, fact sheets, web pages, workshops etc.	Ongoing	LWCD, UW-Ext, DATCP, WDNR
	Promote learning strategies for environmental education among our youth	1) Make available one internship annually to provide real work experience opportunities for High School or College students 2) Utilize new and existing programs to help implement a curriculum to inform students about natural resource issues, their function and role in the environment, and ways they can manage and restore those resources 3) Assist area youth groups in the development of outdoor classroom activities to promote land and water conservation	Ongoing	LWCD, UW-Ext, Schools, Youth Groups
	Provide outreach programs to developers, engineers, landscapers, local officials, and work groups that will increase awareness of stormwater pollution impacts	1) Host one yearly workshop or presentation on stormwater and erosion control BMPs 2) Promote environmentally sensitive land development designs 3) Educate landowner associations in charge of stormwater basin management and maintenance 4) Provide information to developers about nonagricultural performance standards and prohibitions	Ongoing	LWCD, UW-Ext, Work Groups, Towns, Local Govt.
	Increase landowner and producer/operator awareness of conservation practices and programs	1) Continue to provide a quarterly newsletter <i>Ties to the Land</i> to 3500+ landowners and producers 2) Help sponsor a Dairy Breakfast field day annually to promote dairy farming 3) Provide an I&E at display booth at the county and lake fairs and periodic SE Area bus tours 4) Maintain web page on conservation programs, technical services, and cost-shared practices 5) Distribute information material during office and site visits 6) Use direct mailings to contact priority farms	Ongoing	LWCD, UW-Ext, NRCS, FSA

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #1 (continued)	Provide information to riparian property owners and landscape contractors on the benefits of riparian buffers	1) Continue to distribute 15+ lake information packets to new riparian landowners 2) Hold seminars targeted towards landscape contractors on the effectiveness of riparian buffers and potential design options for residential and business situations 3) Assist in developing demonstration sites to illustrate sound riparian land management and buffer establishment 4) Partner with lake districts and associations on shoreline protection and restoration demonstration projects and workshops 5) Informational and educational programming targeted towards riparian property owners	Ongoing	LWCD, UW-Ext, WDNR, Lake Groups
	Educate landowners, agricultural supply businesses, lawn maintenance companies, and golf course superintendents on the importance of nutrient and chemical management	1) Organize an annual nutrient management planning certification, update or revision training course 2) Work with area coops and other suppliers to develop seminars targeted to nutrient and agri-chemical management and regulations, as well as area lawn companies and golf-course and park superintendents	Ongoing	LWCD, UW-Ext, DATCP
	Provide information to county residents about how they can control water pollution and groundwater contamination	1) Conduct one annual workshop presentation to promote water conservation, rain gardens, groundwater protection, etc. 2) Continue to distribute informational materials to homeowners on pet waste, leaf and grass clipping disposal, lawn fertilization techniques, and the problems associated with dumping chemicals directly into storm sewers 3) Promote storm drain stenciling and provide materials to schools and youth groups	Ongoing	LWCD, UW-Ext, WDNR, Schools, Youth Groups, Work Groups
	Provide information to county residents about how they can control nonnative and invasive species	1) Conduct one hands-on workshop annually to educate local work and youth groups on how to identify and eliminate nonnative and invasive species 2) Host a Garlic Mustard pull-a-thon event 3) Assist the Clean Boats, Clean Waters Volunteer program 4) Support Purple Loosestrife Biological Control 5) Create a monitoring program to track control measures over time	Ongoing	LWCD, UW-Ext, WDNR, Schools, Youth Groups, Work Groups

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #2 Implement the State Performance Standards to Reduce Agricultural Nonpoint Source Water Pollution (0.5 FTE and 25 percent of Budget per year)	Implement the State Agricultural Performance Standards and Prohibitions	1) Inventory/visit three priority farm landowners yearly to evaluate compliance status 2) Create an inventory tracking system for landowner's compliance status to State performance standards 3) Utilize GIS to map priority farms and compliance status 4) Notify landowners of compliance status and identify key problems and needed BMPs when necessary 5) Offer technical assistance cost sharing if available 6) Inspect landowners' efforts to maintain and/or implement compliant practice(s) 7) Notify landowner of compliance status. Refer noncompliance to the WDNR if necessary for enforcement	Ongoing	LWCD, DATCP, NRCS, WDNR
	Support the Farmland Preservation Program	1) LWCD staff will randomly monitor program participants for compliance with the applicable county soil and water conservation standards, at a minimum, once every six years through a combination of field inspections and examination of aerial orthophotography 2) Continue to assess and evaluate farm practices and parcel management 3) Review farm plans and update farmland-zoning certificates, recalculating acres lost to sale, purchase or rezone and notify DATCP of status changes	Ongoing	LWCD, DATCP, NRCS
	Reduce soil erosion to or below T, and to one-third to one-half T on fields in water quality management areas (WQMA) as required by State and County performance standards	1) Conduct the semi-annual transect erosion survey to monitor cropland erosion levels and farming practices 2) Encourage landowners to develop farm conservation plans on critical agricultural fields and develop practices as needed A. Practice conservation tillage to leave 30 percent or more residue B. Use no-till practices for fields in WQMA if practical C. Practice crop rotations to minimize soil loss D. Contour farm if practical E. Establish permanent vegetation in concentrated flow channels F. Rotationally graze horses and cattle where practical	Ongoing	LWCD, DATCP, NRCS, FSA, WDNR

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #2 (continued)	Manage manure and livestock access to water resources in accordance with State performance standards	1) Utilize SWRM cost-share funds to install conservation practices that improve feedlot runoff control, manure handling, or storage 2) Make producers aware of local, State and Federal guidelines and performance standards 3) Continue to work with dairy farmers to contain or control the discharge of milkhouse waste 4) Locate manure stack areas outside of WQMA 5) Install fencing to properly manage livestock and horses in areas with water resources 6) Limit manure applications on highly erodible lands and in WQMA 7) Continue to enforce the A-3 Agricultural Feedlot Zoning District ordinance	Ongoing	LWCD, DATCP, NRCS, WDNR
	Reduce soil delivery rate from riparian cropland	1) Utilize SWRM cost-share funds to create 500+ linear feet of effective grassed waterway systems 2) Work with landowners, FSA and NRCS to utilize CRP to establish buffers in the riparian corridor 3) Reduce sediment delivery from fields by promoting best management practices to reduce soil erosion 4) Clean out accumulated sediment from agricultural drainageways as needed, incorporating the proper permitting process and associated sediment removal actions	Ongoing	LWCD, DATCP, NRCS, FSA
	Develop, implement, and monitor compliance of nutrient and pest management plans to protect water quality	1) Work with producers, DATCP, NRCS and technical service providers to expand nutrient and pest management planned acreage each year 2) Utilize integrated pest management to reduce the amount of applied chemicals 3) Assist NRCS and TSPs with compliance inspections and updates of expired NMPs and PMPs	Ongoing	LWCD, DATCP, NRCS, TSP
	Utilize GIS technology to develop detailed mapping of important agricultural land management areas and priority farms	1) Develop a GIS tool to track compliance to agricultural performance standards 2) Map restricted manure application sites 3) Map locations of all horse and livestock farms 4) Map locations of CRP contracts, NMP, and HEL farm plans and WQMAs	2008-2009	LWCD

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #3 Implement the State Performance Standards to Reduce Nonagricultural Nonpoint Source Water Pollution (1.0 FTE and 50 percent Budget per year)	Implement the State Nonagricultural Performance Standards and Prohibitions	1) Review 20 + stormwater management plans per annum for new and redevelopment sites 2) Continue to encourage the adoption of stormwater management and construction site erosion control standards and guidelines for urban, urbanizing, and redeveloping areas as set forth in Chapter NR 151 of the <i>Wisconsin Administrative Code</i>; and will be designed to achieve the pollutant reduction goals set forth in the regional and watershed water quality management plans 3) Inspect compliance of approved plan requirements during construction and inspect as-built stormwater systems 4) Work with local governments and towns to develop programs to routinely inspect, remove sediment, and otherwise maintain stormwater detention basins and other facilities 5) Encourage municipalities and towns to take responsibility for maintenance of major stormwater management systems	Ongoing	LWCD, WDNR, Towns, Local Govt.
	Reduce construction site erosion	1) Review 25+ erosion control plans per annum for new and redevelopment sites 2) Assist contractors, developers and local building inspectors with erosion control issues 3) Recommend WDNR Conservation Practice Standards 4) Continue to respond to complaints of erosion problems and notify local building inspectors of uninstalled or unmaintained erosion control measures	Ongoing	LWCD, WDNR, Towns, Local Govt.
	Manage stormwater runoff more effectively	1) Develop a coordinated permitting process between the County, the Wisconsin Department of Natural Resources and local levels of government for stormwater management projects 2) Recommend special protection to environmentally sensitive areas 3) Continue to require developers to meet special release rates for new development within the Des Plaines River watershed	Ongoing	LWCD, WDNR, Towns, Local Govt.
	Comply with the Municipal Separate Storm Sewer System (MS4) permit requirements under NR 216 of the <i>Wisconsin Administrative Code</i>	Assist in the implementation of permit requirements that will include: Public outreach and education, Illicit discharge detection and elimination, Construction site pollution control and prevention	Ongoing	LWCD, Towns, Local Govt.

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #4 Invasive and Nonnative Species Management and Control. (0.1 FTE and percent of Budget per year)	Control the infestation of nonnative and invasive plant and animal species	1) Conduct one annual workshop or presentations on nonnative and invasive plant and animal species control 2) Distribute informational material, answer phone and direct inquiries 3) Organize and educate local work and youth groups to identify and eliminate nonnative and invasive species 4) Continue to coordinate the Gypsy Moth suppression program 5) Help sponsor a garlic mustard pull-a-thon event, assist the clean boats, clean waters volunteer program, and support purple loosestrife biological control 6) Encourage the development and adoption of aquatic plant management plans for all inland lakes	Ongoing	LWCD, UW-Ext
GOAL #5 Protect and Preserve Land and Water Resources (0.5 FTE and 12 percent of Budget per year)	Conserve Kenosha County's unique natural resources in the face of increasing urbanization and resulting loss of farmland	1) Help to prepare and distribute an annual <i>Farm Fresh Atlas</i> to advertise farmer's markets to support farm to table initiatives, helping connect local farmers with local buyers 2) Continue use of land use planning and regulatory tools to preserve productive farmland and agricultural businesses: A. Recommend the preservation of open/green space to builders and developers B. Promote conservation subdivisions and rural cluster development C. Continue to encourage Exclusive Agricultural Zoning D. Protect farmland through Land Division Ordinances E. Support the Purchase of Development Rights and the Transfer of Development Rights to conserve farmland F. Promote Sustainable and Alternative Farm Practices 3) Advise subdivision associations on how to manage their wetlands, woodlots and detention ponds 4) Continue to support acquisition and preservation of environmental corridors and important identified natural areas and critical species habitat areas 5) Encourage urban-density land use to be confined to and within the identified urban service areas	Ongoing	LWCD, UW-Ext, Towns, Local Govt.

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
Goal #5 (continued)	Implement and refine the County's shoreland/floodplain management program	1) Continue to enforce the County Shoreland regulations through review and issuance of 15+ stipulated shoreland permits 2) Update existing floodplain maps and encourage the mapping of unmodeled areas 3) Recommend adoption of floodland zoning regulations and participation in the Nation Flood Insurance Program to effected municipal units of government 4) Preserve and protect streams and watercourses impacted by new construction and redevelopment 5) Continue to monitor Lake Michigan shoreline, especially in those reaches with relatively high unprotected bluffs	Ongoing	LWCD, WDNR, Towns, Local Govt.
	Create, restore and enhance wetland, riverine, and wildlife habitat throughout the county	1) Assist planning commission staff, USF&W, WisDOT and contractors with one or more mitigation and stream relocation projects 2) Work with landowners, WDNR, FSA, USF&W, Racine/Kenosha Land Trust and NRCS to utilize local, State and Federal program funds for wetland and riverine improvements 3) Seek funding sources for lake and river water quality protection	Ongoing	LWCD, UW-Ext, NRCS, WDNR, WisDOT FSA, USF&W, Work Groups
	Assure the reclamation of terminated nonmetallic mining sites	1) Approve and annually permit reclamation plans 2) Conduct compliance inspections of reclaimed sites	Ongoing	LWCD
	Prepare, update and implement comprehensive lake and watershed management plans	1) Work with planning commission staff, lake association members, and outside contractors in the development of one or more lake or watershed management plans 2) Discourage the use of rock riprap as a shoreline stabilization approach, where applicable 3) Conduct fishery and aquatic plant surveys for all county lakes 4) Continue to partner with the USCOE, WDNR, IDNR, Lake County, Cook County and SEWRPC to prepare a Des Plaines River watershed feasibility study (Phase II) 5) Support regulations that prohibit the application of lawn fertilizer that contains phosphorus to lawns, golf courses, and other mowed grassy areas (turf)	Ongoing	LWCD, UW-Ext, NRCS, WDNR, FSA, USF&W, Work Groups

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #5 (continued)	Promote riparian buffers along all water resources in the County	1) Use GIS and field inspections to characterize the existing riparian buffer widths of one watershed subbasin each year 2) Continue to work with and form more resource partnerships to educate riparian landowners of the water quality benefits of buffers 3) Offer SWRM cost-share funds to install bio-engineered systems with vegetated buffers 4) Continue to implement CRP to protect water quality 5) Recommend alternative methods available to protect shorelines subject to low erosion intensity	Ongoing	LWCD, UW-Ext DATCP, WDNR, NRCS, FSA
	Protect the quality and quantity of groundwater supplies	1) Utilize SWRM and EQIP cost-share funds to permanently abandon 3-5 unused wells annually 2) Conduct one spring and one fall hazardous waste clean-up day each year 3) Encourage the infiltration of stormwater as set forth in Chapter NR 151 of the <i>Wisconsin Administrative Code</i> 4) Help developers identify potential stormwater infiltration areas using field data, web based GIS mapping, and the soil survey layer 5) Incorporate SEWRPC Regional Water Supply Plan recommendation into stormwater standards 6) Work with agricultural producers to soil test farm fields and provide assistance to producers to develop nutrient management plans for farm fields	Ongoing	LWCD, DATCP, WDNR, NRCS, SEWRPC
	Prevent the degradation and disturbance of wetlands	1) Review 20+ subdivision plats annually and protect wetlands by requiring plans to include homeowner shared outlots 2) Continue to notify the appropriate government agencies of wetland disturbance or destruction 3) Work together with the WDNR, NRCS USCOE and SEWRPC to resolve wetland related issues 4) Continue to administer Kenosha County's C-1 Lowland Resource Conservancy District ordinance	Ongoing	LWCD, WDNR, NRCS, USCOE, SEWRPC
	Support efforts to protect and enhance our forests and woodlots	1) Administer the Kenosha County annual tree program distributing 15,000+ trees and shrubs every spring 2) Enforce the County C-2 Upland Resource Conservancy District ordinance 3) Work with the area forester to provide forestry assistance to landowners 4) Continue to support the Woodland Stewardship Program 5) Support the Managed Forest Law Program	Ongoing	LWCD, WDNR

Table 25 (continued)

Goal	Workplan	Planned Actions	Status of Planned Action	Agencies
GOAL #6 Increase cooperation with Local, State and Federal Partners (0.2 FTE and 2 percent of Budget per year)	Develop a countywide comprehensive and smart growth plan	1) Work with the multi-jurisdictional advisory committee and citizens to develop a countywide comprehensive plan based on Wisconsin's Smart Growth law. The plan will provide a vision for future land use in Kenosha County 2) Once approved, incorporate the Countywide comprehensive planning goals and objectives into land use planning programs	2008-2009	LWCD, DATCP, NRCS, FSA, WDNR, UW-Ext, USF&W, SEWRPC
	Look for opportunities to coordinate efforts with local grass roots groups, conservation and wildlife clubs, local, State and Federal agencies to help implement the goals of this LWRMP	1) Develop an MOU with the WDNR to describe the roles and responsibilities of the LWCD and the WDNR in the implementation of NR 151 and proposed NR 115 revision 2) Enter into working agreements with other agencies to coordinate ordinance administration 3) Work with lake associations and districts to promote innovations in shoreline protection and restoration through demonstration sites of new products and techniques and cost-share incentives 4) Continue to rely on NRCS and DATCP for engineering and technical assistance, and grant funding 5) Look for opportunities to coordinate efforts with local grass roots groups, conservation and wildlife clubs, local, State and Federal agencies 6) Continued active membership of the Root/Pike Watershed Initiative Network, Sustainable Racine Environmental Group, Seno Woodland Education Center, Racine/Kenosha Land Trust, Southeast Fox River Basin Partnership, WALCE, WLWCA	Ongoing	LWCD, DATCP, NRCS, FSA, WDNR, UW-Ext, USCOE, USF&W, SEWRPC, WisDOT Schools, Work Groups, Youth Groups, Lake Groups

NOTES: All goals are of equal priority. Workplan objectives for each goal are listed in priority order from highest to lowest. Planned Actions with measurable outcomes are indicated in bold.

Agency acronyms used in this table are defined below:

DATCP = Wisconsin Department of Agriculture, Trade and Consumer Protection
 WDNR = Wisconsin Department of Natural Resources
 FSA = U.S. Department of Agriculture Farm Service Agency
 LWCD = Kenosha County Land and Water Conservation Department
 NRCS = U.S. Department of Agriculture Natural Resources Conservation Service
 TSP = Technical Service Provider
 SEWRPC = Southeastern Wisconsin Regional Planning Commission
 USCOE = U.S. Army Corps of Engineers
 USF&W = U.S. Department of Agriculture—Fish & Wildlife Services
 UW-Ext = University of Wisconsin-Extension
 WisDOT = Wisconsin Department of Transportation

Source: SEWRPC.

EDUCATIONAL PROGRAMMING

Goals and Workplan Objectives

Developing and implementing sound educational programming is an important component of the land and water resources management plan. The goals and workplan objectives related to educational programming include the following:

- Enhance the general public's appreciation and involvement in natural resource protection and restoration;
- Provide information and education (I&E) to rural landowners and farm operators on the agricultural performance standards;
- Promote learning strategies for environmental education among youth;
- Provide outreach programs to developers, engineers, landscapers, local officials, and work groups that will increase awareness of stormwater pollution impacts;
- Increase landowner and producer/operator awareness of conservation practices and programs;
- Provide information to riparian property owners and landscape contractors on the benefits of riparian buffers;
- Educate landowners, agricultural supply businesses, lawn maintenance companies, and golf course superintendents on the importance of nutrient and chemical management; and
- Provide information to county residents about how they can control water pollution, groundwater contamination, and control invasive species.

Planned Actions

The planned actions to meet the educational goals and workplan objectives in the rural areas include offering seminars or short courses on nutrient and agri-chemical management principals, and developing literature for distribution to farmers on the economics of soil conservation. Certification and training courses on both nutrient management planning and compliance obligations set forth in the State performance standards, will be offered landowners, agricultural cooperatives and suppliers, lawn maintenance companies, and golf course and park management personnel.

The planned actions to meet the educational goals and objectives in the nonagricultural and urban areas include offering seminars or short courses on the principals of sound erosion control and stormwater management practices on construction sites. Residents will also be included in educational programming efforts. Specifically, it is recommended that residents be provided with information on yard waste management practices designed to reduce nonpoint source pollution. This can be done through distributing literature on lawn maintenance, such as proper fertilization and chemical application techniques; on yard landscaping alternatives to turf; and on the proper management of leaf and grass clippings, pet waste, household chemicals, personal care products, and pharmaceuticals. Additionally, informational materials on buffer effectiveness and buffer design options will be made available to riparian property owners. This information will also be made available to landscape contractors and architects, in addition to offering informational seminars related to this topic. Riparian buffer demonstration sites may be established and promoted to illustrate the desirable aesthetics and environmental soundness of buffers.

Informational and educational programming will also be targeted towards Lake Michigan riparian property owners. Informational materials will be developed and distributed containing information regarding Lake Michigan shoreline erosion processes. Additionally, material shall be provided that identifies the most appropriate methods to protect the shoreline from erosion and proper setback distances for structures from the shoreline.

It is important to utilize new and existing programs and teaching materials to develop curriculum for in-school programs that identify valuable natural resources and ways to protect those resources, restoration methods, and sources of natural resource degradation, including nonpoint source pollution.

In order to implement the informational and educational program goals and workplan objectives, the following strategies and methods are part of the five-year planned activities.

- Provide one-to-one contact with individuals, businesses, or local levels of government;
- Inform new and existing landowners about their obligation to maintain compliance with performance standards through personal contact, direct mail, newsletters, fact sheets, webpage, and workshops;
- Utilize new and existing programs to help implement a curriculum to inform students about their role in preserving the environment, natural resource issues, and ways they can manage and restore those resources;
- Assist area youth groups in the development of outdoor classroom activities to promote land and water conservation;
- Make available internships to provide real work experience opportunities for High School and College students;
- Distribute information material during office and site visits. Provide I&E at display booths at county and lake fairs;
- Partner with lake districts and associations on shoreline protection and restoration demonstration projects and workshops. Continue to distribute lake information packets to new riparian landowners;
- Continue to distribute informational materials to homeowners on pet waste, leaf and grass clipping disposal, lawn fertilization techniques, and the problems associated with dumping chemicals directly into storm sewers;
- Promote storm drain stenciling and provide materials to schools and youth groups;
- Organize and educate local work and youth groups to identify and eliminate nonnative and invasive species;
- Conduct seminars or workshops for the farming community, riparian residents, businesses, and local levels of government to include;
 - General awareness of conservation and/or runoff pollution;
 - State performance standards and manure management prohibitions;
 - Nutrient management planning and soil preservation techniques;
 - Land use/planning (including farmland preservation and development rights);
 - Groundwater management (including well abandonment and septic systems);

- Urban stormwater management and erosion control;
 - Water conservation, rain gardens, groundwater protection;
 - Lake/river/shoreland management;
 - Wetland/pond creation/enhancement/restoration;
 - Woodlot/prairie/savannah management;
 - Invasive species management; and
 - Habitat management.
- Provide informative news articles in the *Ties to the Land* newsletter, with sections focusing on different land conservation issues in the County;
 - Use cable TV to deliver environmental programming and circulate opinion surveys and;
 - Maintain a County natural resource and land conservation web site devoted to conservation programs, technical services, and cost-shared practices, with links to other sources of information.

AGRICULTURAL PERFORMANCE STANDARDS

Goals and Workplan Objectives

The goals and objectives set forth in this plan focus on achieving the State minimum performance standards for rural nonpoint source pollution as well as the recommendations identified in the regional water quality and watershed management plans. Specifically, the goals and workplan objectives that were identified include the following:

- Implement the statewide agricultural nonpoint pollution performance standards;
 - Soil erosion rates on all cropland must be maintained at or below “T”¹
 - All farmers who grow agricultural crops, the application of manure or other nutrients to croplands must be done in accordance with a nutrient management plan, designed to meet state standards for limiting the entry of nutrients into groundwater or surface water resources.
 - Clean water runoff must be diverted away from contacting feedlots, manure storage facilities, and barnyards in water quality management areas (areas within 300 feet of a stream, 1,000 feet from a lake, or areas susceptible to groundwater contamination).
 - All new or substantially altered manure storage facilities must meet current engineering design standards to prevent surface or groundwater pollution. The following manure management prohibitions also apply statewide:
 - No direct runoff from animal feedlots to “waters of the state.”
 - No overflowing manure storage facilities.

¹“T” is the tolerable erosion rate for each soil type to maintain its productivity indefinitely. T-values generally range from three to five tons per acre per year and are documented in the *Natural Resources Conservation Service Technical Guide*.

- No unconfined manure piles in shoreland areas (areas within 300 of a stream, 1,000 feet from lakes).
- No unlimited livestock access to “waters of the state” where the livestock prevent sustaining an adequate vegetative cover.
- Support the Farmland Preservation Program and Kenosha County soil and water conservation standards for the Farmland Preservation Program adopted in 2005;
- Reduce soil delivery rate from riparian cropland;
- Develop, implement, and monitor compliance of nutrient and pest management plans to protect water quality; and
- Utilize GIS technology to develop detailed mapping of important agricultural land management areas and priority farms.

Planned Actions

The planned actions that are to be used in combination to achieve the aforementioned goals and workplan objectives include developing farm conservation plans for agricultural producers and encouraging landowners and farmers to utilize a wide variety of best management practices designed to target soil erosion. The County will continue to conduct the transect erosion survey semi-annually to monitor the use of conservation practices and their effectiveness in reducing agricultural erosion. Until a State buffer standard is adopted, the County and municipalities will promote the establishment of appropriate riparian buffers designed according to NRCS standards to reduce sediment delivery to water resources.

The Kenosha County Land and Water Conservation Department (LWCD) will continue to work with farmers to develop nutrient management plans that consider a variety of best management practices such as soil testing, accounting for legumes and manure before fertilizer application, and utilizing integrated pest management to reduce the amount of applied chemicals to fields. The LWCD will monitor manure management practices in the county to ensure that practices are in compliance with the State performance standards.

LWCD plans to develop a detailed data base utilizing geographic informational system (GIS) technology to identify and assist in management of farms prioritized for compliance with State performance standards. The initial information to be inventoried and mapped will include horse and livestock farms and water quality management areas (WQMA). It is eventually anticipated that additional information will be inventoried and mapped and may include restricted manure, septage, wastewater and/or sludge land application sites, nutrient management plan locations, cost-shared practices installed, U.S. Natural Resources Conservation Service (NRCS) farm plans for highly erodible lands and conservation reserve and reserve enhancement program contracts.

Planned actions associated with improving stream sedimentation and agricultural drainage include the implementation, by individual agricultural producers, of best management practices to reduce soil erosion and sediment delivery as identified in farmland management plans to be prepared by the NRCS staff. In addition, it is also recommended that farmers and rural landowners periodically clean out accumulated sediment from drainage channels following the proper permitting procedures.

NONAGRICULTURAL PERFORMANCE STANDARDS

Goals and Workplan Objectives

Nonagricultural and urban land uses are a significant source of nonpoint pollution. To achieve the requirements of the NR 151 nonagricultural performance standards, the goals and objectives of this plan focus on stormwater management, construction site erosion control, and sound land use planning. Specifically goals and workplan objectives include the following:

- Implement the State Nonagricultural Performance Standards;
 - Control 80 percent of sediment from construction sites;
 - Control 80 percent of post-construction total suspended solids (TSS) from new developments and 40 percent from redevelopments;
 - Maintain pre-development peak discharge rates for the two-year, 24 hour design storm for new developments;
 - Infiltrate 90 percent of pre-development runoff volumes for new residential developments and 60 percent for nonresidential or demonstrate exemption;
 - Maintain protective areas between new impervious surfaces and lakes, streams, and wetlands; and
 - Control petroleum runoff (visible sheen) from fueling and vehicle maintenance areas.
- Reduce construction site erosion;
- Manage stormwater runoff more effectively;
- Encourage urban-density land use to be confined to and within the identified urban service areas;
- Comply with the Municipal Separate Storm Sewer System (MS4) permit requirements under Chapter NR 216 of the *Wisconsin Administrative Code*.

Planned Actions

In order to accomplish the identified nonagricultural nonpoint pollution goals and workplan objectives, a number of management practices need to be implemented. Construction sites are one of the most significant contributors of sediment to waterbodies when best management practices are not properly installed and maintained. Storm water management and erosion control standards should be established to provide consistent stormwater permit requirements countywide. In addition, Kenosha County, the Towns, and local municipalities should work together to develop a consistent monitoring program for construction sites to ensure proper establishment and maintenance of best management practices. The County, Towns and local government should also, require through standards or adopted ordinance, developers to provide a site plan inventory of the drainage network including contiguous properties extending beyond the site boundary to show surface and subsurface runoff patterns onto, through, and from the site; watercourses that may affect or be affected by runoff from the site; flow path and direction for all stormwater conveyance sections; watershed boundaries used in hydrology determinations to show compliance with performance standards; lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the project site.

Not only does stormwater transport sediment and contaminants, but it also contributes to erosion of streambanks and temperature fluctuations of water resources. A coordinated program should be developed to prepare and implement detailed comprehensive stormwater management plans for logical subwatershed and groundwater protection areas. This program should address new development, redevelopment of existing urban areas, and existing urban areas. Additionally, the Towns and local governments should take on the primary responsibilities associated with maintenance of major stormwater management facilities for future developments, to ensure that long-term maintenance issues are properly addressed. Any approved stormwater management and/or erosion control plan will designate a “responsible party” who is obligated to design, implement, inspect, verify or maintain the BMPs and other approved elements of the plan. Kenosha County, the Towns, and local governments should continue to work to develop coordinated and simplified requirements for stormwater management facility permitting and regulation. Local requirements should be coordinated with the Wisconsin Department of Natural Resources permitting program.

Kenosha County LWCD's strategy to address applicable nonpoint pollution performance standards and prohibitions under Chapter NR 151 are described in more detail below.

INVASIVE AND NONNATIVE SPECIES MANAGEMENT AND CONTROL

Goals and Workplan Objectives

Nonnative and invasive species can alter ecological relationships among native species and can affect ecosystem function, economic value of ecosystems, and human health. In order to more effectively control the infestation and spread of nonnative and invasive animal and plant species, specific goals and workplan objectives have been identified as follows:

- Distribute informational material and respond to phone and direct inquiries;
- Organize and educate local work and youth groups to identify and eliminate nonnative and invasive species;
- Continue to coordinate the Gypsy Moth suppression program;
- Continue to conduct periodic workshops and presentations on nonnative and invasive plant and animal species control and;
- Host a garlic mustard pull-a-thon event, assist the clean boats, clean waters volunteer program, and support purple loosestrife biological control;
- Create a monitoring program to track control measures over time and;
- Encourage the development and adoption of aquatic plant management plans for all inland lakes.

Planned Actions

Nonnative and invasive species control strategies rely heavily on information, education, and communication. Therefore, this plan includes a wide range of activities to implement an effective identification, prevention, and eradication program. Kenosha County will continue 1) to conduct Gypsy Moth suppression monitoring in all areas of the County and 2) to work with the WDNR, Towns, and local governments to map areas of Gypsy Moth infestation and coordinate aerial pesticide application, if warranted.

The emerald ash borer is a nonnative insect, native to Asia, which currently threatens ash trees in the Great Lakes region. Infestations have been confirmed (summer 2006) in Kane and Cook counties in Illinois. Kenosha County will work together with the Department of Agriculture, Trade and Consumer Protection (DATCP); the WDNR; the U.S. Forest Service; the University of Wisconsin; and other State and local agencies and groups to educate the public on prevention and prepare them for potential infestation.

The WDNR has recognized aquatic invasive species as a potentially serious problem in Kenosha County lakes. Planned activities include the continuation of an ongoing program of public information and education for both riparian landowners and lake users, and encouraging lake association/districts to develop and adopt aquatic plant management plans for their individual lakes.

Invasive shrubs such as buckthorn and honeysuckle prevent the regeneration of young trees, causing long-term, serious impacts to the forestry of Kenosha County. Garlic mustard can invade woodlands and displace native vegetation. It spreads rapidly and can dominate the forest floor within ten years. It not only invades disturbed habitats, but readily spreads into high-quality forests. Garlic mustard provides little food and habitat for wildlife. Purple Loosestrife has become an aggressive weed in the wetlands and roadside ditches of Kenosha County. This plant spreads quickly and chokes out high-quality native wetland plant species. The Kenosha County LWCD will work to coordinate an annual invasive species awareness event.

PROTECT AND PRESERVE LAND AND WATER RESOURCES

Goals and Workplan Objectives

In order to more effectively protect and preserve land and water resources, specific goals and workplan objectives have been identified as follows:

- Conserve Kenosha County's unique natural resources in the face of increasing urbanization and resulting loss of farmland;
- Prevent the degradation and disturbance of wetlands;
- Create, restore and enhance wetland, riverine, and wildlife habitat throughout the County;
- Assist in the preparation and/or revisions of comprehensive lake and watershed management plans;
- Promote riparian buffers along all water resources in the County;
- Protect the quality and quantity of groundwater supplies;
- Support efforts to protect and enhance forests and woodlots; and
- Continue to implement and refine the County's shoreland management program with emphasis on shoreline protection, restoration, and enhancement.

Planned Actions

The loss of farmland and the rural character is an important concern in Kenosha County. The County, the Towns, and local municipalities should follow adopted land use plans when considering proposals for new development and redevelopment. Ongoing and future development should be held to high environmental standards through the implementation of comprehensive planning and the use of existing and future local ordinances and policies to protect open and green space and environmental corridors. The Kenosha County LWCD will encourage farmers to continue farming through sustainable and alternative agricultural practices and other initiatives which may include the purchase of development rights, comprehensive land use plans, farmland protection, farm-to-table programs (connecting local farmers with local buyers), cooperative farm approaches, trusts, deeded outlots, and conservancies.

The regional water quality management plan update² will provide specific recommendations on land use, point source pollution abatement, and nonpoint source pollution abatement on urbanizing watercourses. These recommendations were determined by detailed modeling needed to achieve the adopted water use objectives for the southeastern Wisconsin region. The recommendations will provide an invaluable resource tool for Kenosha County, the Towns, and local governments in land and water management planning.

In order to meet the identified goals and workplan objectives related to the protection and preservation of Kenosha County's land and water resources:

- Soil erosion from unstable river and lake shorelines should be quantified, priority sites should be mapped, and funding should be identified and obtained to assist landowners in implementing shoreline protection measures;

²*SEWRPC Planning Report No. 50, A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds, in progress.*

- Wetlands should be protected through implementation of Chapter NR 103, “Water Quality Standards for Wetlands,” of the *Wisconsin Administrative Code*, Chapter NR 151, and local ordinances to minimize wetland disturbance and to insure setback requirement for protected areas are met; and
- The County and local governments will work cooperatively to implement the recommended actions identified in the regional natural areas and critical species habitat plan.

The Kenosha County LWCD and the WDNR should work together to update and review water quality inventory data to assess existing conditions, as well as to provide a benchmark for evaluation of the effectiveness of best management practices for control of nonpoint source pollution. These baseline data will be used to monitor the effectiveness of implementation of the land and water resource management plan. The needed data could be used by the WDNR, by lake associations/districts, and other groups with an interest in water quality monitoring. The Kenosha County LWCD will continue to encourage lake associations/districts to become more active in water quality monitoring and encourage interested organizations to apply for various grants for both lake and river protection activities. The LWCD will continue to partner with the Southeastern Wisconsin Regional Planning Commission to provide assistance in identifying grant opportunities and in the grant application process itself. Kenosha County LWCD will continue to monitor Lake Michigan shoreline, especially in those reaches with relatively high unprotected bluffs and where shoreline protection structures are in need of maintenance, failing or failed, and where shoreline protection structures have been placed in isolated situations and are likely to cause differential erosion processes acting on unprotected portions of the shoreline in the vicinity of those structures.

Riparian buffers are one of the most effective means of protecting water quality through reducing sediment and nutrient delivery to waterbodies. Accordingly, Kenosha County will continue to work with and form more resource partnerships to educate riparian landowners on the water quality benefits of buffers. Kenosha County will offer Soil and Water Resource Management Program (SWRM) cost-share funds, as available, to install bio-engineered systems with vegetated buffers. The Kenosha County LWCD is currently promoting voluntary programs such as the Conservation Reserve Program (CRP) to protect water quality.

The WDNR is working to revise the State nonpoint pollution control standards to include riparian buffer standards. When the WDNR adopts a buffer standard under NR 151, the LWCD plans to incorporate it into local program efforts and revise annual planned activities as necessary. Kenosha County will work to achieve the pollutant reduction goals set forth in both regional and watershed water quality management plans. Additionally, Kenosha County will protect shoreline and water resources from continued degradation by continuing to administer its shoreland ordinance which limits the extent of activities such as filling, tree cutting, and grading that occur within the shoreland zone. Kenosha County will continue to update existing floodplain maps and encourage the mapping of un-modeled areas. The County will also recommend that local units of government adopt floodland zoning regulations and participate in the National Flood Insurance Program. Kenosha County will continue to protect and enhance its upland forests and woodlots through enforcement of the County Upland Resource Conservancy District ordinance, and the LWCD will continue to conduct its annual tree program and work with the area forester to provide forestry assistance to landowners.

In order to meet the goals and objectives that call for reducing the threat of groundwater contamination, Kenosha County will continue to use SWRM grant funds to cost-share the decommissioning of abandoned and unused wells. The County will also encourage and support local governments in developing wellhead protection programs to ensure safe setbacks from all municipal wells. The County will continue the current comprehensive onsite sewage disposal system management program, and will address the provisions set forth in the recently revised Comm 83, as needed. The County will continue to seek funding sources for repairing or replacing failing septic systems.

Because of the concerns associated with groundwater contamination from agriculture and related industries, the County LWCD and NRCS staff will work with agricultural producers to soil test farm fields and provide assistance to producers to develop nutrient management plans. The County will utilize the available inventory data and GIS mapping that is set forth in the regional groundwater inventory to delineate those areas that are

considered groundwater-related water quality management areas. The educational program activities mentioned above will include an element to increase the awareness level of the importance of groundwater and ways to protect groundwater resources through informational workshops, fact sheets, and literature. In addition to existing programs and educational materials, new in-school programs will be encouraged to address: sources of groundwater and its importance, groundwater uses, and protection of groundwater.

To ensure the continued quality of groundwater resources in Kenosha County, the LWCD, Towns, and local government shall incorporate information on groundwater recharge areas and the potential for groundwater contamination as one component of future land use planning. Furthermore, new urban development will be encouraged to be located in areas where public water supply systems are available.

The Southeastern Wisconsin Regional Planning Commission is conducting a regional water supply study for the Southeastern Wisconsin Region. The recommendations and guidance for groundwater sustainability set forth in SEWRPC Planning Report No. 52 will be considered by Kenosha County when evaluating the sustainability of proposed developments and in conducting local land use planning.³ The plan is expected to be completed in 2008.

INCREASED COOPERATION WITH LOCAL, STATE AND FEDERAL PARTNERS

Goals and Workplan Objectives

Coordination with Federal, State and local agencies is necessary to protect land and water resources in Kenosha County. In order to increase cooperation with those partners, specific goals and workplan objectives have been identified as follows:

- Develop a countywide comprehensive plan;
- Foster existing relationships with WDNR, FSA, DATCP, and NRCS;
- Look for new opportunities to coordinate efforts with local grass roots groups; conservation and wildlife clubs; and local, State and Federal agencies to help implement the goals of this LWRMP.

Planned Actions

The Kenosha County LWCD will work with the multi-jurisdictional advisory committee and citizens to develop a countywide comprehensive plan based on Wisconsin's Smart Growth law. The plan will provide a vision for future land use in Kenosha County. In order to improve the consistency and effectiveness of ordinance administration, the County may enter into working agreements with other agencies to coordinate and streamline the environmental permit process. The Kenosha County LWCD will consider developing a memorandum of understanding with the WDNR to describe the roles and responsibilities of the LWCD and the WDNR in the implementation of NR 151 and the proposed revision to the NR 115 shoreland regulations. The county will work to foster relationships with lake associations and districts and to promote innovations in shoreline protection and restoration through demonstration sites of new products and techniques and cost-share incentives. Kenosha County will continue to rely on NRCS and DATCP for engineering and technical assistance and grant funding. Kenosha County will continue active membership in and/or collaboration with the Root/Pike Watershed Initiative Network, Sustainable Racine Environmental Group, Seno Woodland Education Center, Racine/Kenosha Land Trust, Southeast Fox River Basin Partnership, Wisconsin Association of Land Conservation Employees, and Wisconsin Land and Water Conservation Association, among others. Partnerships are essential to conservation efforts throughout the country. They enhance communication techniques, improve outreach, and are a funding source and/or a funding requisite that can make more grant programs accessible.

³SEWRPC Planning Report No. 52, A Regional Water Supply Plan for Southeastern Wisconsin, *in progress*.

PERFORMANCE STANDARDS IMPLEMENTATION STRATEGY

The goals, workplan objectives and planned activities presented in this chapter represents part of the framework for an annual workplan that will be developed and carried out by the Kenosha County LWCD over the next five years. Proposed planned activities were purposely broadly defined in order to meet future changes in the environment, changes in programs and policies, changes in local priorities, and changes in available funding. As required by DATCP, a more detailed list of planned activities is set forth below, as a strategy to implement the nonpoint pollution performance standards and prohibitions under NR 151. Also an estimate of the costs associated with plan implementation is provided.

Implementation Strategy (agricultural)

To equitably implement the previously noted standards and prohibitions in agricultural areas, a systematic and comprehensive approach will be required. Kenosha County anticipates entering into a Memorandum of Understanding (MOU) with the WDNR at some point in the future. Specific roles and responsibilities would be negotiated during the framing of the agreement. However, the strategy for implementation detailed below is a likely process for implementation with some need for flexibility as program experience develops and fiscal conditions may dictate. In the following sections, the term “landowner” is used generically to describe the person responsible for compliance with the abovenoted standards.

1. Conduct information and education activities.

The Kenosha County LWCD will distribute information and educational material prepared by the WDNR and DATCP to appropriate landowners. The information will also be distributed via the County *Ties to the Land* newsletter, County website, public informational meetings, and individual contacts with landowners.

The educational materials will be designed to achieve the following objectives:

- Educate landowners about Wisconsin’s agricultural performance standards and prohibitions, County ordinances, applicable conservation practices, and cost-share grant opportunities;
- Promote voluntary implementation of conservation practices necessary to meet the performance standards and prohibitions;
- Inform landowners of compliance procedures and agency roles to be used statewide and locally; and
- Make landowners aware of expectations for compliance and consequences for noncompliance.

2. Priority Farms Strategy: Identify and evaluate farms for compliance with standards and prohibitions.

The Kenosha County LWCD will use GIS as a tool to identify priority farms for compliance determinations, track progress on implementing performance standards, and meet reporting requirements. Color digital orthophotography taken in spring of 2005 will be used as a base map for initial screening. Water Quality Management Areas (WQMA) (300 feet from a stream or 1000 feet from a lake) will be delineated using County two-foot contour interval large-scale topographic maps and water resource layers. Those areas coincide with the shoreland zone for the Kenosha County Department of Planning and Development. Digital land units from the U.S. Department of Agriculture-Farm Service Agency will be used to identify field boundaries. Information from the NRCS soil survey may also be used to identify “potential” locations of runoff or groundwater problems. These data layers combined with a hydrologic data layer will help identify water resources and locate potential problem areas within the WQMA. Agricultural fields and livestock operations within this area can be identified and a list of owners generated from the Land Information System parcel maps. Once the list of landowners is created, LWCD staff can conduct a records inventory search for files related to conservation planning prepared by the LCWD or the NRCS. This would be

an initial review to determine potential compliance with the performance standards based on past or present program participation. If no records are found, or if the records are found to be out of date with existing farming operations, an onsite farm visit would be scheduled.

In the initial stages, implementation will focus on high priority areas, WQMA, livestock operations, highly erodible soil areas, and lands not slated for development in the near future. Landowners within these areas will be contacted for compliance evaluation based on initial screening data noted above. Additional onsite review may also be identified through complaints or staff observations. The Kenosha County LWCD plans to conduct a minimum of three priority farm inventory visits annually. This number may increase after the GIS tool is in place and initial screening data is collected. The number of compliance evaluations is also limited by existing program efforts and staffing levels.

3. Document and report compliance status.

Following completion of records review and onsite evaluations, an NR 151 Status Report will be prepared and issued to owners of the parcel evaluated. This report will include at a minimum:

- Compliance status of individual parcels with each of the performance standards and prohibitions;
- Corrective measure options and an approximate cost estimate to comply with each of the performance standards and prohibitions for which a parcel is not in compliance;
- Status of eligibility for available cost-share funding;
- Grant funding and technical assistance available from Federal, State, and local government sources and third party service providers;
- An explanation of conditions that apply if public cost share funds are used;
- A timeline for completing corrective measures, if necessary;
- Signature lines indicating landowner agreement or disagreement with report findings;
- Process and procedures for contesting evaluation results to the County; and
- A copy of performance standards, prohibitions, and technical design standards.

All evaluations and compliance status reports will be kept as public record in the office of the Kenosha County Department of Planning and Development. If a landowner agrees with the initial compliance determination and no corrective actions are required, a Letter of NR 151 Compliance would be issued (see Item 5 below) and the site mapped appropriately on the Kenosha County Land Information System. If a landowner disagrees with the initial compliance determination, the landowner may meet and discuss concerns with the LWCD regarding the compliance determination process and results. If, after discussing the NR 151 Status Report with the LWCD, the landowner still disagrees with conclusions, the landowner may choose to follow the appeals process to be detailed in the anticipated MOU between the LWCD and the WDNR.

4. Offer technical assistance and available cost-share funding to implement appropriate best management practices.

If a site is determined to be out of compliance with the State standards, technical assistance and cost-sharing will be offered to the landowner to bring them into compliance. A list of conservation practices likely to be utilized to meet state performance standards and potential sources of cost-share funding is found in Appendix A. If no cost-share funding was available, a landowner would not be required to comply until such time that cost-sharing becomes available. However, if cost-share

funding is offered, and a landowner refuses to make the corrective actions needed to bring the site into compliance, future cost-sharing is not required and the landowner will be required to implement the practices needed to bring the site into compliance.

5. Administer funding and technical assistance.

Once a landowner agrees to implement the corrective actions to bring the site into compliance with the State standards, and if cost-sharing is involved, the cost-share agreement and schedule for implementation will be executed. If technical assistance is required, it will be arranged through appropriate agencies/staff with the proper engineering job approval or conservation planning certifications.

After the corrective measures are applied, the site will be re-evaluated to determine if the parcel has been brought into compliance with the relevant performance standards or prohibitions. If the site was in compliance, the NR 151 Status Report would be updated to include a Letter of NR 151 Compliance. This would serve as official notification that the site has been determined to be in compliance with applicable performance standards and prohibitions. Under NR 151, once a site is determined to be in compliance, it is required that the site remain in compliance for perpetuity without additional cost sharing being required.

6. Issue required notices and enforcement activities.

Following compliance status notification, if appropriate action is not taken by the landowner/operator in a reasonable amount of time as detailed in the NR 151 Status Report, enforcement action may commence.

Generally, a NR 151 Violation Letter would be sent via certified mail to notify the landowner of the violation and explain possible enforcement action that may follow. It is anticipated that the LWCD would refer the case to the WDNR for further enforcement, depending on the structure of the MOU described earlier.

7. Compliance monitoring and annual reporting.

The Kenosha County LWCD will use GIS and a spreadsheet database to record progress on implementing performance standards and meet reporting requirements. Compliance monitoring may be done as random spot checks or through scheduled inspections of sites previously cost-shared. Annual reports will be compiled to evaluate the progress of administering performance standards and prohibitions and submitted to the WDNR and DATCP.

Implementation Strategy (nonagricultural)

To implement the abovenoted standards and prohibitions fairly in the nonagricultural areas, a systematic and comprehensive approach will be required. Runoff pollution from urban lands can be the leading cause of water quality problems in some areas. As in rural areas the State standards are focused on achieving reductions in sediment loads delivered to streams and lakes. Attached to the soil particles are nutrients such as phosphorus that fuels the growth of algae and weeds in bodies of water. Other pollutants from urban areas include flakes of metal from vehicles, particles from vehicle exhaust, bits of tire and brake linings, soot from smokestacks, lead, zinc, pet waste, leaves, grass clippings, and a variety of chemical compounds.

To minimize water pollution, flooding, and other negative impacts of urbanization on downstream water resources (lakes, streams, wetlands and groundwater) and property owners, controls on soil erosion and sedimentation during construction and management of stormwater after development are required. Any development that requires Site Plan Review or the subdividing of land through the Platting or Certified Survey Map (CSM) process or is a Condominium Development requires a stormwater management and construction site erosion plan review by the County. The process of obtaining a Certificate of Compliance may also require a stormwater management and construction site erosion plan review. The review of stormwater management and construction site erosion facilities for proposed development in the business, industrial, and manufacturing zoning districts, is required under Chapter 12.08-2 of the Kenosha County General Zoning and Shoreland/Floodplain Zoning Ordinance. Subdivision developments are also reviewed for stormwater management and erosion control as required by Chapters 14.08-8 and 14.09-5 of the County Subdivision Control Ordinance. A checklist that is used in the review of stormwater management & construction erosion control plans for proposed development may be found on the Kenosha County website at http://www.co.kenosha.wi.us/plandev/land_dev/stormwater_info.html. For new development in the Des Plaines River watershed, the checklist also specifies the peak unit discharges to be achieved during two- and 100-year recurrence interval storms.⁴

Construction site erosion control ordinances are in effect in the Towns of Bristol, Salem and Somers, the City of Kenosha and the Villages of Paddock Lake, Pleasant Prairie, Silver Lake and Twin Lakes. These ordinances require erosion control practices for land disturbing activities, as set forth in the Wisconsin Storm Water Management and Post-Construction Technical Standards, a set of documents that specify the minimum requirements needed to plan, design, install, and maintain a wide array of conservation practices aimed at preserving the land and water resources of Wisconsin. WDNR construction site erosion and sediment control standards that can be downloaded at <http://www.dnr.state.wi.us/org/water/wm/nps/stormwater/techstds.htm>.

Kenosha County recognizes the need for more consistent and formal stormwater management and erosion control regulation. The County is, therefore, in the process of developing Storm water Management and Construction Site Erosion Control Standards that builders and developers will be required to follow. It is anticipated that the proposed performance standards for new construction sites will follow the nonagricultural and urban land use workplan objectives listed above. The Town of Bristol has adopted a stormwater management ordinance.

Review of preliminary and final stormwater management and construction site erosion plans and construction site and as-built stormwater management facility inspections currently represent the largest workload for the LWCD, requiring one full time employee along with additional review and oversight by the staff of the Regional Planning Commission.

It should be noted that local erosion control ordinances do not apply to single-family home construction which is regulated under Chapter Comm 21 of the *Wisconsin Administrative Code*. By State statute, Comm 21 supersedes all local ordinances. In Kenosha County, the Towns administer the regulations for erosion control for single-family home construction.

Municipal Storm Water Discharge Permits

Chapter NR 216, “Storm Water Discharge Permits,” of the *Wisconsin Administrative Code* also contains stormwater permitting requirements for regulating discharges from municipal separate storm sewer systems. Phase II of NR 216 requires municipalities outside urbanized areas with a population greater than 10,000 and a density over 1,000 persons per square mile to obtain a Wisconsin Pollutant Discharge Elimination System stormwater discharge permit. As a result of Phase II requirements, Kenosha County, the City of Kenosha, and the Villages of Paddock Lake and Pleasant Prairie will be required to obtain permits. Requirements for permitted municipalities are set forth in Chapter III of this report.

⁴Those peak unit discharges were developed through hydrologic simulations conducted under the SEWRPC Des Plaines River watershed study (SEWRPC Planning Report No. 44, A Comprehensive Plan for the Des Plaines River Watershed, June 2003).

Table 26

ESTIMATED TOTAL COSTS FOR PLAN IMPLEMENTATION: 2008-2012

Cost Category	2008	2009	2010	2011	2012	Five-Year Total Costs
Salary and Benefits ^a	\$165,568	\$173,847	\$191,666	\$201,249	\$211,312	\$ 943,642
Operating Expenses ^a	15,750	16,538	17,364	18,233	19,144	87,029
Landowner Cost-Share Hard Practices ^b	70,000	70,000	70,000	70,000	70,000	350,000
Landowner Cost-Share Soft Practices ^b	72,800	72,800	72,800	72,800	72,800	364,000
Total Annual Costs	\$324,118	\$333,185	\$351,830	\$362,282	\$373,256	\$1,744,671

^aAnticipate 5 percent annual increases for salaries, benefits, and operating expenses.

^bThe costs provided by landowners and other grant recipients would be approximately \$42,840 annually.

Source: SEWRPC.

ESTIMATED COSTS OF PLAN IMPLEMENTATION

Since this plan does not have the authority to establish county budget items, the estimated costs provided below are solely intended to satisfy state LWRM planning requirements and do not in any way represent anticipated Kenosha County LWCD budgets. It is also assumed that no additional staff resources will be made available to implement this plan beyond what is currently allocated to land and water conservation programs in the County (approximately 2.5 full time employees). The cost estimates contained in Table 26 are based on average annual costs to maintain existing program efforts and staffing levels.

The cost-sharing estimates in Table 26 are based on a statutory requirement of 70 percent cost-sharing and are dependent on the need for landowners to comply with the state performance standards described earlier in this chapter. Crop erosion control has greatly improved in Kenosha County owing to the widespread practice of conservation tillage and sowing of herbicide resistant field crops. Also Kenosha County has only a few livestock operations remaining. Therefore, compared to other Wisconsin counties, the costs to meet these requirements should be nominal. Kenosha County has, however, been under intensive agriculture for over a hundred years and many of its streams have accumulated sediment throughout that period. If a new standard is established for stream buffers, and nutrient management standards are enforced, these costs could be greater. Average salary increases and inflationary costs are included in the increases shown each year. Currently, all cost-share funding is acquired from Federal and State sources, Kenosha County LWCD will continue apply for grants to supplement those funds. The table assumes that Kenosha County's current budgeted staffing level of 2.5 full time employees is maintained, and it assumes stable segregated and bonding cost-share funds by the State. Conservation practices, such as diversions, riparian buffers, filter strips and building projects such as manure storage facilities, concrete barnyards and roofed feedlots are considered "hard practices." Cropping practices, such as nutrient management and conservation tillage, are known as "soft practices." The projected cost-share needs for installing hard and soft best management practices over the next five years is only an approximate estimate due to uncertain funding levels, changing land use and farm economy, and increasing practice installation costs.

The procedures and cost estimates outlined in this chapter represent the best estimates of the LWCD at the time of plan preparation and are all subject to change. No attempt is made to identify the source of funding beyond the assumptions noted above. All of the estimated costs are subject to the annual budget processes at the county, state and Federal levels. The LWCD will make every attempt to take advantage of the wide array of grants and partnerships that may be available through public or private sources to implement this plan.

Chapter V

PROGRESS MONITORING AND EVALUATION

MONITORING AND EVALUATION

The monitoring and evaluation of program efforts is important to ensure the effectiveness of the planned activities detailed in Chapter IV of this plan. The Kenosha County LWCD currently employs, and plans to expand, a variety of methods to monitor and evaluate the progress of program efforts which include: a geographic information system (GIS) database, public surveys, advisory committees, annual progress reports, and water quality monitoring. Monitoring program effectiveness will be carried out through analyses and quantification of soil erosion and sediment delivery, priority farm compliance, tracking the level of protection of environmentally sensitive lands, and analysis of water quality data. This chapter describes some of these efforts in more detail and indicates how they will be used to monitor and evaluate the success of implementing planned activities.

GIS/Database Tracking Systems

Kenosha County's priority farms strategy will involve the identification and evaluation of farmland for compliance with performance standards and prohibitions. Kenosha County will use GIS as a tool to identify priority farms for compliance determinations, track progress on implementing performance standards, and meet reporting requirements. This database will be designed to inventory parcel ownership, track notices sent to landowners, and record conservation measures installed and cost-share funds awarded. In addition, the LWCD will be able to track progress on riparian buffer installation accomplished through the Conservation Reserve Program or Soil and Water Resource Management (SWRM) program cost-share. If a statewide buffer standard is adopted, this database will be used to track compliance with the new standard as well.

Kenosha County currently tracks stormwater reviews using a spreadsheet database. A GIS system is proposed to monitor compliance with the urban nonpoint source pollution performance standards and to generate annual reports of activities such as plan reviews, permits issued, inspections conducted, and enforcement action taken. In addition, a GIS component may be incorporated to allow mapping of the sites where stormwater BMPs are located and to track and schedule maintenance activities.

Citizen Surveys

One way to measure progress in information and education efforts is through random citizen surveys. The Kenosha County LWCD plans to include an annual survey or questionnaire in the *Ties to the Land* newsletter. Such surveys will help to measure the level of understanding of rural nonpoint source pollution and the impacts of urban stormwater runoff. The LWCD will analyze the results of these surveys to optimize planned activities to address particular problems, concerns, or deficiencies. The Kenosha County LWCD will continue to survey workshop participants to get feedback and suggestions for improvement and ideas for future informational and educational program efforts.

Progress Reporting

Regular meetings are currently held to report progress to the Kenosha County Land and Water Conservation Committee regarding conservation plans and nutrient management plans that were developed, buffers implemented, contacts made, and educational activities. These meetings are used to evaluate the effectiveness of current practices, to approve and review cost-share contracts and to change or modify programs to better address current conditions and local priorities.

Water Quality Monitoring

Water quality monitoring is an important means to assess the present condition of water resources and to gauge the effectiveness and progress of land conservation-related activities and best management practices. Unfortunately, due to the high number of variables involved in monitoring water quality, nonstandardized parameters and sampling techniques, and the broad spatial and temporal sampling effort, it is often difficult to interpret the data. Overall, there is a shortage of water quality monitoring information available to the LWCD and much of the data is anecdotal or otherwise not readily quantifiable. The Kenosha County LWCD supports the monitoring efforts of programs, such as the Self-Help monitoring and Water Action Volunteers, among others. The LWCD also plans to continue to work in cooperation with conservancy and environmental organizations, State and Federal Agencies, school districts, utility companies, local governments, lake, sanitary, and utility districts, and adjacent County and local governments and other groups such as the Southeastern Fox River Basin Partnership, Root-Pike Watershed Initiative Network, Lake County Stormwater Management Commission, Dead/Kellogg Watershed Friends, and Upper Des Plaines River Ecosystem Partnership. All of these groups work directly or indirectly, through project funding, to collect water quality data on a regular basis.

The principal methods that will be used to evaluate soil erosion and sediment delivery will include State and Federal farm plan monitoring, plan revisions, random field checks, and conducting the annual cropland erosion survey. The principal methods that will be used to evaluate soil erosion and sediment delivery will include: State and Federal farm plan monitoring, plan revisions, random field checks, and conducting the annual cropland erosion survey. In 1999, the LWCD began conducting an annual cropland erosion survey program, which is a method to determine the average rate of cropland erosion throughout Kenosha County. The county conducted the survey every year until 2005 and now conducts the survey every other year. In 2005, 69 percent of all cropland was eroding at or below tolerable soil loss rates. This suggests that increased efforts through local, State, and Federal conservation programs will be needed to help farmers manage soil erosion. Additionally, nonagricultural and shoreline erosion will be monitored through quantification of shoreland permits and determining the effectiveness of construction site best management practices through onsite inspections and cooperation with municipal building inspectors. Modeling has also been used to estimate pollution reduction accomplished by the installation of BMPs. The Source Loading and Management Model (SLAMM) and RECARGA¹ may be used to model TSS control or to evaluate the efficiency of a design in meeting infiltration standards. Environmentally valuable lands will be quantified in the preliminary planning stage by utilizing GIS and other computer databases to introduce protective measures for environmental corridor areas and other environmentally important lands identified in the SEWRPC regional natural areas and critical species habitat plan and watershed studies.

In 2003, the Kenosha County Board adopted SEWRPC Planning Report No. 44, *A Comprehensive Plan for the Des Plaines River Watershed*. The Des Plaines River Watershed encompasses approximately 122 square miles or about 44 percent of the total land area of Kenosha County. Plan recommendations were developed for future land uses, park and open space needs, stormwater and floodplain management, water quality management, and fisheries management. The watershed plan also recommends the continued maintenance and preservation in open uses of primary and secondary environmental corridors and isolated natural resource areas, and the preservation and restoration of potential prairie areas. The watershed plan summarizes historic fisheries and water quality data,

¹The RECARGA model is a design tool developed by the University of Wisconsin-Madison, Department of Civil and Environmental Engineering for the evaluation of infiltration facilities.

and recommended monitoring strategies. This data summary offers a detailed benchmark to evaluate water resource improvements across nearly one-half of the county.

Wisconsin Department of Natural Resources Water Quality Monitoring

The Wisconsin Department of Natural Resources (WDNR) also conducts baseline monitoring of lakes and streams in Kenosha County. Department staff conducts fish collections, examines macroinvertebrates, and conducts habitat assessments at a number of locations throughout Kenosha County. This information is summarized in periodic State of the Basin reports.

U.S. Geological Survey Monitoring

The U.S. Geological Survey (USGS) is actively collecting surface water resources data at three stream locations and groundwater resources data at two locations in Kenosha County and at numerous locations around Wisconsin. The two groundwater sites USGS No. 423214087503801 Silurian-Devonian aquifers, Niagaran Series and USGS No. 423819088090301 Cambrian-Ordovician aquifer system, Sandstone Aquifer measures groundwater levels. The three stream monitoring sites USGS No. 04087250 on Pike Creek measures discharge, USGS No. 04087257 on the Pike River and USGS No. 05545750 on the Fox River records water-stage and gage crest-stage. The USGS operates a station on Powers Lake USGS No. 423246088175800 measures water quality and lake-stage. The type of data collected varies depending on program and project scope but includes historic and current stream flow on selected waterbodies, water quality, and lake-stage data. The USGS regularly partners with the WDNR and other agencies and local interest groups to collect information on the condition of surface and groundwater resources. More information on the variety of data collected by the USGS and the ability to view real-time stream gage data can be found at the USGS website: <http://wi.water.usgs.gov/>.

Lake Michigan Beach Monitoring

The Federal Beach Act was passed in October of 2000, requiring States that border coastal or Great Lakes waters to develop beach monitoring and public notification programs. The Beach Act also authorized the U.S. Environmental Protection Agency (USEPA) to provide grants to States that have beaches bordering these coastal waters for the purpose of developing and implementing monitoring and public notification programs. The WDNR and its partners have participated in this grant program since the 2002 swimming season. The Wisconsin Beach Monitoring Program was developed in accordance with USEPA performance criteria. The Kenosha County Division of Health adheres to the performance criteria for monitoring, public notification, and reporting. The Kenosha County Division of Health is responsible for testing the samples and informing the Kenosha City Parks Department daily of bacteria counts so that they can post the appropriate signs for beach advisories. Kenosha County beaches that are tested regularly include: Alford, Pennoyer, Simmons, Eichelman, and Southport. Water quality data is posted daily from Memorial Day to Labor Day. The County and State websites are updated daily and, therefore, have the latest available advisories. The Kenosha County website is: www.co.kenosha.wi.us. The State of Wisconsin beach website is: www.wibeaches.us.

Kenosha County inland lake public park beaches are tested regularly on a monthly basis during the summer months. Residents with homes or subdivisions bordering private lakes are also encouraged to test their beach water monthly. Beach kits are available from the Kenosha County Division of Health Laboratory at a cost of \$20 per sample.

Wisconsin's Self-Help Lake Monitoring Program

Wisconsin's Self-Help Lake Monitoring Program began in 1986 as one component of the WDNR Lake Management program. The Program is designed as a data collection program on some of Wisconsin's 15,000 lakes and serves as a citizen education program about lakes in general. Each volunteer learns about his or her own lake by collecting the data and through a detailed report he or she receives at the end of the sampling season. The Program was designed with six specific objectives in mind:

1. To teach citizen volunteers some concepts of basic limnology, how lakes "work" and to increase their understanding of the water quality of their lake in particular.

2. To teach citizens about basic lake sampling techniques, specifically how to use a Secchi disc carefully, regularly, and according to set procedures.
3. To document changes in water clarity over time by tallying the data on a centralized computer system.
4. To differentiate between normal and seasonal variations in water clarity and long-term trends over time. In this way it can be determined whether water clarity and, presumably water quality, is getting better, getting worse, or staying the same.
5. To compare the water clarity data for all of the lakes in the program on both a regional and statewide basis.
6. To collect data accurately over time in order to make sound lake management decisions.

Lake monitoring volunteers may measure water clarity using a Secchi disk or may elect to do chemical analysis as well as water clarity readings. Lakes in Kenosha County with a Self-Help Lake Monitoring Program include: Benedict Lake, Elizabeth Lake, George Lake, Lake Mary, Montgomery Lake, Paddock Lake, Powers Lake, and Silver Lake.

SUMMARY

Consistent and thorough evaluation and monitoring of conservation efforts is essential to ensure the effectiveness of the Kenosha County Land and Water Resource Management Plan. An annual progress report will be the primary method used to evaluate progress of implementing the planned activities outlined in Chapter IV of this report. The progress report will utilize the standardized units of measurement for conservation practices and information and education activities prescribed by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). The progress report will consist of a summary of the annual outcomes and accomplishments of planned activities outlined in the workplan. This summary may include, but is not limited to: completed information and education activities, landowners contacted, BMPs designed and installed, conservation and nutrient management plans written or revised, cost-share agreements developed, stormwater and erosion control plans reviewed, compliance monitoring and status, and other planned program results. These annual progress reports will be compiled and forwarded to DATCP and WDNR. Periodic updates will also be posted on the Kenosha County website. The results of the monitoring and evaluations described in this chapter, and conducted over the term of this plan (2008-2012), will be used to improve the next land and water resource management plan.

ACRONYMS AND GLOSSARY

ACRONYMS

BMP	Best Management Practice
CAC	Citizen Advisory Committee
CRP	Conservation Reserve Program
DATCP	Department of Agriculture, Trade and Consumer Protection
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
FPP	Farmland Preservation Program
FSA	USDA Farm Service Agency
GIS	Geographical Information Services
HEL	Highly Erodible Land
I&E	Information and Education
LWCC	Land and Water Conservation Committee
LWCD	Land and Water Conservation Department
LWRMP	Land and Water Resource Management Plan
MOU	Memorandum of Understanding
NMP	Nutrient Management Plan
NPS	Nonpoint Source Pollution
NRCS	USDA Natural Resources Conservation Service
PDR	Purchase of Development Rights
RC&D	Resource Conservation and Development
SEWRPC	Southeastern Wisconsin Regional Planning Commission
SWRM	Soil and Water Resource Management
“T”	Tolerable Soil Loss Rate
TSP	Technical Service Provider
USCOE	United States Army Corp of Engineers
USDA	United States Department of Agriculture
USF&W	United States Fish and Wildlife Service
UW-Ext	University of Wisconsin-Extension
WDNR	Wisconsin Department of Natural Resources
WHIP	Wildlife Habitat Incentive Program
WisDOT	Wisconsin Department of Transportation
WRP	Wetland Reserve Program
WQMA	Water Quality Management Area

GLOSSARY

303(d) List – The 303(d) list is prepared by the WDNR under requirements of section 303(d) of the Clean Water Act and identifies waters which are not meeting water quality standards, including both water quality criteria for specific substances and their designated uses.

ATCP 50 – The chapter of *Wisconsin's Administrative Code* that implements the Land and Water Resource Management Program as described in Chapter 92 of the *Wisconsin Statutes*.

Best Management Practices (BMPs) – The most effective practice or combination of practices for reducing nonpoint source pollution to acceptable levels.

Chapter 92 – Portion of the *Wisconsin Statutes* outlining the soil and water conservation, agricultural shoreland management, and animal waste management laws and policies of the State.

Citizen Advisory Committee – A group of citizens formed to assist in the development and/or revisions to the Land & Water Resource Management Plan through recommendations to the Kenosha County Land Conservation Committee.

Conservation Plan – A record of decisions and intentions made by land users regarding the conservation of the soil, water and related natural resources of a particular unit of land.

Conservation Reserve Program (CRP) – A provision of the Federal Farm Bill that takes eligible cropland out of production and puts that land into grass or tree cover for 10 to 15 years.

County Planning and Development (P&D) – Kenosha County Department of Planning and Development is the County office responsible for zoning administration, land conservation, land use planning, land information and GIS.

Department of Agriculture, Trade and Consumer Protection (DATCP) – The State agency responsible for establishing statewide soil and water conservation policies and administering the State's soil and water conservation programs. The DATCP administers State cost-share funding for a variety of LWCC operations, including support for staff, materials and conservation practices.

Environmental Protection Agency (EPA) – The agency of the Federal government responsible for carrying out the nation's pollution control laws. It provides technical and financial assistance to reduce and control air, water, and land pollution, and is responsible for administering the Clean Water Act.

Environmental Quality Incentives Program (EQIP) – Federal program to provide technical and cost-sharing assistance to landowners for water quality protection. The program focuses on whole farm planning to reduce nonpoint source pollution.

Eutrophication – The process by which a body of water becomes enriched in dissolved nutrients (such as phosphorus) that stimulate the growth of aquatic plant life usually resulting in the depletion of dissolved oxygen.

Geographic Information Systems (GIS) – A computerized system of maps and layers of data about land including soils, land cover, topography, field boundaries, roads and streams, zoning and land use, etc.

Highly Erodible Land (HEL) – Lands that are over 6 percent in grade. According to the NRCS, a farm field is considered to be HEL if more than one third of that field has land slopes that exceed 6 percent.

Land and Water Conservation Committee (LWCC) – The portion of the County government that is empowered by Chapter 92 of the *Wisconsin Statutes* to conserve and protect the County's soil, water and related natural resources.

Natural Resources Conservation Service (NRCS) – The NRCS is under the direction of the United States Department of Agriculture (USDA) and is responsible for soil survey inventory and information, farm conservation planning, and providing technical assistance to landowners regarding best management practices.

Nonpoint Source Pollution (NPS) – Pollution resulting from many small and diffuse sources, unlike point source pollution, which results from one identifiable source. Soil erosion, livestock waste, stormwater runoff, nutrients such as nitrogen and phosphorus, and other pollutants are all examples of nonpoint source pollution.

Resource Conservation and Development (RC&D) - USDA program that focuses on utilizing and conserving natural resources for economic development, administered by NRCS.

Responsible Party – means any person or entity holding fee title to the property or acting as the owners representative, including any person, firm, corporation or other entity performing services, contracted, subcontracted or obligated by other agreement to design, implement, inspect, verify or maintain the BMPs and other approved elements of erosion control and storm water plans.

Southeastern Wisconsin Regional Planning Commission (SEWRPC) – Governmental organization providing regional scale planning services to the seven-county Southeastern Wisconsin Region. These services include land use planning, transportation, environmental (wetlands, engineering, soils, and lake management), economic development, and GIS.

Tolerable Soil Loss (T) – Tolerable soil loss refers to the maximum allowable soil loss rate (tons/acre/year) for individual soil types. This rate refers to the amount of soil loss that can occur annually while the soil still remains agriculturally productive. It does not refer to the time it takes to naturally regenerate the soil.

United States Department of Agriculture (USDA) – Branch of Federal government with responsibilities in the areas of food production, forestry, and wildlife and fisheries.

University of Wisconsin-Extension – The outreach program of the University of Wisconsin that is responsible for formal and informal educational programs throughout the State.

Water Quality Management Area (WQMA) – The area that is within 300 feet of a navigable stream or river or 1,000 feet from a lake. In addition WQMAs also include lands adjacent to ponds, or areas that are susceptible to groundwater contamination, such as a wetland, sinkhole, or an area that is shallow to bedrock.

Watershed – The geographic area which drains to a particular river, stream, or waterbody.

Wetlands Reserve Program (WRP) – A provision of the Federal Farm bill that compensates landowners for voluntarily restoring and protecting wetlands on their property that had been in agricultural production.

Wildlife Habitat Incentives Program (WHIP) – Federal program to help provide technical and cost-share assistance to landowners to help improve wildlife habitat.

Wisconsin Department of Natural Resources (WDNR) – The State agency responsible for managing State owned lands and protecting public waters of the State. The WDNR also administers programs to regulate, guide and assist land conservation programs within individual counties, as well as landowners in managing land, water, fish, and wildlife.

Wisconsin Association of Land Conservation Employees (WALCE) – Membership organization that represents all of Wisconsin's Land and Water Conservation employees.

Wisconsin Land and Water Conservation Association (WLWCA) – Membership organization that represents the State's 72 County Land Conservation Committees.

APPENDICES

Appendix A

CONSERVATION PRACTICES

This table lists the current technical standards and potential sources of cost-share funding for the conservation practices likely to be utilized in Kenosha County to meet the agricultural nonpoint pollution performance standards.

Conservation Practice	Practice Code	Potential Funding Source	Standard
Access Road	560	SWRM, EQIP, WHIP	ATCP 50.65
Animal Trails and Walkways	575	SWRM, EQIP	ATCP 50.66
Barnyard Runoff Control Systems	Various	SWRM, EQIP	ATCP 50.64
Contour Farming	330	EQIP	ATCP 50.67
Critical Area Stabilization	342	SWRM, EQIP	ATCP 50.69
Diversion	362	SWRM, EQIP	ATCP 50.70
Field Windbreak	612	EQIP, WHIP	ATCP 50.71
Filter Strips	393	SWRM, EQIP, WHIP, CREP, CRP	ATCP 50.72
Grade Stabilization Structure	468	SWRM, EQIP	ATCP 50.73
Heavy Use Area Protection	561	SWRM, EQIP	ATCP 50.74
Livestock Fencing	382	SWRM, EQIP, WHIP	ATCP 50.75
Livestock Watering Facilities	614	SWRM, EQIP	ATCP 50.76
Manure Storage System	313	SWRM, EQIP, TRM	ATCP 50.62
Manure Storage System Closure	360	SWRM	ATCP 50.63
Milking Center Waste Control Systems	Various	SWRM, EQIP	ATCP 50.77
Nutrient Management	590	EQIP	ATCP 50.78
Pesticide Management	595	EQIP	ATCP 50.79
Prescribed Grazing	Various	EQIP	ATCP 50.80
Riparian Buffer	391	SWRM, WHIP, CREP, CRP	ATCP 50.83
Roof Runoff System	558	SWRM, EQIP	ATCP 50.85
Roofs	Various	SWRM	ATCP 50.84
Sediment Basin	350	SWRM, EQIP	ATCP 50.86
Sinkhole Treatment	725	SWRM	ATCP 50.87
Streambank and Shoreline Protection	580	SWRM, EQIP, WHIP, TRM	ATCP 50.88
Subsurface Drain	606	SWRM, EQIP	ATCP 50.90
Terrace System	600	SWRM	ATCP 50.91
Underground Outlet	620	EQIP	ATCP 50.92
Wastewater Treatment Strip	635	SWRM, EQIP	ATCP 50.94
Water And Sediment Control Basin	638	SWRM, EQIP, TRM	ATCP 50.95
Waterway Systems	412	SWRM, EQIP, CREP, CRP	ATCP 50.96
Well Decommissioning	351	SWRM, EQIP	ATCP 50.97
Wetland Development or Restoration	657	SWRM, WRP, CREP, CRP, TRM	ATCP 50.98

NOTE: Practice codes refer to NRCS field office technical guides available at <http://efotg.nrcs.usda.gov/>

SWRM = Soil and Water Resource Management Program

EQIP = Environmental Quality Incentives Program

WHIP = Wildlife Habitat Incentives Program

WRP = Wetland Reserve Program

CREP = Conservation Reserve Enhancement Program

CRP = Conservation Reserve Program

TRM = Targeted Runoff Management

Appendix B

NOTICE OF PUBLIC HEARING

Notice of Public Hearing
Kenosha County Land & Water Conservation Committee Hearing
Wednesday, August 1, 2007 at 10:00 a.m.
Kenosha County Center, Public Hearing Room
19600 – 75th Street
Bristol, WI 53104

Notice is hereby given that on Wednesday, August 1, 2007 starting at 10:00 a.m., the Kenosha County Department of Planning and Development – Land and Water Conservation Department will conduct an informational meeting followed by a public hearing on the update to the Kenosha County Land and Water Resource Management Plan (LWRMP). This is the second edition Land and Water Resource Management Plan for Kenosha County and is intended as an update to the initial LWRMP, adopted by the County Board in 2000. This five-year plan is to be used as a guide for the Land and Water Conservation Department in carrying out their duties related to land and water resource protection in Kenosha County. Adoption of the plan will also help the county qualify for future State and Federal grants. The informational meeting and public hearing will be held at the Kenosha County Center, Public Hearing Room 19600 – 75th Street, Bristol, WI 53104

The Kenosha County Land and Water Resource Management Plan may be viewed online at www.Kenoshacounty.org – look under Property, Mapping, & Environment, choose Land Conservation, then look for “Land and Water Management Plan.” The plan may also be viewed in the Department of Planning and Development at the Kenosha County Center. For additional information regarding this hearing, please contact Daniel Treloar at 262-857-1895. All interested parties will be heard.

Publication Dates: July 13th and July 20th, 2007 – in the Kenosha News.

* * *

Appendix C

CONSERVATION-RELATED LINKS

1000 Friends of Wisconsin	http://www.1kfriends.org/
American Fisheries Society	http://www.fisheries.org/afs/
Bong Naturalist Association	http://www.bongnaturalistassociation.org/
Center for Land Use Education	http://www.uwsp.edu/cnr/landcenter/landcenter.html
Chiwaukee Prairie Preservation Fund	http://www.chiwaukee.org/
Ducks Unlimited	http://www.ducks.org/
Great Lakes Commission	http://www.glc.org/
Kenosha County Interactive Mapping	http://kcmapping.co.kenosha.wi.us/mapping_public/
Kenosha County Land & Water Conservation	http://www.co.kenosha.wi.us/plandev/conservation/
Kenosha/Racine Land Trust	http://www.krlt.org/
MMSD Water Quality Initiative	http://www.mmsd.com/wqi/
National Association of Conservation Districts	http://nacdn.org/
National Fish and Wildlife Foundation	http://www.nfwf.org/
Nature Conservancy	http://www.nature.org/
Pheasants Forever	http://www.pheasantsforever.org/
River Alliance of Wisconsin	http://www.wisconsinrivers.org/
Root – Pike Watershed Initiative Network	http://www.rootpikewin.org/
Seno Woodland Education Center	http://www.senocenter.org/
Southeastern Fox River Partnership	http://basineducation.uwex.edu/southeastfox/
Southeastern Wisconsin Regional Planning Commission	http://www.sewrpc.org/
Soil and Water Conservation Society	http://www.swcs.org/
Soil Data Mart	http://soildata.mart.nrcs.usda.gov/
Standards and Oversight Council	http://www.socwisconsin.org/
Town and Country Resource Conservation and Development	http://www.townandcountryrcd.org/
U.S. Army Corp of Engineers	http://www.usace.army.mil/
U.S. Environmental Protection Agency	http://www.epa.gov/
U.S. Geological Survey	http://www.usgs.gov/
University of Wisconsin Geological & Natural History Survey	http://www.uwex.edu/wgnhs/
Upper Des Plaines Ecosystem Partnership	http://www.upperdesplainesriver.org/
Wisconsin Association of Lakes	http://www.wisconsinlakes.org/
Wisconsin Lakes Partnership	http://www.dnr.state.wi.us/org/water/fhp/lakes/index.htm
Wisconsin Lakes Publication	http://www.dnr.state.wi.us/org/water/fhp/lakes/wilkbook.htm
Wisconsin Association of Land Conservation Employees	http://www.walce.org/
Wisconsin Department of Agriculture, Trade & Consumer Protection – Environmental Protection	http://datcp.state.wi.us/core/environment/environment.jsp
Wisconsin Department of Agriculture, Trade & Consumer Protection – Nutrient Management	http://datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp
Wisconsin Department of Natural Resources – Runoff Management	http://www.dnr.state.wi.us/org/water/wm/nps/index.htm
Wisconsin Land and Water Conservation Association	http://www.wlwa.org/
Wisconsin League of Conservation Voters	http://www.conservationvoters.org/
Wisconsin Shoreland Restoration	http://www.uwex.edu/ces/shoreland/
Wisconsin USDA Farm Service Agency	http://www.fsa.usda.gov/FSA/stateoffapp?mystate=wi&area=home&subject=landing&topic=landing
Wisconsin USDA Natural Resources Conservation Service	http://www.wi.nrcs.usda.gov/
Wisconsin Wetlands Association	http://www.wisconsinwetlands.org/
Wisconsin Woodland Owners Association	http://www.wisconsinwoodlands.org/