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PLANNING REPORT NUMBER 40

A REGIONAL LAND USE PLAN FOR SOUTHEASTERN WISCONSIN-2010

Prepared by the

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STATEMENT OF THE CHAIRMAN

In 1966 the Regional Planning Commission, after careful evaluation and intensive public review of alternatives, formally adopted a regional land use plan for design year 1990 as a guide for growth and development in the seven-county Southeastern Wisconsin Region. That plan, together with the supporting data, analyses, forecasts, and objectives and standards, was documented in SEWRPC Planning Report No. 7. In 1977, the Commission adopted a second-generation land use plan extending the plan design year to the year 2000. The year 2000 land use plan was documented in SEWRPC Planning Report No. 25 and contained the basic concepts underlying the initial regional land use plan, refining and detailing the initial plan as required.

The Commission has now completed a major reappraisal of the second-generation, design year 2000, regional land use plan. This process involved review and evaluation of the design year 2000 plan in the light of changes which have occurred since the preparation of that plan with respect to population, employment levels and distribution, land use patterns, and public facility and utility systems development, and in the light of any discernable changes in regional development objectives. This process led to the preparation of a third-generation regional land use plan with a design year extended to the year 2010. The new plan presented in this report is conceptionally identical to the second-generation year 2000 regional land use plan adopted in 1977 and, indeed, the first-generation plan adopted in 1966. The year 2010 regional land use plan, like the previous plans, promotes a compact, centralized regional settlement pattern; promotes the location of new urban development in areas covered by soils suitable for such use, in areas that may be readily served by basic urban services and facilities including sanitary sewer and mass transit, and in areas free of special hazards such as erosion and flooding; and seeks to preserve the remaining primary environmental corridor lands and most of the remaining prime agricultural lands in the Region.

The Southeastern Wisconsin Region may be expected to undergo continued urban growth and development, although on a smaller scale than envisioned under the first and second-generation land use plans. Many of the challenges that existed under these earlier land use plans, however, remain. These challenges include how best to constructively shape the substantial additional urban development which may still be expected to occur within the Region to the year 2010 and how to best preserve the quality of life in older, fully developed areas of the Region and to enhance the quality of life in declining urban areas.

The challenges inherent in planning for the physical development of southeastern Wisconsin are compounded by the increased uncertainty surrounding many of the factors affecting the future scale and distribution of population and economic activity, and attendant urban development in the Region. In view of this increased uncertainty, it is important that major public works projects and major private sector development proposals are evaluated in terms of their performance under a broad range of possible future conditions. To this end, the current regional land use planning effort included the preparation of alternative futures land use plans for the year 2010, differing from the recommended plan in terms of the scale and distribution of future development. The alternative futures land use plans are intended to supplement the recommended plan, providing a broader basis for planning and decision-making regarding development and redevelopment in the Region.

While presenting many challenges, future growth and change also provide a great opportunity in that a better overall regional settlement pattern can be evolved and past mistakes avoided; new growth and development can be adjusted to the underlying and sustaining resource base; preservation, rehabilitation, and redevelopment can be properly pursued to result in a better living environment in nongrowth areas; safer, more efficient, and more convenient transportation utility and public facility systems can be provided; and a better environment for life in the Region can be created.

Implementation of, or failure to implement, the recommended regional land use plan will affect not only the efficiency of supporting transportation, utility, and facility systems and thereby directly affect the cost of living and doing business within the Region, but also the overall quality of the environment within the Region for many generations to come. It is therefore hoped that government, business, and industry, and interested citizens groups and individuals within the Region will take an active interest in the plan recommendations, which are completely advisory to all concerned, carefully reviewing their soundness and practicality, and if in agreement with the plans, support and act toward their implementation.

Very truly yours,

Frank 7. Utteck

Frank F. Uttech Chairman

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Chapter I

INTRODUCTION

The Regional Planning Commission is charged by law with the function and duty of "making and adopting a master plan for the physical development of the Region." The permissible scope and content of this plan, as outlined in the enabling legislation, extend to all phases of regional development, implicitly emphasizing, however, the preparation of spatial designs for the use of land and for supporting transportation and utility facilities.

The scope and complexity of areawide development problems prohibit the making and adopting of an entire comprehensive development plan at one time. The Commission has, therefore, determined to proceed with the preparation of individual plan elements which together can form the required comprehensive plan. Each element is intended to deal with an identified areawide developmental or environmental problem. The individual elements are coordinated by being related to an areawide land use plan. Thus, the land use plan comprises the most basic regional plan element, an element on which all other elements are based.

In 1966, the Commission adopted a regional land use plan, in conjunction with a regional transportation plan, as an overall guide to growth and development in southeastern Wisconsin through the year 1990. Those plans are documented in SEWRPC Planning Report No. 7, Land Use-Transportation Study, Volume 1, Inventory Findings-1963; Volume 2, Forecasts and Alternative Plans-1990; and Volume 3, Recommended Regional Land Use and Transportation Plans-1990. In 1977, the Commission adopted a second-generation land use plan as an update and amendment of the initial plan, extending the design period to the year 2000. That plan, along with a second-generation regional transportation plan, is documented in SEWRPC Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin-2000, Volume 1, Inventory Findings; and Volume 2, Alternative and Recommended Plans.

As part of the continuing regional planning program, the Commission completed a major review and reevaluation of the second-generation regional land use plan in 1991. The reappraisal process led to the the preparation of a third-generation regional land use plan, with the design period extended to the year 2010. This report describes the findings and recommendations of that plan reappraisal process. It presents definitive data on changes over time in the factors affecting land use and public utility and public facility development in the Region. Included are data regarding trends in population and economic activity levels and distribution within the Region. Land use trends in the Region are analyzed within the framework of the recommendations of the adopted year 2000 regional land use plan. Actual land development is evaluated in terms of the extent to which it has contributed to, or detracted from, implementation of that plan. A new regional land use plan is presented as an amendment of the year 2000 plan and an extension of that plan to the year 2010. This report, then, brings forward the findings and recommendations contained in SEWRPC Planning Reports No. 7 and No. 25 pertaining to land use in southeastern Wisconsin. Although this report supersedes the land use elements of Planning Reports No. 7 and No. 25, the earlier reports will continue to have value as a source of historical data about land use development within the Region.

Because regional land use planning studies comprise integral parts of a broader regional planning program, an understanding of the need for, and objectives of, regional planning and the manner in which these needs are being met in southeastern Wisconsin is necessary for a full understanding of the land use plan reappraisal process and of its findings and recommendations as presented herein. To that end, this chapter describes the need for, and status of, the regional planning effort within the Southeastern Wisconsin Region.

NEED FOR REGIONAL PLANNING

Regional planning may be defined as comprehensive planning for a geographic area larger than a county but smaller than a state, united by economic interest, geography, and common areawide developmental and environmental problems. The need for such planning has arisen from certain important social and economic changes which, while national phenomena, have had far-reaching impacts on the problems facing local government. These changes include growth and redistribution of population and urbanization; changes in agricultural and industrial productivity, income levels, and leisure time; generation of mass recreational needs and pursuits; intensive use and consumption of natural resources; development of private water supply and sewage disposal systems; development of extensive electric power and communications networks; and development of limited-access highways and mass automotive transportation. Through the effects of these changes, entire regions like southeastern Wisconsin are being subjected to internal migration and attendant urban diffusion and are thereby becoming a single, large, mixed rural and urban socioeconomic complex. This urban diffusion, in turn, creates serious and complex areawide developmental and environmental problems.

The areawide problems which necessitate a regional planning effort in southeastern Wisconsin all have their source in the changes in population size, composition, and distribution and in the attendant urban diffusion occurring within the Region. These areawide problems include, among others: drainage and flooding; air and water pollution; increased demand for park and outdoor recreation facilities, sewerage and water supply facilities, and housing; traffic congestion; and, underlying all of the foregoing problems, rapidly changing land use development. These problems are all truly regional in scope, transcending both the geographic boundaries and the fiscal capabilities of the local municipal units of government comprising the Region, and can be resolved only within the context of a continuing, cooperative, areawide, comprehensive regional planning effort.

THE REGIONAL PLANNING COMMISSION

The Southeastern Wisconsin Regional Planning Commission was created in August 1960, pursuant to the provisions of Section 66.945 of the Wisconsin Statutes, to serve and assist the local, state, and federal units of government in solving areawide problems and in planning for the more orderly and more economic development of southeastern Wisconsin. The Commission's role is entirely advisory, and participation by local units of government in its work is on a voluntary, cooperative basis. The Commission is composed of 21 citizen members, three from each county in the Region, who serve without pay. One Commissioner from each county is appointed to the Commission by the county board, one by the Governor from a list certified to him by the county board, and one by the Governor on his own motion.

The powers, duties, and functions of the Commission and the qualifications of the Commissioners are carefully set forth in the enabling legislation. The Commission is authorized to employ a staff and to appoint advisory committees to assist it in the execution of its responsibilities. Basic funding to support Commission operations is provided by the member counties, with the budget apportioned among the seven counties on the basis of relative equalized property valuation. The Commission is authorized to request and accept aid in any form from all levels and agencies of government to accomplish its objectives, and is authorized to deal directly with the state and federal governments for this purpose. The organizational structure of the Commission and its relationship to the constituent units and agencies of government comprising or operating within the Region is shown in Figure 1.

THE REGIONAL PLANNING CONCEPT IN SOUTHEASTERN WISCONSIN

Regional planning, as conceived by the Commission, is not substitute for, but a supplement to, local, state, and federal planning. Its objective is to assist the various levels and units of government in finding cooperative solutions to areawide developmental and environmental problems which cannot be properly resolved within the framework of a single municipality or county. As such, regional planning has three principal functions:

1. Inventory: the collection, analysis, and dissemination of basic planning and engineering data on a uniform, areawide basis so that, in light of such data, the various levels and agencies of government and private investors operating within the Region can better make decisions concerning community development.

Figure 1



Source: SEWRPC.

STAFF PLANNING DIVISIONS

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STAFF SUPPORT DIVISIONS



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The Southeastern Wisconsin Region, consisting of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties, encompasses an area of about 2,689 square miles, or about 5 percent of the total area of the State. The Region has a resident population of about 1.81 million persons, or about 37 percent of the population of the State, and provides about 990,000 jobs, or about 38 percent of the total employment in the State. There are 154 general-purpose local units of government in the seven-county Region.

Source: SEWRPC.

- 2. Plan Design: the preparation of a framework of long-range plans for the physical development of the Region, these plans being limited to functional elements having areawide significance.
- 3. Plan Implementation: promotion of plan implementation by providing a center to coordinate the planning and plan implementation activities of the various levels and agencies of government in the Region and by providing the introduction of information on areawide problems, recommended solutions to these problems, and alternatives thereto, as part of the existing decision-making process.

The work of the Commission, therefore, is seen as a continuing planning process providing outputs of value to the making of development decisions by public and private agencies and to the preparation of plans and plan implementation programs at the local, state, and federal levels. It emphasizes close cooperation between the governmental agencies and private enterprise responsible for the development and maintenance of land uses in the Region and for the design, construction, operation, and maintenance of the supporting public facilities. All Commission work programs are intended to be carried out within the context of a continuing overall planning program which provides for periodic reevaluation of the plans produced and for the extension of planning information and advice necessary to convert the plans into action programs at the local, regional, state, and federal levels.

THE REGION

The Southeastern Wisconsin Planning Region, as shown on Map 1, is comprised of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties. Exclusive of Lake Michigan, these seven counties have a total of 2,689 square miles, or about 5 percent of the total land and inland water area of Wisconsin, and a total resident population of about 1.81 million people. About 37 percent of the population of the State lives in these seven counties, which contain three of the thirteen metropolitan statistical areas which are wholly or partially located in Wisconsin. The Region contains about 41 percent of the tangible wealth of the State, as measured by equalized property valuation, and represents the greatest wealth producing area of the State, providing about 38 percent of all employment in the State. The Region contains 154 local units of government, exclusive of school and other special-purpose districts, and encompasses all or parts of 11 major watersheds.

Geographically the Region is located in a relatively good position with regard to continued growth and development. It is bounded on the east by Lake Michigan, which provides an ample supply of fresh water for both domestic and industrial use, and is an integral part of a major international transportation network. It is bounded on the south by the rapidly expanding northeastern Illinois metropolitan region and on the west and north by the fertile agricultural lands and desirable recreational areas of the rest of the State of Wisconsin. As shown on Map 2, many of the most important industrial areas and heaviest population concentrations in the Midwest lie within 250 miles of the Region; over 32 million people reside within this radius.

COMMISSION WORK PROGRAMS TO DATE

Since its creation in 1960, the Regional Planning Commission has diligently pursued its three basic functions of areawide inventory, plan design, and promotion of plan implementation through intergovernmental cooperation and coordination, although the relative emphasis placed upon these functions has changed somewhat over time. Initially, major emphasis in the Commission's work program was on the inventory function, with increasing attention being placed over the years on the plan design and on the intergovernmental coordination functions.

With respect to the inventory function, the Commission's planning program, as conducted since 1961, has resulted in the creation of a data bank containing in a readily usable form the basic planning and engineering information required for sound, areawide planning. The data assembled in the regional data bank include, among others, definitive data on streamflows; floodlands; surface and groundwater quality; woodlands, wetlands, and wildlife habitat; sites having scenic, scientific, cultural, and recreational value; soils; existing and proposed land uses: travel habits and patterns: transportation system capacity and utilization; existing and proposed utility service areas; and the demographic and economic base and structure of the Map 2

THE REGIONAL SETTING IN THE MIDWEST



Many of the most important industrial areas and the largest population and employment concentrations in the Midwest are located within 250 miles of the Southeastern Wisconsin Region. More than 32 million people, or more than one-seventh of the entire population of the United States, live within the 250-mile radius.

Source: SEWRPC.

Region. The data base also includes an extensive topographic and cadastral base mapping and horizontal and vertical survey control file.

Some of the data in the regional planning data bank have been assembled through the collation of data collected by other agencies. Data so assembled include data on highway and transit facility capacity, use, and service levels; transportation terminal facility capacity; automobile and truck availability; and population and economic activity levels. Much of the data in the regional data bank, however, have been assembled through original inventory efforts conducted by the Commission itself. Such inventory efforts have ranged from aerial photography, large-scale topographic and cadastral base mapping, and control survey programs; through extensive land use, woodland, wetland, wildlife habitat, potential park site, and public utility system inventories; to massive travel inventory, detailed operational soil survey, and streamflow gaging and water quality monitoring efforts.

The regional planning data bank is supported by an extensive data conversion, filing, and retrieval capability which permits the basic data to be readily manipulated and tabulated by various geographic areas, ranging in size from the Region as a whole down through natural watersheds, counties, and minor civil divisions to planning analysis areas, census enumeration districts and tracts, traffic analysis zones, U.S. Public Land Survey sections and quartersections, and, for certain data, urban blocks and block faces. Of increasing importance in the regional planning data bank is the Commission's automated geographic information systems capability. Key regional map files, including land use inventory and soil survey maps, have been digitized, allowing for automated map reproduction and related data analysis functions. The Commission's planning data bank provides valuable points of departure for all Commission work efforts and is, moreover, available for use by the constituent agencies and units of government and the private sector.

With respect to the plan design function, the Commission has placed great emphasis upon the development of a comprehensive plan for the physical development of the Region in the belief that such a plan is essential if land use development is to be properly coordinated with development of supporting transportation, utility, and community facility systems; if the development of each of these individual functional systems is to be coordinated with the development of each of the others; and if serious and costly developmental and environmental problems are to be avoided and a safer, more healthful and attractive, as well as more efficient regional settlement pattern is to be achieved. Under the Commission's approach, the preparation, adoption, and use of the comprehensive plan are considered to be the primary objective of the planning process; and all planning and plan implementation efforts are related to the comprehensive plan.

The comprehensive plan not only provides an official framework for coordinating and guiding growth and development within a multijurisdictional urbanizing region, but also provides a good conceptual basis for the application of systems engineering skills to the growing problems of such a region. The comprehensive regional plan also provides the essential framework for more detailed physical development planning at the county, community, and neighborhood levels.

As previously noted, because the scope and complexity of areawide development problems prohibit the preparation of an entire comprehensive plan at one time, the Commission has determined to proceed with the preparation of individual plan elements which together comprise the required comprehensive plan. By the end of 1990, the adopted regional plan consisted of 23 individual plan elements. Four of these elements are land use related: the regional land use plan, the regional housing plan, the regional library facilities and services plan, and the regional park and open space plan. Seven of the plan elements relate to transportation. These consist of the regional transportation plan including highway and transit elements, the regional airport system plan, the transportation systems management plan, the elderly and handicapped transportation plan, and detailed transit development plans for the Kenosha and Racine urbanized areas and for the City of Waukesha. Ten of the adopted plan elements fall within the broad functional area of environmental planning. These consist of the regional water quality management plan, the regional wastewater sludge management plan, the regional air quality attainment and maintenance plan, and comprehensive watershed development plans for the Root, Fox, Milwaukee, Menomonee, Kinnic-

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kinnic, and Pike River watersheds, and for the Oak Creek watershed. The final two plan elements consist of comprehensive community development plans for the Kenosha and Racine urbanized areas.

Certain of the aforementioned plan elements, namely, the regional land use plan, the regional transportation system plan, the regional airport system plan, and the regional water quality management plan, are second-generation plans. Moreover, many of those plan elements have been refined and detailed through formal plan amendments.

The Commission also carries on an active community assistance planning program, in which functional guidance and advice on planning problems are provided to local units of government and regional planning studies are interpreted locally so that the findings and recommendations of these studies may be incorporated into local development plans and plan implementation programs. Six local planning guides have been prepared under this program to provide information helpful in the preparation of local plans and plan implementation ordinances. The subjects of these guides are land subdivision control, official mapping, zoning, organization of local planning agencies, floodland and shoreland development, and the use of soils data in development planning and control.

THIRD REGIONAL LAND USE PLANNING STUDY

Need for the Study

The Commission views the process of planning for the physical development of the Region as cyclical in nature, alternating between systems, or areawide, planning and project, or local, planning. With respect to land use planning, under this concept an overall regional land use plan design is initially advanced at the areawide systems level of planning, and then an attempt is made to implement the plan recommendations through local land use planning. If for whatever reasons a particular feature of the plan advanced at the systems planning level cannot be implemented at the local level, that determination is taken into account in the next phase of systems level planning.

Within the planning framework conceived by the Commission, the periodic review of major elements of the comprehensive regional plan is essential. The periodic review of the regional land use plan is especially important, it being the most basic element of the comprehensive plan, the element upon which all other elements are based. As previously indicated, the Commission year 2000 regional land use plan is a second-generation plan, having been adopted in 1977 as an update and extension of the initial year 1990 regional land use plan. Owing to the passage of time, there is a need for a comprehensive review and reevaluation of that plan in light of changes which have occurred with respect to population and employment levels and distribution, land use patterns, and public facility and utility systems and in light of any discernible changes in regional development objectives or the relative priority attached to those objectives. Moreover, there is a need to extend the plan to a new design year on the basis of these changes; on the basis of the findings and recommendations of other local, county, or regional plans since completed; and on the basis of new projections of population and economic activity.

Study Objectives

The primary objective of the third regional land use planning study was to review and reevaluate the adopted regional land use plan in light of growth and change in the Region since adoption of that plan and to update and extend the plan to the year 2010.

Ancillary objectives of the planning study are as follows:

- 1. Maintenance of a coordinated and uniform data collection and analysis system that will readily provide, on a continuing basis, summary data on population, employment, land use, natural resources, soil capabilities, and public utilities for the Region. These data are to be available in a form suitable to assist federal, state, and local agencies of government and private investors in making development decisions.
- 2. Promotion of better understanding by public officials, planners, and engineers of the interrelationships existing between land use and public facilities and utilities, and of the factors influencing residential, industrial, and commercial land development within the Region, thereby providing a better insight into local and regional growth patterns.

- 3. Establishment of an increased awareness of the effect of individual local community plans on the development of surrounding communities and of the Region and promotion of the coordination of land use and public facility and utility planning efforts of all levels and units of government within the Region.
- 4. Maintenance of data that will permit forecasts and recommendations to be made regarding future patterns of economic activity, population distribution, and land use development.

Public Participation

From the very origin of the Southeastern Wisconsin Regional Planning Commission, it was recognized that the regional community and its elected and appointed representatives in government service must be involved in the regional planning program. Indeed, the Commission membership itself consists of a combination of elected local governmental officials and citizen members. Thus, by intent, policy, and organizational structure, the Southeastern Wisconsin Regional Planning Commission has tried to be responsive to its constituents. In addition to providing public participation through the conduct of extensive public attitudinal and behavioral surveys, the Commission has developed an intricate plan formulation and review procedure specifically designed to gain the advice and consent of concerned elected officials and citizen leaders. This procedure focuses primarily on the use of advisory committees, informal public informational meetings, and formal public hearings.

The Commission very early in its existence recognized that any comprehensive regional planning program covers such a broad spectrum of related governmental and private development programs and interests that no agency, whatever its function or authority, could "go it alone" in such a planning program. The basic Commission organizational structure, therefore, provides for the extensive use of advisory committees to promote the necessary intergovernmental and interagency coordination, to broaden the technical knowledge and experience at the disposal of the Commission, and to more actively involve elected and appointed public officials and knowledgeable citizen leaders in the regional planning effort.

Accordingly, the third regional land use planning study was carried out under the guidance of the Commission's Technical Coordinating and Advisory Committee on Regional Land Use Planning. Membership on that Committee included representatives from the U. S. Department of Agriculture, Soil Conservation Service; from the Wisconsin Departments of Natural Resources, and Agriculture, Trade, and Consumer Protection; from the university community; from municipal and county planning and public works departments; from private utilities; and from environmental organizations. A complete membership list of the Advisory Committee is provided on the inside cover of this report.

In addition to the Advisory Committee, public participation in the planning process was achieved through a series of public informational meetings and hearings. Held at locations throughout the Region, these hearings were attended by interested citizens, by representatives of business, industry, and civic organizations, and by elected and appointed public officials. These meetings and hearings were intended to provide an opportunity for the general public to become familiar with the plan reevaluation process and to allow individuals and groups to affect the decision-making process through comments and questions. Minutes of the hearings are on file in the Commission offices.

Organizational Structure

As shown on Figure 2, the primary responsibility for reevaluation of the present regional land use plan and the preparation of a new regional land use plan rested with the Commission's Land Use Planning Division. This Division reports to the Executive Director of the Commission, who in turn reports to the Commission. The Land Use Division was directly supported in its efforts by three service divisions, the Administrative Services, Cartographic and Graphic Arts, and Information Systems Divisions, of the Commission staff and was indirectly supported by the remaining functional planning divisions, the Community Assistance Planning, Economic Development Planning, Environmental Planning, and Transportation Planning Divisions.

SCHEME OF PRESENTATION

The findings and recommendations of the third regional land use planning program are documented in this report. Following this introduc-

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ORGANIZATIONAL STRUCTURE FOR THE REGIONAL LAND USE PLAN REAPPRAISAL



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tory chapter, Chapter II sets forth the basic principles underlying the regional land use plan reevaluation and outlines the major steps in the planning process. Chapter III presents an overview of the adopted year 2000 regional land use plan, together with a summary of the progress to date in the implementation of that plan. Chapters IV through VII present new benchmark inventory data and historic trend data essential in the plan reevaluation process. Separate chapters are devoted to the description and analysis of the demographic and economic base, the natural resource base and public utility base, the land use base, and community plans and land use control ordinances. Chapter VIII presents projections of population and economic activity levels in the Region through the year 2010, thereby providing a basis for the development of a new regional land use plan. Chapter IX presents the results of the review of the regional development objectives adopted as part of the year 2000 regional land use plan and sets forth a revised set of regional land use development objectives, supporting principles, and related standards. Chapter X presents the new recommended year 2010 regional land use plan for southeastern Wisconsin. Chapter XI examines the implications of future population and economic activity levels and distributions in the Region significantly different from those used as the basis for the preparation of the year 2010 regional land use plan. This chapter presents four land use plans for "alternative future" scenarios of growth and change in the Region, conceptually bracketing the year 2010 regional land use plan, indicating the range of possible future conditions with respect to the level and distribution of population and economic activity and attendant land use patterns in the Region. Chapter XII describes the actions which should be taken by the various units and agencies of government concerned to facilitate implementation of the recommended year 2010 regional land use plan. Chapter XIII provides an overall summary of the major findings and recommendations of the third regional land use planning study.

It should be noted that this report can only summarize in brief fashion the volume of information assembled in the extensive data collection, analysis, and forecasting phases of the land use plan reevaluation effort. Although the reproduction of these data in conventional report format is impossible due to the magnitude and complexity of the data collected, data from the files are available to member units and agencies of government and to the general public, upon specific request. This report, therefore, serves the additional purpose of indicating the type of data available from the Commission which may be of value in assisting federal, state, and local units and agencies of government and private investors in making better decisions concerning community development within the Region.

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Chapter II

BASIC PRINCIPLES AND CONCEPTS

In the preparation of the first-generation and second-generation regional land use plans as well as the third-generation plan presented in this report, the Regional Planning Commission followed a systematic planning approach, adhering to well established, time-proven, planning procedures. Such a systematic approach requires at the outset careful consideration of the proper scope of the regional land use plan; formulation of basic principles on which the planning process may be based; and clear identification of the major steps of the planning process itself. This chapter describes the approach followed by the Commission in preparing this thirdgeneration regional land use plan. More specifically, this chapter defines the term "land use" within a regional context, thereby providing scope to the regional land use plan; sets forth the basic principles on which the planning process is based; and describes the major steps of the planning process. In addition, this chapter describes the fundamental concepts underlying the adopted regional land use plan and the historical development of those concepts, thereby providing the background information necessary for a full understanding of the planning approach followed in the preparation of the third-generation regional land use plan.

SCOPE OF THE REGIONAL LAND USE PLAN

Land use is one of the principal areas of determining public policy facing public officials. citizen leaders, and technicians in the Region. Although much new land use development is financed by private capital, each new increment of development, planned or unplanned, be it a subdivision, shopping center, industrial plant, or institutional building, inevitably creates a demand for new public facilities and services and requires the investment of public capital in new or improved transportation facilities, utilities, and community facilities and requires the expenditure of public funds for their operation and maintenance. Such development cumulatively may also have attendant significant environmental impacts. Moreover, the unit of government facing these new public investments and increased public expenditures and affected by the environmental impacts may not always

be the same as the unit experiencing the growth. Thus, while detailed land use problems are primarily of local concern and properly subject to local planning and control, the aggregate effects of changing land use activities are of areawide concern, not only interacting strongly with the need for regional utility, storm water drainage and flood control, recreation, and transportation facilities, but also exerting a heavy demand on a limited natural resource base. The wise and judicious use of this resource base, together with the functional relationships existing between land use and the demand for regional utility, recreation, and transportation facilities, must be the major guidelines for the determination of which land uses are regional in character or influence and, therefore, are to be included in a regional land use plan.

Within the context of regional planning, the term "land use" is defined as the human activities which, grouped together, form the overall generalized pattern of urban and rural development considered at a regional scale. These include large land-consuming uses, such as agriculture, regional parks and open space reserves, major woodlands and wetlands, and major surface water bodies together with their associated shorelands and floodlands, all of which uses have important implications for the preservation and protection of the natural resource base. These also include major areas of residential use; major concentrations of commercial, industrial, and institutional use; and certain transportation terminal facilities, such as airports, all of which uses exert a heavy demand on public works facilities of areawide concern, including major trafficways, sanitary trunk sewers, and major storm water drainage channels. All other land uses, such as minor commercial and service uses; local institutional and governmental uses, including elementary and secondary schools, churches, libraries, and police and fire stations; and local park and recreational areas, are considered in the regional land use planning process only in regard to the aggregate area they require, their approximate densities, and their spatial distribution. These other uses are incorporated implicitly in the regional land use plan as integral components of urban neighborhood units.

BASIC PRINCIPLES

The specific planning process applied in the SEWRPC regional land use plan reevaluation process is based on the following basic principles:

- 1. Land use planning must be conducted concurrently with, and cannot be separated from, transportation and public utility planning. The land use pattern determines transportation and public utility needs; and, in turn, transportation and public utility systems are important determinants of the land use pattern, forming the basic framework for all urban development today. Although detailed land use patterns are primarily of local concern and properly subject to local planning and control, the aggregate effects of the spatial distribution of land use activities are regional in scope and interact strongly with the need for regional transportation and utility facilities.
- 2. Land use planning must recognize the existence of a limited natural resource base to which urban and rural development must be properly adjusted to ensure a pleasant and habitable environment. Land, water, and air resources are limited and subject to grave misuse through improper land use and related public utility and facility development. Such misuse can lead to serious environmental problems that may be difficult or impossible to correct.

BASIC PLAN CONCEPTS

While the regional land use plan is an evolving plan, the basic concepts of that plan have remained essentially the same since the initial regional land use plan was adopted in 1966. Those concepts, and the historical development of those concepts, are described herein.

Initial Regional Land Use Planning Study

In the initial regional land use planning study, a concerted effort was made to prepare and present for public evaluation the full range of alternatives that were practically available to the Region with respect to land use development. The following alternative land use plans were developed and evaluated:

<u>Controlled Existing Trend Plan</u>

A controlled existing trend plan envisioned a return to the historic development trends within the Region most evident prior to the late 1950s, with urban development continuing to occur largely in concentric rings along the full periphery of, and outward from, existing urban centers within the Region (see Map 3A).

• <u>Corridor Plan</u>

A corridor plan represented an attempt to concentrate new urban development within the Region in radial corridors centered on transportation routes emanating from the existing major urban centers within the Region (see Map 3B). Radial corridors of urban development would alternate with wedges of agricultural land and other open land.

• Satellite City Plan

A satellite city plan represented an attempt to concentrate new urban development in the Region in outlying communities relatively independent of commercial and industrial development in the larger central cities and separated from these cities by large areas of open space. The resulting development pattern would be discontinuous, both radially and circumferentially (see Map 3C).

In addition, a fourth alternative development pattern was explored, that of continuation of existing development trends in the absence of any attempt to guide development on an areawide basis in the public interest (see Map 3D). This last alternative was developed, not as a plan, but as a forecast of unplanned development. It was intended to serve, not as a recommendation, but as a standard of comparison for the evaluation of the other land use plan alternatives directed toward the attainment of regional development objectives.

Technical evaluation indicated that the controlled existing trend plan was the best of the alternatives considered, and that alternative was the most favorably received by public officials and citizens of the Region at the public hearings held on the alternative plans. Accordingly, the controlled existing trend plan was adopted in 1966 as the recommended regional land use plan for the year 1990. The controlled existing trend plan placed heavy emphasis on the continued effect of the urban land market in determining the location, intensity, and character of future urban development. The plan, however, recommended that existing development trends be altered in three significant ways in order to achieve a more healthful and attractive, as well as more efficient, regional settlement pattern. First, the plan recommended that development trends be altered by encouraging intensive urban development only in those areas of the Region which are covered by soils suitable for such development; which are not subject to special hazards such as flooding and shoreline erosion; and which can be readily served by essential municipal facilities and services, including centralized public sanitary sewerage and water supply and mass transit systems. Second, the plan recommended that existing development trends be altered by preserving in essentially natural, open uses the identified primary environmental corridors, that is, linear areas in the landscape that encompass the most important elements of the natural resource base, including lakes, rivers, and streams and their associated floodlands and shorelands; wetlands; woodlands; prairies; wildlife habitat areas; and rugged terrain and highrelief topography. Third, the plan recommended that existing development trends be altered by retaining in essentially rural use almost all of the remaining prime agricultural lands comprising the most productive farm lands in the Region.

Second Regional Land Use Planning Study

In the second land use planning study, work efforts were centered on revisions of the basic controlled existing trend plan described above. In that study, two somewhat different alternative development concepts were explored, resulting in the preparation of two alternative controlled existing trend land use plans for the year 2000. The following variations of the controlled existing trend plan were developed and evaluated:

• <u>Controlled Centralization Plan</u>

The development concepts of the controlled centralization plan were identical with those of 1990 regional land use plan. The basic development concept emphasized was one of centralization, with virtually all new urban development located in areas served by centralized public sanitary sewer and water supply facilities and with new urban development occurring in planned neighborhood units (see Map 4A).

• Controlled Decentralization Plan

The controlled decentralization plan placed less emphasis on centralization and on the planned neighborhood unit, and more emphasis on lower density and more diffusion of urban development, with greater reliance on private onsite soil absorption sewage disposal systems and private individual water supply wells (see Map 4B). This alternative was prepared at the specific request of local and state officials and private individuals who perceived a need, even within the broad concept of a controlled existing trend land use plan, to accommodate low-density, unsewered urban development.

After careful review and evaluation of the two land use plan alternatives, including public hearings, the controlled centralization plan was selected for adoption as the recommended year 2000 regional land use plan. Thus, the basic concepts of the initial regional land use plan adopted by the Commission in 1966, including, importantly, the centralization of urban development and the location of new urban development in areas which may be readily provided with essential urban services and facilities; the preservation of primary environmental corridors; and the preservation of prime agricultural lands, were reaffirmed and carried forward into the second-generation regional land use plan for the year 2000.

Third Regional Land Use Planning Study

In the third regional land use study, it was determined that the basic concepts of the adopted land use plan as described above should be brought forward and incorporated into the new land use plan for the year 2010. As shown above, the two previous regional land use planning programs indicated conclusively that a controlled existing trend land use plan, emphasizing a centralized settlement pattern, was best for the Southeastern Wisconsin Region. In the third regional land use planning study, it was determined that the preparation and evaluation of additional alternative plans was not warranted, the full range of land use plan alternatives practically available to the Region having already been carefully explored. Rather, it was determined that a single regional land use plan should be prepared as the extension to the year

Map 3

ALTERNATIVE REGIONAL LAND USE PLAN DESIGNS CONSIDERED UNDER THE FIRST REGIONAL LAND USE PLANNING EFFORT



CORRIDOR PLAN: 1990

Map 3 (continued)

SATELLITE CITY PLAN: 1990

UNPLANNED LAND USE ALTERNATIVE: 1990



Under the initial regional land use planning program, three alternative land use plans for the Region were developed and evaluated: a controlled existing trend plan, a corridor plan, and a satellitecity plan. In addition, a fourth regional development pattern was prepared, not as a plan, but as a forecast of unplanned development. The controlled existing trend plan was found to best meet the adopted regional development objectives and standards; of the alternatives considered it was the most favorably received by public officials and citizens at public hearings held on the alternative plans. Accordingly, the controlled existing trend plan was selected for adoption as the recommended regional land use plan for the year 1990. Map 4

ALTERNATIVE REGIONAL LAND USE PLAN DESIGNS CONSIDERED UNDER THE SECOND REGIONAL LAND USE PLANNING EFFORT



Under the second-generation regional land use planning program, two alternative plan designs were prepared and evaluated as revisions to, and extensions of, the first generation year 1990 regional land use plan: a controlled centralization plan and a controlled decentralization plan. Based upon careful evaluation of the two land use plan alternatives and the results of public hearings held on the alternatives, the controlled centralization plan was selected for adoption as the recommended year 2000 regional land use plan. The selected plan was a refinement of the controlled existing trend plan adopted under the initial regional land use planning effort.

Source: SEWRPC.

2010 of the adopted year 2000 plan. While incorporating the concepts of the adopted plan, the new plan would reflect actual development that has occurred in the Region since the adoption of the year 2000 plan; information and recommendations incorporated into other other local, county, and regional plans since completed; and probable future population and economic activity levels in the Region through the year 2010.

Because of the increased uncertainty regarding future trends in population and economic activity in the Region, under the current regional land use planning study, four land use plans for "alternative future" scenarios of growth and change in the Region, conceptually bracketing the new year 2010 regional land use plan, were also prepared. The "alternative futures" land use plans are intended to represent reasonable extremes of possible future conditions with respect to the level and distribution of population and employment and the amounts and distribution of the major categories of land use in the Region through the year 2010. The "alternative futures" land use plans, in conjunction with the new recommended year 2010 regional land use plan, establish a framework of possible future conditions within which planning and decision-making regarding development matters can be carried out. For example, using this framework, proposals for major public facilities and utilities may be evaluated to determine how well they would perform under a range of possible future conditions. In this way, "robust" plans which may be expected to remain viable under greatly varying conditions can be identified. Given the increased uncertainty regarding future social and economic conditions in the Region, the importance of evaluating major development proposals, in particular. plans for major public facilities and utilities. under a wide range of future conditions, cannot be overstated.

LAND USE PLANNING PROCESS

The third regional land use planning study followed a seven-step planning process: 1) study design, 2) formulation of objectives and standards, 3) inventory, 4) analysis and forecast, 5) plan design, 6) plan evaluation, and 7) plan refinement and adoption. Plan implementation, although necessarily a step beyond the foregoing planning process, is considered throughout the process, so that realization of the plans may be fostered. While the planning process was similar to that used in the first and second regional land use planning studies, certain modifications were made. The major modification, the preparation of a single regional land use plan bracketed by four land use plans for reasonable extremes of future growth and change in the Region, has already been noted. Other changes are noted in the description of the various steps of the planning process set forth below.

Study Design

Every planning program must embrace a formal structure or study design so that the program can be carried out in a logical and consistent manner. This study design should specify the content and procedures of the major steps in the planning process in order that those individual steps may be carried out efficiently and the overall planning process properly coordinated.

In the third regional land use planning study, key work elements were outlined in the Commission's annual overall work program. As appropriate, staff memoranda were prepared to define the contents of specific elements of the planning study. One of the major work elements in the planning process, the analysis and projection of population and economic activity in the Region, was completed under the continuing regional planning program, the methodology and findings of that work being documented in SEWRPC Technical Report No. 10 (2nd Edition), The Economy of Southeastern Wisconsin, and SEWRPC Technical Report No. 11 (2nd Edition), The Population of Southeastern Wisconsin. As in the previous regional land use planning studies, direction to, and technical coordination for, the planning work was provided through the advisory committee structure.

Formulation of Objectives and Standards

In its most basic sense, planning is a rational process for establishing and meeting objectives. The formulation of objectives is, therefore, an essential task to be undertaken before plans can be prepared. The objectives chosen guide the preparation of plans and, when converted to standards, provide the criteria for plan evaluation. Since objectives provide the logical basis for plan synthesis, formulation of sound objectives is a crucial step in the planning process. In order to be useful in plan design, the objectives must not only be stated clearly and be sound logically, but must be related in a demonstrable way to physical development proposals.

It is important to recognize that, because the formulation of objectives involves a formal definition of a desirable physical system by listing, in effect, the broad needs which the system aims to satisfy, the objectives implicitly reflect an underlying value system. Thus, every physical development plan is accompanied by its own unique value system. The diverse nature of value systems in a complex urban society complicates the process of goal formulation and makes it one of the most difficult tasks of the planning process. This difficulty relates in part to the lack of a clear-cut basis for a choice between value systems and in part to the reluctance of public officials to make an explicit choice of ultimate goals. Yet, it is much more important to choose the "right" objectives than the "right" plan. To choose the wrong objectives is to solve the wrong problem; to choose the wrong plan is merely to choose a less efficient physical system. Although, because of the differing value systems involved, there may be no single argument to support a given choice of objectives, it is possible to state certain planning principles which provide at least some support for the choice; this was done in the initial regional land use planning study and in subsequent studies.

Objectives cannot be intelligently chosen without knowledge of the causal relationships existing between objectives and means. This suggests that the formulation of objectives is best done by people with prior knowledge of the social, economic, and technical means of achieving the objectives, as well as of the underlying value systems. The advisory committee structure created for this purpose provides a practical and effective means by which public officials, technicians, and citizen leaders may become involved in the formulation of the regional development objectives.

The regional development objectives formulated under the initial land use planning study were necessarily conditioned by the then existent knowledge of conditions in the Region, as well as by the then present status of planning at the federal, state, regional, and local levels. With the passage of time, with the attainment of additional knowledge about the Region, and with the fulfillment of certain of the adopted regional development objectives through plan implementation as well as the failure to fulfill others, periodic reevaluation of regional development objectives becomes necessary.

The continued validity of the regional development objectives, as well as the relative priorities which the citizens of the Region may assign to each of these objectives and to other objectives directly or indirectly related to land use development, are all ultimately derived from community values which can probably best be assessed through the process of human interaction which takes place in the established political system as the implementation actions for various plan proposals are advanced over time. A very pragmatic approach was taken, therefore, to the reappraisal of the regional development objectives, namely, assessment by the Commission staff, the Advisory Committee, and the Commission itself of the community reaction experienced over the past almost three decades to specific plan implementation actions growing out of the adopted regional land use plan. Under this approach, continued adverse public reaction or response to plan implementation proposals was deemed an indication of a need to reevaluate the specific objectives, principles, and standards involved for their continued relevance. Conversely, favorable public reaction was deemed to be expressed through effective plan implementation facilitated by favorable public reaction. In the reappraisal process, it is important that care be exercised to ensure that any reaction to plan implementation proposals, be it adverse or favorable, truly reflects the values of the citizen body as a whole within the Region and not the values of a small "pressure" group, and also that the reaction reflects long-term, stable community values, not ephemeral opinions.

Inventory

Reliable basic planning and engineering data, collected on a uniform, areawide basis, are absolutely essential to the formulation of workable development plans. Consequently, inventory becomes the first operational step in any planning process, growing out of the study design. The crucial nature of factual information in the planning process should be evident, since no intelligent forecasts can be made or course of action selected without knowledge of the current state of the system being planned.

The sound formulation of a regional land use plan requires that factual data be developed on the existing land use pattern, on the potential demand for each of the various major land use categories, on the major determinants of these demands, and on existing local development objectives and constraints, as well as on the underlying natural resource and public utility base and its ability to support land use development. The necessary inventories may be grouped under five major headings: 1) aerial photography and base mapping; 2) economic and demographic base; 3) natural resource and public utility base; 4) existing land use base; and 5) community plans and zoning. These major inventories considered together must be both areawide and comprehensive, encompassing all of the geographic area and all of the various factors which influence and are influenced by land use development, and must be in a form which permits any finding to be related to the whole. In the interests of economy, the data collected in the inventories must be pertinent to describing the existing situation with respect to land use development and identifying existing and probable future problems with respect thereto; forecasting future land use requirements; and formulating and evaluating the regional land use plan.

After the inventory data have been collected, they must be edited, coded, transferred to electronic data processing media, checked, summarized, and analyzed before they are available for use in forecasting, plan design, or plan evaluation. The data collection and processing operation is the most time-consuming and costly of the entire planning process, absorbs a major portion of the budget for land use planning, and provides the most formidable obstacle to successful completion of the planning program.

Under the Commission's continuing regional planning program, regional development was monitored and analyzed in relation to the adopted land use plan, to the forecasts and basic assumptions underlying that plan, and to the techniques used in the preparation and evaluation of that plan. Data were collected periodically regarding the amount and spatial location of changes in population and economic activity levels, in land use development, and in local land use plan development and plan implementation within the Region. The conduct of these surveillance activities was directly related to the five major data categories listed above and was deemed to provide an adequate data base for the plan reevaluation.

It should be noted that certain inventory data pertaining to the land use base and natural resource base, previously published in SEWRPC Planning Reports Nos. 7 and 25, have been revised under the continuing regional planning program. These revisions are due in part to the availability of new source material and in part to definitional changes, the latter usually resulting from additional planning programs undertaken to refine the systems level recommendations of the regional land use plan. Major areas of revision include data pertaining to historical urban growth in the Region, data pertaining to individual categories of land use, and data pertaining to primary environmental corridors and prime agricultural lands in the Region. A brief description of these revisions follows.

Historic Urban Growth Data: In order to describe and analyze the evolution of the regional settlement pattern over the past 135 years, the Regional Planning Commission has delineated on appropriate base maps concentrations of urban development in selected past years, based on historical society records, land subdivision plat books, farm plat maps, historic aerial photographs, and other sources. A regional urban growth map and related measurements of the areal extent of urban growth in selected years from 1850 to 1963 were published in Planning Report No. 7. This material was extended to 1970 in Planning Report No. 25. Under the continuing regional planning program, the Commission refined the previously published historic urban growth data for the three most recent years for which data were published—1950, 1963, and 1970—and extended the time series to the year 1985. The refinement involved a change in the mapping criteria used to identify urban development areas and was undertaken to provide for more precise monitoring of urban growth over time. The refined historic urban growth data also reflect previously unknown source material, namely, aerial photography for 1950 obtained from the U.S. Soil Conservation Service.

As a result of this refinement, the details of the configuration of urban development areas in the Region for the years 1950, 1963, and 1970 shown in Chapter VI of this report are somewhat different from those shown in Planning Report Nos. 7 and 25, although the broad outlines of the configuration remain unchanged. The areal extent of urban development in the Region as presented in this report is 6 percent greater than that previously published for 1950; 17 percent lower than that previously published for 1963; and 15 percent lower than that previously published for 1970. The areal extent for the years 1850 through 1940 remain essentially unchanged.

Land Use Inventory Data: The Commission maintains a detailed inventory of existing land use in southeastern Wisconsin. The land use inventory provides definitive data on the amount and location of over 60 categories of land use. The regional land use inventory was first conducted by the Commission in 1963 and was subsequently updated in 1970, 1975, 1980, and 1985.

The 1963 regional land use inventory provided, for the first time, land use data on a uniform, areawide basis for southeastern Wisconsin. The land use classification system was designed to be suitable for both land use and transportation planning, and adaptable to other public utility and facility planning. The same land use classification system was used in the land use inventory update for 1970. The results of these inventories are summarized in SEWRPC Planning Reports Nos. 7 and 25.

As the regional land use inventory data were used in increasingly varied applications, the need for certain relatively minor, but nevertheless important, modifications of the land use inventory classification system became apparent. These changes were incorporated into the 1975, 1980, and 1985 land use inventory updates. Moreover, the land use inventory data for 1963 and 1970 were subsequently revised to reflect these changes, thereby ensuring a consistent chronological land use inventory series.

The first change was made to allow for a more precise monitoring of changes in land use over time. The change altered the classification of certain unused lands adjacent to fully developed urban areas. Under the initial classification system, if such lands appeared to be committed to eventual development similar to that of the adjacent area, they were placed in the same land use category as the adjacent fully developed land. This approach tended to overstate somewhat the extent of certain urban land use categories, particularly, residential land, industrial land, and transportation, communication, and utility land, for the inventory year concerned, since actual development of the land in question may not have occurred until years later or may not have occurred at all. Under the amended classification system, such unused lands were placed in a newly defined "unused urban" land category. This approach recognizes that such lands may be effectively committed to urban use at the time of the inventory, but does not allocate those lands to a particular urban land use category until development has actually occurred.

The second change was made in response to the significant progress which has been made with respect to the identification and mapping of wetland areas. In conjunction with a state wetland inventory program, the mapping of wetlands in southeastern Wisconsin has been refined and detailed in accordance with mapping criteria promulgated by the State. The refined wetland inventory data were incorporated directly into the regional land use inventories for the years 1975, 1980, and 1985. The initial 1963 and 1970 land use inventories were subsequently revised as necessary to reflect the refined data. One of the most significant revisions pertained to the treatment of lowland woodlands. Under the initial 1963 and 1970 land use inventories, lowland woodlands were generally included in the "woodlands" land use category, whereas under the revised classification, such woodlands are included in the "wetlands" land use category. The agricultural land use inventory category was also significantly affected, with certain lands classified as general agricultural land under the initial 1963 and 1970 land use inventories assigned to the wetlands category under the revised classification.

As a result of the changes described above, the acreages for individual land uses for the years 1963 and 1970 presented in this report differ somewhat from those published in Planning Reports Nos. 7 and 25. It should be noted that the revisions consist, for the most part, of shifts among the various urban land use inventory categories and of shifts among the various nonurban land use inventory categories. The combined acreage of all urban land uses and the combined acreage of all nonurban land uses were not significantly changed. Thus, for 1970 the combined acreage of all urban land use categories as presented in this planning report is 1.3 percent less than the acreage reported in Planning Report No. 25. The combined acreage of all nonurban lands as presented in this report is 0.3 percent greater than the previously reported acreage.

Prime Agricultural Lands: A major recommendation of the adopted regional land use plan is the preservation in essentially agricultural use of most of the remaining prime agricultural lands in the Region. The initial plan set forth a generalized delineation of prime agricultural lands along with a recommendation that the actual areas to be protected through exclusive agricultural zoning be locally determined. Considered in the original identification of prime agricultural lands were soil productivity, the size of the individual farms, the size and extent of the combined area being farmed, and other factors. It should be noted that only large blocks of farmland, concentrated areas of at least five square miles, were included in the original delineation. The Commission recognized that in local refinements of the original delineation, it may be desirable to modify the criteria used to identify which agricultural lands ought to be preserved.

After the adoption of the regional land use plan. farmland preservation planning programs were undertaken in Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties, the six counties in the Region with a significant agricultural land base. Those plans resulted in a refinement of the agricultural land preservation recommendations of the regional land use plan, including refinement of the criteria used to identify prime farming areas. The most significant change in those criteria pertains to the size of the farming areas to be included. In identifying prime agricultural lands, the counties included blocks of agricultural land considerably smaller than those initially identified under the regional land use plan, areas as small as 100 acres. As might be expected, the total prime agricultural land area identified under the county plans is significantly greater, by about 50 percent, than that included in the generalized Commission delineation set forth in Planning Report No. 25. The data pertaining to prime agricultural lands in this planning report reflect the refinements provided under the county farmland preservation plans.

<u>Environmental Corridors</u>: Another major recommendation of the regional land use plan is the preservation in essentially natural, open use of the primary environmental corridors in the southeastern Wisconsin. As previously noted, these corridors are linear areas in the landscape containing concentrations of the most important remaining elements of the natural resource base as well as scenic, recreational, and historic resource amenities. Like the delineation of prime agricultural lands, the delineation of primary environmental corridors as set forth in Planning Reports Nos. 7 and 25 is a generalized delineation, the result of systems level planning. Subsequent to the adoption of the year 2000 regional land use plan, the need for a more detailed delineation of these corridors became increasingly apparent. This need stemmed from from increased involvement by the Commission in the preparation of local plans and plan implementation devices; increased requests from both the public and private sector for detailed natural resource-related information; and changes in state and federal policies regarding sanitary sewer service extensions and wetland preservation. In response to this need, the Commission embarked on an environmental corridor refinement process which resulted in the detailed delineation of environmental corridors throughout the Region. This refinement process made full use of detailed inventory data regarding wetlands and other elements of the natural resource base not available at the time of preparation of the original regional land use plan.

The refined environmental corridors, like the generalized corridors originally identified under the regional land use plan, lie along the major stream valleys, around major lakes, and in the Kettle Moraine area of southeastern Wisconsin. The boundaries of the corridors have, however, been adjusted to coincide more precisely with natural resource features, based on the more detailed inventory data now available. In comparison to the initial environmental corridor configuration, the revised configuration includes a higher percentage of wetlands, woodlands, and surface water and a lower percentage of agricultural land. The areal extent of the revised corridor configuration is slightly lower, by 8 percent, than that of the original configuration identified in 1963.

Analyses and Forecasts

Inventories provide factual information about the present situation, but analyses and forecasts are necessary to provide estimates of future needs for land and resources. Analyses of the information provided by the inventories are required to provide an understanding of the existing situation, the future trends of change in that situation, and the factors influencing these trends. Particularly important among the analytical relationships established are those which link population and economic activity levels to the demand for various categories of land use.

Future needs must be estimated from a sequence of interlocking forecasts founded on the results of the planning analyses. Economic activity and population forecasts set the general scale of future growth, which, in turn, is translated into future demands for natural resources and land use.

Although the preparation of forecasts is not planning, the preparation of all plans must begin with some kind of forecast. In any planning effort, forecasts are required of all future events and conditions which are outside the scope of the plan but which will affect plan design or implementation. For example, the future demand for land and natural resources will depend primarily on the size of the future population and the nature of future economic activity in the Region. Control of changes in population and economic activity at the regional level lies largely outside the scope of governmental activity and outside the scope of the physical planning process. Future population and economic activity levels must, therefore, be forecast.

In the preparation of any projections, it must be realized that no one can predict the future and that all projections involve uncertainty. Surveillance activities under the continuing regional planning program point to increasing uncertainty about future trends in social and economic conditions in the Region. To deal with this uncertainty, the Commission has adopted an "alternative futures" process in developing projections of population and economic activity. Under this process, three alternative regional growth scenarios have been postulated. Two are intended to represent low and high extremes of possible future regional growth and change, while the third is intended to represent an intermediate future, that is, a future that lies between the two extremes. A set of population and employment projections was then developed for each of the three scenarios.

<u>Plan Design</u>

Plan synthesis or design forms the heart of the planning process. The most well-conceived

objectives; the most sophisticated data collection, processing, and analysis operations; and the most accurate forecasts are of little value if they do not ultimately result in sound plans to meet the objectives in light of forecast needs. The outputs of each of the aforementioned planning operations, formulation of objectives and standards, inventory, and forecast, become inputs to the design problem of plan synthesis.

The land use plan design problem consists essentially of determining the allocation of a scarce resource, land, between competing and often conflicting demands. This allocation must be so accomplished as to satisfy the aggregate needs for each land use and comply with the design standards derived from the plan objectives.

The task of designing a land use plan for a large, urbanizing area is a most complex and difficult problem. The land use pattern must enable people to live in close cooperation and yet freely pursue an enormous variety of interests. It must minimize conflicts between population growth and limited land and water resources; maintain an ecological balance of human, animal, and plant life; and minimize social and public health problems.

While the magnitude of the plan design problem approaches an almost insoluble level of complexity, no substitute for intuition in plan design has so far been found, much less developed to a practical level. Consequently, it is still necessary to develop the land use plan by traditional graphic and analytical "cut and try" methods, then to evaluate the resulting design quantitatively against the adopted land use development objectives and standards, making necessary adjustments in the design until a workable plan has evolved.

In order to overcome the limitations of individual intuitive grasp of the design problem, maximum resort was made to team effort in the actual plan synthesis. The knowledge and experience of those planners and engineers most familiar with selected geographic and functional areas was applied to the plan synthesis process through direct consultation with such staff and through careful committee review. Finally and most importantly, it should be noted that in the synthesis of the land use plan, the Commission had at its disposal far more definitive information bearing on the problem than has ever before been available, and this fact alone made the traditional plan synthesis techniques applied far more powerful.

In contrast to the first and second regional land use planning studies, in the current study a single regional land use plan design was prepared for public review and refinement as the recommended land use plan. As previously indicated, in the first land use planning study, four markedly different land use plan designs were prepared and evaluated, while in the second study two alternative designs were prepared. Both studies clearly indicated that a controlled existing trend plan, emphasizing a centralized land use pattern, was best among the alternatives considered. In view of the extent of the work of preparing and evaluating alternative land use designs done under the first and second regional land use planning programs and the conclusive nature of the findings, it was determined that additional design alternatives would not be explored in the current study. Rather, it was decided that the basic concepts of the adopted year 2000 regional land use plan would be brought forward and incorporated into the new regional land use plan. Accordingly, a single land use plan was prepared as a update and extension to the year 2010 of the previously adopted regional land use plan. Development of the new plan took into account changes in land use that have taken place in the Region since the adoption of the year 2000 plan, the findings and recommendations provided in other local, county, and regional plans since completed, and projections of population and employment in the Region to the year 2010.

As noted above, as part of the Commission's continuing regional planning program three alternative scenarios of future growth and change for the Region, a low-growth scenario, an intermediate-growth scenario, and a highgrowth scenario, have been postulated and a set of population and employment projections developed for each. As a practical matter, the preparation of a regional land use plan must be targeted toward a single set of population and employment projections. It was the collective judgement of the Advisory Committee guiding the preparation of the design year 2010 plan that future population and employment levels in the Region could be expected to be most closely approximated by the intermediate-growth scenario. Accordingly, the Committee recommended that the new land use plan be prepared to

accommodate the population and employment forecasts attendant to that scenario. The Committee further recommended, however, that the intermediate-growth scenario forecasts be adjusted as appropriate to reflect the implications of new benchmark population and employment data, particularly data from the 1990 Federal Census of Population and Housing, which indicated that population and employment growth in certain subareas of the Region, particularly in Kenosha, Racine, and Milwaukee Counties, was exceeding that envisioned under the intermediate-growth scenario. Accordingly, the forecast population and employment levels were modestly adjusted to reflect the trends indicated by the most recent data.

While practical considerations dictated that the regional land use plan be targeted toward a single set of future population and employment levels, it would be imprudent to dismiss the possibility of future growth and change in the Region at variance with the plan. Given the continuing uncertainty surrounding future social and economic conditions in the Region, a determination was made to prepare four additional land use plans for reasonable extremes of future growth and change in the Region. These "alternative futures" land use plans differ from the new recommended year 2010 regional land use plan in the overall scale of development to be accommodated, in the geographic distribution of such development, or both. In conjunction with the new recommended year 2010 land use plan. the four alternative futures land use plans are intended to establish a framework, indicating the range of possible future conditions with respect to the level and distribution of population and economic activity and attendant land use patterns in the Region, within which planning and decision-making regarding development matters can be carried out.

Plan Evaluation

In the first and second regional land use planning studies, the plan evaluation step in the overall planning process was particularly important insofar as it provided a basis for selecting, from among the alternatives being considered, one plan design which would serve as basis for the recommended regional land use plan. In the third regional land use planning study, while alternative land use plan designs were not formulated, the plan evaluation step remains important insofar as it provides a basis for determining whether the land use plan prepared as an update and extension of the previously adopted plan is sound and workable, while meeting the postulated land use development objectives.

The focus of the plan evaluation process was the degree to which the proposed plan meets the regional land use development objectives. In the evaluation process, the proposed plan was scaled against the standards supporting each objective. As previously noted, those standards are intended to relate the objectives to physical development recommendations and thus facilitate the evaluation of the ability of a plan to achieve the chosen objectives.

Plan Refinement and Adoption

In order for the regional land use plan to gain widespread acceptance, the process followed in developing that plan must actively involve the various governmental bodies, technical agencies, and private interest groups concerned with regional development. That involvement is particularly important in the review of the plan developed for consideration as the new regional land use plan. As in the previous studies, in the current study it was determined that review of the plan would be accomplished primarily through the Advisory Committee structure and through formal and informal public hearings. After refinement as warranted by that review process, the plan would be considered for adoption by the Regional Planning Commission. Upon adoption by the Commission, the plan would be certified to the concerned units and agencies of government for adoption and implementation.

SUMMARY

This chapter has presented the basic principles underlying the regional land use plan reevaluation and described the major steps in that planning process. In addition, it has described the basic concepts of the adopted regional land use plan and the historical development of those concepts, providing the background necessary for a full understanding of the planning approach followed in the preparation of the third-generation regional land use plan.

While the planning process followed in the third regional planning study was similar to that used in the previous studies, certain modifications were made. The most significant modification was made with respect to the plan design phase of the work. In the first regional land use planning study, four different land use plan designs were prepared and evaluated, while in the second study, two alternative designs were considered. Both studies clearly indicated that a controlled existing trend plan, emphasizing a centralized land use pattern, was best among the alternatives considered. In view of the extensive work with respect to the preparation and evaluation of alternative land use designs conducted under the first and second regional land use planning programs and the conclusive nature of the findings, it was determined that further consideration of design alternatives was not warranted in the third regional land use planning program. Rather, it was determined that a single regional land use plan should be prepared as an update and extension to the year 2010 of the adopted year 2000 plan. While incorporating the basic concepts of the adopted plan, the new plan would reflect actual development that has taken place since the adoption of the year 2000 plan, the findings and recommendations of other local, county, and regional plans since completed, and probable future population and economic activity levels in the Region through the year 2010.

Because of the increased uncertainty regarding future levels and distribution of population and economic activity in the Region, however, under the current regional land use planning study. four land use plans for "alternative future" scenarios of growth and change in the Region were also prepared. The "alternative futures" land use plans differ from the new recommended year 2010 regional land use plan in the overall scale of development, in the distribution of such development, or both. The "alternative futures" land use plans, in conjunction with the new year 2010 regional land use plan, establish a framework of possible future conditions within which planning and decision-making regarding development matters can be carried out. Within this framework, proposals for major public facilities and utilities may be evaluated to determine how well they would perform under a range of possible future conditions. In this way, "robust" plans which may be expected to remain viable under greatly varying conditions can be identified. With the increased uncertainty regarding future social and economic conditions in the Region, there is a much greater need to evaluate major development proposals in particular. plans for major public facilities and utilities, under a wide range of future conditions.

Chapter III

ADOPTED YEAR 2000 REGIONAL LAND USE PLAN

INTRODUCTION

As noted in Chapter I of this report, in 1966 the Regional Planning Commission, after careful evaluation and intensive public review of alternatives, formally adopted a regional land use plan for the plan design year 1990 as a guide to growth and development in the seven-county Southeastern Wisconsin Region. That plan, together with the supporting data, analyses, forecasts, and objectives and standards, was documented in SEWRPC Planning Report No. 7. In 1977, the Commission adopted a secondgeneration land use plan, extending the plan design period to the year 2000. The year 2000 land use plan, which was documented in SEWRPC Planning Report No. 25, retained the basic concepts underlying the initial regional land use plan, refining and detailing that initial plan as required. Upon adoption by the Commission, the initial 1990 regional land use plan and its successor, the year 2000 regional land use plan, were certified to the concerned federal and state agencies of government and to the constituent local units of government for consideration, adoption, and implementation over time.

This chapter presents a brief description of the adopted year 2000 regional land use plan together with federal, state, and local plan adoption and implementation actions to date. A description of that plan, together with its implementation status, is important because that plan constitutes the object of the plan reevaluation process. That process is intended to determine the continued validity of the adopted land use plan; to identify any major shortcomings, as well as progress in, plan implementation; and thereby to serve as a basis for the further refinement and detailing of the adopted plan and of the development objectives and standards on which the plan is based.

PLAN DESCRIPTION

A description of the past regional land use planning efforts, including a description of the alternative plans considered, was presented in Chapter II of this report. As indicated in that chapter, while the regional land use plan is an

evolving plan, the basic concepts underlying the plan have remained unchanged since the adoption of the initial regional land use plan in 1966. The adopted year 2000 regional land use plan, like the initial year 1990 regional land use plan, may be characterized as a "controlled existing trend" plan, emphasizing a centralized regional settlement pattern. The plan recommends that new urban development be encouraged to occur largely in concentric rings along the full periphery of, and outward from, existing urban centers within the Region (see Map 5). Although the plan envisions a continued reliance on the urban land market as the major determinant of the location, density, and character of future land use development within the Region, it does propose to influence the operation of this market and its effects on land use development in order to promote a more orderly and economical regional development pattern, and avoid intensification of areawide developmental and environmental problems.

Because the plan recognizes the importance of the urban land market in determining the location. density, and character of future land use development within the Region, the allocation of future land uses to each county within the Region under the adopted regional land use plan is such as to approximate the forecast future population and employment levels for each county, and, to the extent practicable, the proposals contained in existing community development plans and related plan implementation ordinances. The adopted land use plan, however, seeks to influence the operation of the urban land market in three significant ways in order to achieve a more healthful and attractive, as well as more efficient, regional settlement pattern.

First, the plan recommends that intensive urban development occur only in those areas of the Region which are covered by soils suitable for such development; which are not subject to special hazards, such as flooding and shoreline erosion; and which can be readily served by essential municipal facilities and services, including centralized public sanitary sewerage and water supply. The plan recommends that new residential development occur primarily in planned neighborhood units at medium densi-

Map 5

ADOPTED LAND USE PLAN FOR THE REGION: 2000



LLINOIS
The second-generation, design year 2000, regional land use plan, like the first-generation, design year 1990, plan, placed heavy emphasis on the continued effect of the urban land market on determining the location, intensity, and character of future development. In doing so, however, those plans sought to influence the operation of the urban land market in three important ways in order to achieve a more healthful and market in three important ways in order to achieve a more healthful and arracter of future development; which are not subject to special hazards, such as flooding and shoreline erosion; and which can be readily served by essential municipal facilities and services. Second, the plans recommended that inter areas in the landscape encompassing the most important features of the natural resource base. Third, the plans recommended the remaining primary environmental corridors, those linear areas in the landscape encompassing the most important features of the Region. Source: SEWRPC.

new residential development occur primarily in planned neighborhood units at medium densities, averaging four dwelling units per net residential acre. In this respect, the plan seeks to moderate the declining trend in urban population density occurring in the Region since 1920. Under the plan, the overall density of the developed urban areas of the Region would approximate 3,800 persons per square mile by the plan design year 2000. The adopted plan would require the conversion of approximately 113 square miles of land from rural to urban use within the Region to accommodate a population increase of about 460,000 persons. The plan envisions a total of 22 major industrial centers and 16 major commercial centers within existing urban areas or areas proposed to be converted to urban use by the plan design year 2000.

Second, the plan recommends the protection of all of the remaining primary environmental corridors of the Region from intrusion by incompatible urban development. The preservation of the primary environmental corridors in essentially natural, open use to form an integrated system of park and related open spaces within the Region is perhaps the most important single recommendation contained in the adopted land use plan. These corridors, while encompassing only about 17 percent of the total area of the Region, encompass almost all of the best remaining elements of the natural resource base. The corridors encompass all of the major lakes and streams and most of the associated undeveloped shorelands and floodlands; most of the best remaining woodlands, wetlands, and wildlife habitat areas; areas with rough topography and significant geologic formations; most of the best remaining sites having scenic, historic, and scientific value; the major groundwater recharge and discharge areas; and many existing park sites and most of the best remaining potential park sites. The preservation of these corridors is important to the maintenance of a high level of environmental quality in the Region, to the protection of its natural beauty and cultural heritage, and to the provision of opportunities for certain scientific, educational, and recreational activities. The exclusion of urban development from these corridors will also prevent the creation of such serious and costly developmental problems as wet and flooded basements, pavement and building foundation failures, and excessive clearwater infiltration and inflow into sanitary sewerage facilities.

Third, the plan recommends the retention in essentially rural use of almost all the remaining prime agricultural lands, consisting of the most productive farm lands and farm units in the Region. Protection and preservation of this prime agricultural land is recommended not only for economic reasons but also to assure the wholesomeness of the future regional environment and to contribute to the preservation of the unique cultural heritage of the Region and its natural beauty.

Although the adopted regional land use plan contains many other recommendations with respect to guiding land use development within the Region into a better settlement pattern, the three major recommendations summarized above are the most important. These, therefore, warrant particular attention in any surveillance of actual development in relation to the adopted plan and in any determination of the continued validity of that plan.

PLAN ADOPTION

An essential action preceding the implementation of plans is the adoption of those plans by the governmental agencies having plan implementation authority. Significant progress has been achieved with respect to formal adoption or endorsement of the regional land use plan. As of December 1985, six county boards of supervisors, the County Boards of Kenosha, Milwaukee. Racine, Walworth, Washington, and Waukesha Counties, had formally adopted the firstgeneration design year 1990 regional land use plan or its successor, the second-generation design year 2000 regional land use plan. The local governing bodies or plan commissions of 13 cities, 14 villages, and 16 towns within the Region had also formally adopted the firstgeneration or second-generation regional land use plans, thus reinforcing the actions of the constituent county boards. In addition, the following agencies of government had formally adopted or endorsed the first- or secondgeneration regional land use plans: the Wisconsin Departments of Natural Resources and Transportation; the Wisconsin Board of Soil and Water Conservation Districts (now the Wisconsin Land Conservation Board); the U.S. Department of Transportation, Federal Highway Administration and Urban Mass Transit Administration; the Federal Water Pollution Control Administration (now the U.S. Environmental Protection Agency); the U. S. Department of Housing and Urban Development; the U. S. Department of Interior; and the U. S. Department of Agriculture, Soil Conservation Service.

The adopted land use plan has provided a means by which land use development may be guided and shaped in the public interest on an areawide basis through the coordinated, cooperative actions of all of the units and agencies of government concerned. The land use plan has also provided the basic framework for the preparation of additional regional plan elements, such as the regional water quality management plan, the regional park and open space plan, and the regional transportation system plan; for the preparation of additional subregional plan elements, such as comprehensive watershed plans, sanitary sewer service area plans, and county farmland preservation plans; and for the preparation of community land use plans and detailed neighborhood unit development plans for certain municipalities within the Region.

PLAN IMPLEMENTATION

The balance of this chapter provides a general description of the status of implementation of the adopted year 2000 regional land use plan, focusing on the three major plan recommendations as summarized above. The description of recent land use development focuses on the degree to which such development may have contributed to, or detracted from, implementation of the adopted plan and the continued viability of that plan. Also included is a review of changes in the size and distribution of economic activity and population within the Region, providing essential background for any consideration of the implementation status of the plan.

As indicated in Chapter I, the year 2000 regional land use plan has been refined and detailed through a number of formal plan amendments since its adoption in 1977. The description of the implementation status of the regional land use plan presented in this chapter takes into account these plan amendments as well as other inventory data developed under the continuing regional planning program since the adoption of the land use plan.

Population and Economic Activity Levels

Before examining recent land use development patterns in the Region, a review of the basic factors determining the general scale as well as the spatial distribution of land use development is in order. Changes in economic activity and population levels determine the general scale of regional development by generating the demand for specific types of land uses; while the distribution of population and economic activity determines the spatial distribution of those land uses. Preparation of the adopted regional land use plan was, therefore, necessarily preceded by the preparation of forecasts of both economic activity and population levels to the year 2000, the design year of the plan. The degree to which actual levels of economic activity and population either conform to or depart from the levels originally forecast is an important qualifier in any evaluation of land use development in the Region both in its relation to the adopted regional land use plan and also in its relation to the continued viability of that plan.

The surveillance activities carried out by the Commission under the continuing regional planning program indicate that growth in employment within the Region has generally conformed to the forecasts used in the preparation of the adopted year 2000 regional land use plan. Employment within the Region in 1985 totaled 871,900 jobs, an increase of 118,200 jobs. or 16 percent, over the 1970 employment level of 753,700 jobs (see Table 1 and Figure 3). The 1985 regional employment level envisioned under the adopted regional land use plan totaled 878,800 jobs. Thus, for the Region as a whole, the actual 1985 employment level was within 1 percent of the forecast employment level, indicating general conformance with the forecast trend in regional employment growth. This growth in employment occurred in spite of a slight decrease in the regional population since 1980, as described below, reflecting an increasing participation rate of the total population in the labor force. This growth in employment also occurred in spite of the severe economic recession experienced within the Region from 1979 through 1983.

Between 1970 and 1985, each county in the Region experienced an increase in total employment (see Table 1). The largest relative increases occurred in Ozaukee, Washington, and Wauke-

		Actual Employ	yment Levels Change: 1	Forecast	Difference Between Actual and Forecast 1985 Employment Levels		
County	1970	1985	Number	Percent	1985	Number	Percent
Kenosha Milwaukee	40,000 507,100	42,500 527,300	2,500 20,200	6.3 4.0	46,700 552,200	-4,200 -24,900	-9.0 -4.5
Ozaukee	19,800 62,700	26,900 74,500	7,100 11,800	35.9 18.8	28,000 78,700	-1,100 -4,200	-3.9 -5.3
Walworth Washington	24,500 23,100	28,100 31,300	3,600 8,200	14.7 35.5	32,700 28,200	-4,600 3,100	-14.1 11.0
Waukesha	76,500	141,300	64,800	84.7	112,300	29,000	25.8
Region	753,700	871,900	118,200	15.7	878,800	-6,900	-0.8

ACTUAL AND FORECAST EMPLOYMENT LEVELS IN THE REGION BY COUNTY: 1970 AND 1985

Source: Wisconsin Department of Industry, Labor and Human Relations; U. S. Bureau of Economic Analysis; and SEWRPC.

Figure 3



ACTUAL AND FORECAST EMPLOYMENT IN THE REGION BY COUNTY: 1970 AND 1985

Source: Wisconsin Department of Industry, Labor and Human Relations; U. S. Bureau of Economic Analysis; and SEWRPC.

sha Counties, marking a continuation of decentralization of economic activity within the Region. The rates of increase in employment for counties in the Region between 1970 and 1985 varied somewhat from the forecast rates. Thus, between 1970 and 1985, actual employment increased substantially faster than forecast in Waukesha County and slightly faster than forecast in Washington County. In Kenosha, Milwaukee, Ozaukee, Racine, and Walworth Counties, employment increased somewhat slower than forecast, with actual 1985 employment levels in these counties being 4 to 14 percent less than forecast. Surveillance activities carried out under the continuing regional planning program indicate that, contrary to forecasts of continued population growth, the overall population of the Region has stabilized in recent years. Following decades of relatively rapid growth, the regional population experienced only a slight increase of about 8,700 persons, from 1,756,100 person in 1970 to 1,764,800 persons in 1980; and since 1980, the regional population may have decreased slightly, to about 1,742,700 persons. The forecasts underlying the adopted regional land use plan indicated a substantial increase in the regional population, from 1,756,100 persons in 1970 to 1,954,100 persons in 1985. The actual 1985 population was thus lower than the 1985 forecast population by 211,400 persons, or by about 11 percent (see Table 2 and Figure 4). This variance between the estimated actual and forecast population levels is principally the result of net migration of population out of the Region in excess of the rate of out-migration assumed in the population forecasts. This outmigration may be attributed in part to the severe economic recession experienced within the Region from 1979 to 1983.

Between 1970 and 1985, four counties in the Region, Ozaukee, Walworth, Washington, and Waukesha, experienced population increases ranging from about 14 to 37 percent. The

ACTUAL AND FORECAST POPULATION LEVELS IN THE REGION BY COUNTY: 1970, 1980, AND 1985

	Actual Population Levels Change: 1970-1					Forecast	Difference Between Actual and Forecast 1985 Population Levels	
County	1970 ^a	1980 ^b	1985 ^c	Number	Percent	Population Percent 1985 Number		Percent
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	117,900 1,054,300 54,500 170,800 63,500 63,800 231,300	123,100 965,000 67,000 173,100 71,500 84,900 280,200	121,100 939,600 67,500 169,200 72,200 87,200 285,900	3,200 -114,700 13,000 -1,600 8,700 23,400 54,600	2.7 -10.9 23.9 -0.9 13.7 36.7 23.6	149,800 1,015,000 86,800 195,500 80,500 103,900 322,600	-28,700 -75,400 -19,300 -26,300 -8,300 -16,700 -36,700	-19.2 -7.4 -22.2 -13.5 -10.3 -16.1 -11.4
Region	1,756,100	1,764,800	1,742,700	-13,400	-0.8	1,954,100	-211,400	-10.8

^a1970 census.

^c1985 Wisconsin Department of Administration estimate.

Source: U. S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

b1980 census.

population levels of Kenosha and Racine Counties were relatively stable during this time, while the population level of Milwaukee County decreased by about 11 percent. For each county, the actual 1985 population level was lower than the forecast level. The variance between the actual and forecast population levels ranged from 7 percent in Milwaukee County to 22 percent in Ozaukee County.

In contrast to the recent decline in the regional population, the number of households in the Region has increased significantly. There were about 643,800 households in the Region in 1985, an increase of 107,300 households, or 20 percent, since 1970. The increase in the number of households has been accompanied by a significant decrease in the average household size, or number of persons per household. Unlike resident population, the increase in the number of households in the Region between 1970 and 1985 closely approximates the increase envisioned under the adopted regional land use plan. The actual number of households in 1985 was about 11,600 households, or about 2 percent, greater than the forecast level of 632,200 households (see Table 3 and Figure 5).

Each county in the Region experienced an increase in the number of households between 1970 and 1985. Actual household levels in 1985 were slightly greater than forecast in Milwau-

Figure 4

ACTUAL AND FORECAST POPULATION IN THE REGION BY COUNTY: 1970 AND 1985



Source: U. S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

kee, Racine, Walworth, and Waukesha Counties, and slightly lower than forecast in Kenosha, Ozaukee, and Washington Counties. The differences between actual and forecast 1985 household levels ranged from about 2 percent in Milwaukee County to about 8 percent in Walworth County.

The foregoing overview of economic and demographic base data indicates that, while the population of the Region has not increased as forecast, two other determinants of the general scale of land use development, the number of households and the number of jobs, have

ACTUAL AND FORECAST HOUSEHOLD LEVELS IN THE REGION BY COUNTY: 1970, 1980, AND 1985

	Actual Household Levels Change: 1970-1985					Forecast Number of	Difference Between Actual and Forecast 1985 Household Levels	
County	1970 ^a	1980 ^b	1985 ^c	Number Percent		Households 1985	Number	Percent
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	35,500 338,600 14,800 49,800 18,500 17,400 61,900	43,100 363,700 21,800 59,400 24,800 26,700 88,500	44,200 368,200 22,900 61,200 25,600 28,500 93,200	8,700 29,600 8,100 11,400 7,100 11,100 31,300	24.5 8.7 54.7 22.9 38.4 63.8 50.6	46,200 361,100 24,400 58,400 23,800 29,300 89,000	-2,000 7,100 -1,500 2,800 1,800 -800 4,200	-4.3 2.0 -6.1 4.8 7.6 -2.7 4.7
Region	536,500	628,000	643,800	107,300	20.0	632,200	11,600	1.8

a1970 census.

^b1980 census.

Source: U. S. Bureau of the Census and SEWRPC.

Figure 5

ACTUAL AND FORECAST HOUSEHOLDS IN THE REGION BY COUNTY: 1970 AND 1985



Source: U. S. Bureau of the Census and SEWRPC.

increased substantially as forecast. The general conformity between the actual and forecast number of households is significant since the household represents a basic consuming unit, generates much of the demand for urban land, and is an important component in the generation of the demand for transportation and many other types of urban facilities and services.

Status of Land Use Plan Implementation

Implementation of the regional land use plan is difficult to monitor because of the broad scope of the plan itself, the dynamic nature of regional development, and the great diffusion of decision making power concerning land use development c1985 estimate.

that exists within the Region. In the monitoring process, care must be taken not to become lost in details, the effects of which may be meaningless at the regional scale. Rather, the focus must be on the most important and essential elements of the plan and those areas of action which will have the greatest impact on guiding and shaping development in accordance with the major plan recommendations. Accordingly, the following two criteria have been advanced for use in determining which plan elements are truly regional in character and, thus, most important to the attainment of the regional development objectives: 1) the importance of the plan elements to the wise and judicious use of the underlying and sustaining natural resource base; and 2) the importance of the plan elements to the functional relationships existing between land use and the demand for the major utility, recreational, and transportation facilities.

On the basis of these two criteria, it was concluded that the regional land use plan would be largely achieved if the primary environmental corridors of the Region are protected from incompatible urban development; if prime agricultural lands are preserved; if the major regional park and recreation areas are acquired for public use; if future residential development within the Region approximates the density and spatial distribution patterns recommended by the plan; and if the major activity centers, that is, the major retail and service centers and major industrial centers, approximate the general scale and spatial location recommended by the plan.

Primary Environmental Corridors: As already noted, one of the most important recommendations of the regional land use plan is the preservation and protection of the primary environmental corridors of the Region. As previously noted, primary environmental corridors are linear areas in the landscape which encompass the best and most important elements of the natural resource base. These corridors encompassed about 468 square miles of land and surface water, or about 17 percent of the total area of the Region, in 1985. Also as already noted, the preservation of these corridors in natural open uses is essential to the protection and wise use of the natural resource base of the Region, to the preservation of its natural beauty and cultural heritage, and to the prevention of environmental and developmental problems.

Many important actions have been taken by the concerned agencies and units of government toward achieving the environmental corridor preservation objectives within the Region. By 1985, about 147 square miles of primary environmental corridor lands, including 71 square miles of inland lake surface area, representing 31 percent of the total corridor area was publicly owned and thereby permanently protected against inappropriate development. An additional 177 square miles, or 38 percent, had been effectively protected from inappropriate development through joint State-local floodplain and shoreland wetland zoning and federal wetland regulation. Furthermore, State administrative rules governing sanitary sewer extensions help to protect upland corridors located within planned sewer service areas—areas encompassing an additional 26 square miles, or 6 percent of all corridor lands—although the statutory basis for this protection is relatively narrow, relating only to potential adverse water quality impacts. In total, about 350 miles of primary environmental corridor lands, or about 75 percent of all such lands in the Region, were fully or partially protected by 1985 (see Map 6).

Despite the significant progress with respect to the environmental corridor protection, some primary environmental corridor lands have been developed for intensive urban use. Largely as a result of such development, the area encompassed in primary environmental corridors decreased by almost eight square miles, or almost 2 percent, between 1970 and 1985. Most of this loss occurred prior to 1980, before many of the aforementioned protective measures had been implemented.

Prime Agricultural Land: Prime agricultural lands consist of the most productive agricultural lands remaining in southeastern Wisconsin. These lands were identified on the basis of soils, the size of individual farm units, and the size of the agricultural area comprised by the farm units. In 1985, about 1,047 square miles, or 39 percent of the total area of the Region, were identified as prime agricultural lands. The preservation of these lands in agricultural use, as recommended in the regional land use plan, is important to assure the availability of productive farmlands for future generations; to promote an important sector of the regional economy; and to help certain communities preserve their rural lifestyle. Moreover, agricultural land preservation complements companion urban development recommendations of the regional land use plan by promoting a compact, centralized settlement pattern and discouraging urban sprawl.

The adopted regional land use plan recommends that prime agricultural lands be protected through exclusive agricultural zoning. Exclusive agricultural zoning districts establish a relatively large minimum parcel size and restrict the use of land primarily to agricultural use. By 1985, exclusive agricultural zoning prohibiting the division of farmland into parcels less than 35 acres in area served to protect about 585 square miles, or about 56 percent of the prime agricultural land in the Region (see Map 7).

While the adopted regional land use plan recommended the preservation of most prime agricultural land, the plan recognized that the loss of certain prime farmland would be necessary to accommodate continued urban growth and development in the Region. The plan proposed to convert to urban use only those prime agricultural lands which were already committed to urban development due to the proximity to existing and expanding concentrations of urban uses and the prior commitment of capital to utility extensions. Between 1963 and 1985, the area of prime agricultural lands in the Region decreased by about 160 square miles, or 13 percent. About 27 square miles, or 17 percent of this total, were located in or adjacent to expanding urban areas; the conversion of these

areas to urban use was generally consistent with the regional land use plan. The balance, about 133 square miles, or 83 percent, was located in outlying rural areas generally recommended to remain in agricultural and related use under the plan.

Regional Parks: The adopted regional land use plan recommended a system of 29 regional parks providing opportunities for a variety of resource oriented outdoor recreation activities such as camping, golf, picnicking, and swimming (see Map 8). Nineteen of these sites were in public ownership and use in 1970. Of the remaining ten sites, eight sites were acquired in 1970 but not developed for public use. Between 1970 and 1985, five of these eight sites, Mee-Kwon Park and Harrington Beach Park in Ozaukee County. Cliffside Park in Racine County, Silver Lake Park in Kenosha County, and Pike Lake Park in Washington County, were developed for public use in accordance with the adopted land use plan; while three sites. Bender Park in Milwaukee County, Ela Park in Racine County, and Monches Park in Waukesha County, remained essentially undeveloped. Only two of the originally recommended 29 sites, the Sugar Creek Park site in Walworth County and the Paradise Valley Park site in Washington County, had not been acquired by 1985. No urban development had, however, intruded into either of those park sites which would render them lost to future park use.

<u>Residential Development</u>: Another key component of the year 2000 regional land use plan are plan recommendations concerning the location and intensity of residential development in the Region. As previously noted, the land use plan recommends that residential development occur primarily at medium density in areas which are covered by soils suitable for such development; which are not subject to special hazards such as flooding and shoreline erosion; and which may be readily provided with essential services and facilities, including most importantly, public sanitary sewer service.

Between 1970 and 1985, the development of residential land in the Region occurred at a rate somewhat higher than envisioned under the adopted regional land use plan. The actual increase in residential land of about 41,900 acres was about 4,600 acres, or 12 percent, greater than the planned increase of about 37,300 acres. While the plan recommended that new residential development should occur primarily at medium density, with an average of four housing units per net residential acre, this period saw substantial development of residential land at lower densities. In this regard, low- and suburban-density residential land, which includes areas with lot sizes of about one-half acre or more, increased by 30,400 acres, accounting for almost 73 percent of the overall increase in residential land between 1970 and 1985. It should be noted, however, that although the increase in the amount of low-density residential land was substantially greater than anticipated under the plan, the majority of all housing units constructed during this time were accommodated at higher densities. In this regard it is estimated that more than 70 percent of all housing units built between 1970 and 1985 were developed at medium or high residential densities in accordance with regional land use plan recommendations.

Owing in large measure to the continued proliferation of low-density residential development, the overall urban population density of the Region has continued to decrease over the past several decades, from about 11,300 persons per square mile in 1920 to about 5,100 persons per square mile in 1970. The adopted regional land use plan seeks to stabilize urban population densities by encouraging that new residential development occur primarily at medium densities. Nevertheless, the period from 1970 to 1985 saw a continuation of the trend toward lower urban densities, with the urban population density of the Region declining further to about 3,600 persons per square mile in 1985, somewhat lower than the density of 4,500 persons per square mile proposed under the 1985 stage of the adopted plan.

Although much of the residential land developed in southeastern Wisconsin between 1970 and 1985 was located in close proximity to existing urban development as recommended under the adopted plan, a substantial portion of all new residential development occurred in a dispersed pattern in outlying areas of the Region. The extension of public utilities to these areas will be extremely costly, if not entirely unrealistic. Of the 41,900 acre increase in residential land in the Region between 1970 and 1985, about 15,800 acres, or only 38 percent, was served by public sanitary sewerage facilities, as recommended in



ILLINOIS

Many important actions have been taken by the concerned agencies and units of government in accordance with the adopted regional land use plan to ensure the preservation of the primary environmental corridors in the Region. By 1985, about 350 square miles, or about 75 percent of all primary environmental corridor lands in the Region, were fully or partially protected through public ownership, state/local shoreland-wetland zoning and floodplain zoning, federal wetland regulations, and state utility extension policies. *Source: SEWRPC*.



ILLINOIS

Numerous county and local units of government in the Region have adopted protective zoning to ensure the preservation of prime agricultural lands in accordance with the recommendations of the adopted regional land use plan. By 1985 exclusive agricultural zoning districts restricting the use of land to agriculture-related uses and establishing a minimum parcel size of 35 acres had been applied to prime agricultural lands encompassing about 585 square miles, or about 56 percent of all prime agricultural lands in the Region.

Source: SEWRPC.

the adopted regional land use plan. On the other hand, of the 107,300 additional occupied housing units, or households, in the Region, about 79 percent, or 84,800 units, were served by sanitary sewerage facilities. The difference in these proportions reflects the low density of unsewered residential development, which requires large lots to accommodate onsite soil absorption sewage disposal systems, in comparison to the much higher densities which may be accommodated in areas where public sanitary sewer service is provided.

It should be noted that between 1970 and 1985 public sanitary sewer service was extended to a considerable amount of residential land which had originally been developed with onsite sewage disposal systems. In this regard, residential lands encompassing about 17,600 acres, developed with private onsite sewage disposal systems as of 1970, were provided with public sanitary sewer service between 1970 and 1985. As a result, by 1985 about 110,200 acres of residential land, representing 60 percent of all developed residential land in the Region, was served by public sanitary sewerage facilities, an increase from 54 percent in 1970. A total of 237,800 acres, or 61 percent of all urban development within the Region was thus served by sanitary sewerage facilities by 1985.

<u>Major Commercial and Industrial Centers</u>: The adopted regional use plan attempts to ensure the provision of a variety of suitable commercial and industrial sites to meet the needs of the Region through the year 2000. Of particular importance in the evaluation of the implementation status of the plan recommendations regarding future commercial and industrial development are plan proposals concerning major commercial centers and major industrial centers.

The adopted regional land use plan recommends a total of 16 major commercial centers, that is, commercial centers which may be considered to be of regional significance in terms of site area, number and type of retail stores, retail sales volume, number of shopping trips generated, and number of persons having convenient access to the site. The sites may be central business districts of larger cities in the Region, planned shopping centers, strip shopping districts, or a combination of these. As shown on Map 9, eleven of the recommended major commercial centers existed in 1970. Five additional sites were recommended for development by the

Map 8

STATUS OF PLANNED MAJOR REGIONAL PARKS



The second-generation, year 2000 regional land use plan recommended a system of 29 regional parks providing opportunities for such recreational activities as camping, golf, picnicking, and swimming. By 1985, 24 of the 29 recommended parks were acquired and developed for public use. The sites for an additional three of the recommended parks were acquired but not yet developed. Only two of the recommended park sites, the Sugar Creek site in Walworth County and the Paradise Valley site in Washington County, had not been acquired for public recreational use.

Source: SEWRPC.

year 2000, including three proposed new sites located in the Cities of Milwaukee, Oak Creek, and Racine and two sites which were envisioned to materialize through the continued development of the central business districts of the Cities of Waukesha and West Bend. Two of five additional recommended sites, the Northridge shopping center in the City of Milwaukee and the Regency Mall shopping center in the City of Racine, were developed since 1970.

The regional land use plan also recommends a total of 22 major industrial centers, industrial centers which may be considered to be of

Map 9

STATUS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS



The second-generation, year 2000, regional land use plan sought to ensure the provision of a variety of suitable commercial and industrial sites to meet the needs of the Region through the plan design year. The major commercial and industrial centers recommended under that plan are shown above. As shown on the map on the left, the plan envisioned a total of 16 major commercial centers in the Region by the plan design year, 11 existing and five new. By 1985, development had proceeded in accordance with the plan recommendations at the recommended new commercial sites in Milwaukee, Oak Creek, Racine, Waukesha, and West Bend, with the Milwaukee and Racine sites achieving regional center status by 1985. As shown on the map on the right, the plan envisioned a total of 22 regional industrial centers in the Region by the plan design year, 17 existing and five new. By 1985, development had proceeded in accordance with plan recommendations at the recommended new Burlington, Milwaukee, Oak Creek, and Waukesha industrial sites, with the latter three sites achieving regional status by 1985. Since 1985, development has also proceeded at the proposed new industrial site in Kenosha County.

Source: SEWRPC.

regional significance in terms of site area and number of industrial employees. As shown on Map 9, 17 of the recommended major industrial centers existed in 1970. Five additional sites were recommended for development by the year 2000. These centers would be located in or near the Cities of Kenosha, Milwaukee, Oak Creek, Burlington, and Waukesha. Development has proceeded at the Burlington, Milwaukee, Oak Creek, and Waukesha sites, with the latter three sites achieving major regional status by 1985. Since 1985 development has also proceeded at the proposed center in Kenosha County, on a site just south and west of the location initially identified in the year 2000 plan. While significant progress has been achieved with regard to the development of the proposed major commercial and industrial centers, certain development trends not fully consistent with the major centers concept as envisioned under the regional land use plan have become apparent since the preparation of the plan. First, while substantial amounts of commercial and industrial development has occurred in the proposed major centers, such development has also occurred in areas not envisioned for such development under the plan. There has been a dispersal of commercial and industrial development, perhaps most evident in the relatively recent increase in commercial and industrial development along freeway corridors, particularly near freeway interchanges. Certain freeway corridors have become increasingly attractive locations for retail sales and service uses and employment centers because of the high degree of visual exposure to a large volume of motorists and because of the accessibility advantages, particularly for sites located near freeway interchanges.

Second, there have been changes in the nature of many areas developed or redeveloped for commercial and industrial use since the preparation of the year 2000 land use plan. New types of economic activity centers have emerged, the most noteworthy being the "office park." There has also been an increase of commercial and industrial development in mixed use settings. An "industrial" area may now include not only manufacturing and wholesaling facilities but a much wider range of uses including offices. service operations, and research facilities. A "commercial" area may include not only retail operations but a range of service and office uses as well. Moreover, uses of individual structures or groups of structures at such sites may change over time, for example, from manufacturing to warehousing to office use, in response to changes in occupants' needs or to changes in the urban land market in general. While some areas remain relatively homogeneous concentrations of commercial or industrial activity, the traditional designations do not apply well to other areas, particularly the newer developing areas, because of the mixture of uses present.

The trends described above, including the dispersal of commercial and industrial development, particularly along freeway corridors, and changes in the nature of economic activity centers, including the emergence of the office park and mixed-use centers, have important implications for transportation and other public facility planning, as well as for land use planning. These trends will have to be taken into account in the reevaluation of the regional development objectives and standards and in the preparation of the new year 2010 regional land use plan.

SUMMARY

This chapter has presented an overview of the Commission's adopted year 2000 regional land use plan along with a description of the implementation status of that plan as of 1985. Between 1970, the base year of the adopted plan, and 1985, actual growth and change within the Region occurred in close conformance with regional land use plan recommendations and forecasts in many respects, although this period also saw the continuation of certain trends at variance with the plan. The implementation status of the major elements of the plan is summarized below.

While the forecasts on which the regional land use plan are based indicated significant population growth in the Region through the year 2000. actual population levels for the Region overall have stabilized in recent years. After decades of relatively rapid population growth, the regional population increased by only 0.5 percent between 1970 and 1980, and may have actually decreased by 1.3 percent between 1980 and 1985. Despite the stabilization of the regional population, however, two other determinants of the general scale of land use development, the number of households and the number of jobs, increased substantially as forecast between 1970 and 1985. The number of households in the Region increased by 20 percent during this time, just slightly over the anticipated increase of 18 percent. The number of jobs increased by 16 percent, just under the forecast increase of 17 percent, although some notable variance between actual and forecast employment levels occurred at the county level.

Between 1970 and 1985, residential development in the Region occurred at a rate somewhat higher than envisioned under the adopted regional land use plan. The actual increase in residential land of about 41,900 acres was about 4,600 acres, or 12 percent, greater than the planned increase of about 37,300 acres. While the plan recommended that new residential development should occur primarily at medium density, with an average of four housing units per net residential acre, this period saw substantial development of residential land at lower densities. In this regard, lowand suburban-density residential land, which includes areas with lot sizes of about one-half acre or more, increased by 30,400 acres and accounted for almost 73 percent of the overall increase in residential land between 1970 and 1985. It should be noted that despite the substantial increase in lower density residential development, more than 70 percent of all housing units built between 1970 and 1985 were accommodated at medium or high residential densities in accordance with plan recommendations.

Significant progress has been made in the protection of primary environmental corridor lands in the Region. By 1985, about 350 square miles, or about 75 percent of primary environmental corridor lands in the Region, were fully or partially protected through public ownership, zoning, and state administrative rules. Some primary environmental corridor lands, however, were lost to urban development. Largely as a result of such development, the area encompassed in primary environmental corridors decreased by almost eight square miles, or almost two percent, between 1970 and 1985, with most of this loss occurring prior to 1980, or before many of the current protective measures were in place.

Substantial progress has also been made in the protection of prime agricultural lands through the application of exclusive agricultural zoning. In combination, such zoning served to protect about 585 square miles, or about 56 percent of the prime agricultural lands within the Region. It should be noted that between 1963 and 1985 the area of prime agricultural lands in the Region decreased by about 160 square miles, or 13 percent. About 27 square miles, or 17 percent of this total, were located in, or adjacent to, expanding urban areas; the conversion of these areas to urban use was generally consistent with regional land use plan. The balance, about 133 square miles, or 83 percent, was located in outlying rural areas generally recommended to remain in agricultural and related use under the plan.

Land use development, with respect to the major recreational, commercial, and industrial centers, proceeded in substantial conformance with regional land use plan recommendations between 1970 and 1985. This period saw the continued development of major parks in the Region, with significant facility development occurring at five of the ten sites identified for acquisition and development in the adopted regional plan. Three of five proposed industrial sites and two of five proposed commercial sites also achieved major regional industrial or commercial site status between 1970 and 1985.

It should be noted that while significant progress has been achieved with regard to the development of the proposed major commercial and industrial centers, certain development trends, not fully consistent with the major centers concept as envisioned under the plan, have materialized. These trends include the dispersal of commercial and industrial development, particularly along freeway corridors, and changes in the nature of economic activity centers, including the emergence of the office park and mixed use centers. These trends will require a reevaluation of plan concepts regarding major commercial and industrial centers as part of the plan reappraisal process. (This page intentionally left blank)

Chapter IV

THE DEMOGRAPHIC AND ECONOMIC BASE

INTRODUCTION

Complementary demographic and economic studies are essential to sound comprehensive land use planning as well as to transportation and other public facility planning. Since such planning is intended to improve the environment in which people work and live, and since the primary purpose of all public facilities and services is to meet the needs of the resident population, an understanding of the size, composition, and spatial distribution of the population is essential to all planning for future development. The size, composition, and spatial distribution of the population are greatly influenced by change, be it expansion or contraction, in regional economic activity levels.

Accordingly, this chapter presents a brief description and analysis of the resident population and economic activity levels in the Region and of historic trends in such levels as related to land use and public facilities planning. The presentation on the demographic base includes descriptions of the population size, spatial distribution, and characteristics, with emphasis on such factors as age, sex, and racial composition, household size, educational attainment. income levels, and migration levels and patterns. The presentation on the economic base of the Region includes descriptions of the labor force size, distribution, and participation rates; the amount and distribution of economic activity, as measured by the number of available jobs; and the industrial structure of the regional economy, including the characteristics of the principal economic activities that support the regional population. The significant historic demographic and economic characteristics and trends in those characteristics are summarized and their implications for past and probable future land use development discussed.

Understanding the changing nature of both the demographic and the economic base of the Region is central to any land use planning process. Changes such as an aging population base may affect future land needs for sheltered or institutional care facilities. Decreasing household size will require that land be reserved for new housing units even where total population levels may be stable or declining. Changes in the economic base of the Region, such as new industrial companies operating multiple plants throughout the Region instead of maintaining a single, large facility, will greatly affect future industrial land needs. In addition, a more service-oriented employment base will require that more commercial and service-oriented land development be accommodated. It is therefore important that the entire demographic and economic base of the Region, including those mentioned here, be reviewed and analyzed, so as to anticipate and reflect these changes in land use and facility planning.

It should be noted that the inventory base year for the economic and demographic data that are important to the land use plan reevaluation process, including the size and distribution of population, households, and jobs in the Region, is 1985. The 1990 federal Census of Population and Housing was completed toward the end of the planning effort, and only limited data were available from the 1990 Census at the time of publication of this report. The 1990 Census population counts are presented for the seven counties in the Region in Table 4, along with the 1985 population estimates used in the current land use planning study. As indicated in that table, according to the recently completed Census, the resident population of the Region stood at 1,810,400 persons in 1990, about 67,700 persons, or about 4 percent, more than the 1985 estimate of 1,742,700. At the county level, the 1990 Census population counts exceeded the 1985 population estimates by between 2 and 9 percent. Importantly, the relative distribution of population among the seven counties in the Region as indicated by the 1990 Census is very similar to the estimated 1985 distribution. The census results do not indicate major changes in overall population growth trends in the Region. It is thus believed that the base year 1985 demographic data provides a sound basis for the regional land use plan reevaluation and revision process. This chapter, however, includes those 1990 demographic and economic data which were available at the time of preparation of this report.

County	Population									
	198		199	90p	Change: 1985-1990					
	Number	Percent of Region	Number	Percent of Region	Number	Percent				
Kenosha	121,158	7.0	128,181	7.1	7,023	5.8				
Milwaukee	939,570	53.9	959,275	53.0	19,705	2.1				
Ozaukee	67,465	3.9	72,831	4.0	5,366	8.0				
Racine	169,193	9.7	175,034	9.7	5,841	3.5				
Walworth	72,203	4.1	75,000	4.1	2,797	3.9				
Washington	87,249	5.0	95,328	5.3	8,079	9.3				
Waukesha	285,904	16.4	304,715	16.8	18,811	6.6				
Region	1,742,742	100.0	1,810,364	100.0	67,622	3.9				

POPULATION IN THE REGION BY COUNTY: ESTIMATED 1985 AND 1990 CENSUS

^aWisconsin Department of Administration estimate.

^b1990 census.

Source: U. S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

Table 5

Region Wisconsin United States Changes from Changes from Changes from Regional **Preceding Time Preceding Time Preceding Time** Population as a Percent of: Period Period Period United Year Absolute Population Absolute Percent Population Percent Population Absolute Percent Wisconsin States 1850 113,389 - -305,391 23,191,876 - -37.1 0.49 1860 190,409 77,020 35.6 67.9 775,881 470,490 154.1 8,251,445 31,443,321 24.5 0.61 1870 223,546 33,137 1,054,670 278,789 35.9 38,448,371 7,005,050 22.3 21.2 0.58 17.4 1880 277,119 53,573 24.0 1,315,497 260,827 24.7 50,155,783 11,707,412 30.4 21.1 0.55 1890 386,774 109,655 39.6 1,693,330 377,833 28.7 62,947,714 12,791,931 25.5 0.61 22.8 1900 501,808 115,034 29.7 2,069,042 375,712 22.2 75,994,575 13,046,861 20.7 24.3 0.66 1910 631,161 129,353 25.8 2,333,860 264,818 12.8 91,972,266 15,977,691 21.0 27.0 0.69 1920 783.681 152,520 2,632,067 298,207 24.2 12.8 105,710,620 13,738,354 14.9 29.8 0.74 1930 1,006,118 222,437 2,939,006 306,939 28.4 11.7 122,755,046 17,044,426 16.1 34.2 0.82 1940 1,067,699 61,581 6.1 3,137,587 198,581 6.8 131,669,587 8,914,541 7.3 34.0 0.81 1950 1,240,618 172,919 296,988 14.9 16.2 3,434,575 9.5 151,325,798 19,656,211 36.1 0.82 1960 1,573,614 332,996 517,202 26.8 3,951,777 15.1 179,323,175 27,997,377 18.5 39.8 0.88 1970 1,756,083 182,469 11.6 4,417,821 466.044 11.8 203,302,031 23,978,856 13.4 39.8 0.86 1980 1,764,796 8,713 4,705,642 287,821 226,504,825 0.5 6.5 23,243,774 11.4 37.5 0.78 1985 1,742,742 -22,054 -1.2 4,779,021 73,379 1.6 237,692,000 11,187,175 4.9 0.73 36.5 1990 1,810,364 67,622 3.9 4,891,769 112,748 2.4 249,632,692 11,940,692 5.0 37.0 0.73

POPULATION TRENDS IN THE UNITED STATES, WISCONSIN, AND THE REGION

Source: U. S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

THE DEMOGRAPHIC BASE OF THE REGION

Population Size

As indicated in Table 5, the 1990 resident population of the Region stood at 1,810,364 persons, or about 0.7 percent of the total population of the Nation and about 37 percent of the population of the State. In 1990, the largest civil division in the Region, the City of Milwaukee, was ranked as the 17th largest city in the Nation. In 1963, the City was the 12th largest city in the Nation.

The federal Census first included what is now the Southeastern Wisconsin Region in the 1850 Census of Population. The resident population of the Region has increased every decade since. In the late nineteenth and early twentieth centuries, the population of the Region increased rapidly, at rates ranging from 33,000 to over 222,000 persons per decade. Much of the population growth in this early period reflected the massive flow of immigrants into the United States, particularly the immigration of German and Polish nationals into the Region. After a relatively small increase of only about 62,000 persons during the 1930 to 1940 decade of the Great Depression, the population grew by about 173,000 persons from 1940 to 1950, by about 333,000 persons from 1950 to 1960, reaching a historic peak, and by about 182,000 persons from 1960 to 1970. The rate of growth in the regional population has been markedly different since 1970. Between 1970 and 1980, the regional population grew by less than 9,000 persons, or by less than 1 percent; between 1980 and 1985, it is estimated that the regional population declined by 22,000 persons. The recently completed 1990 Census suggests a recovery during the second half of the 1980s, with the regional population reaching a level of about 1,810,000 persons by the year 1990, an increase of 46,000 persons over 1980 and of 68,000 over 1985.

The rate of population increase in the Region between 1850 and 1960 has generally been higher than for the Nation as a whole and for the State of Wisconsin, with the exception of the 1860s, 1870s, and the 1930s. Between 1960 and 1985, however, the United States and the State of Wisconsin showed larger rates of increase than the Region. By 1985, the estimated regional population of 1,742,742 persons represented an increase of 1,629,353 persons, or about 14 times greater than the 1850 population level. During this same period, the population of the Nation increased by slightly over nine times its 1850 level, while that of the State increased by over 14 times its 1850 level. Thus, the regional population increase during this 135-year period was about one and one-half times that of the national increase and about equal to that of the State. As a result of this growth rate, the regional share of the total national population increased from 0.49 percent in 1850 to 0.73 percent in 1985, while remaining at about 37 percent of the State's population. The 1990 Census indicates very little change in the regional share of the national and state populations between 1985 and 1990.

The rapid increase in regional population between 1940 and 1960 was primarily due to natural increase (see Table 6). The period between the end of World War II and 1960 was characterized by rapidly increasing birthrates and declining death rates. Crude birthrates in the Region increased from 15.5 births per 1,000 persons in 1940, to 26.2 births per 1,000 persons in 1960; the death rate declined from 9.8 deaths per 1,000 persons to 9.1 deaths per 1,000 persons over the same period. Since 1960 however, the crude birthrate in the Region has decreased from 26.2 births per 1,000 persons in 1960 to 16.0 births per 1,000 persons in 1985.

The crude death rate in the Region decreased between 1920 and 1985, from 12.7 deaths per 1,000 persons in 1920 to 8.6 in 1985. The crude death rate in the Region has been consistently below that of both the State and Nation.

The rate of natural increase is simply the net balance of births and deaths. Since the regional crude birthrate has declined much more rapidly since 1960 than the crude death rate, the rate of natural increase has also declined. From 1960 to 1985 the rate of natural increase in the Region declined from 17.1 persons per 1,000 to 7.4 persons per 1,000. The estimated 1985 rate of natural increase in the Region is slightly higher than that of both the State and the Nation.

Migration has also been a significant factor in regional population growth. In the decade from 1950 to 1960 there was an increase in the regional population due to net in-migration of about 108,000 persons (see Table 7). Since 1960 however, the Region has experienced net outmigration, losing about 20,000 persons between 1960 and 1970, about 104,000 persons between

Change 1920-1985 1920 1930 1940 1950 1960 1970 1980 1985 Absolute Area Percent **United States** Crude Birthrate 27.7 21.3 19.4 24.1 23.7 18.2 15.9 15.8 -11.9 -43.0 Crude Death Rate 13.0 11.3 10.8 9.6 9.5 9.4 8.8 8.8 -4.2 -32.3 Rate of Natural Increase . . 14.2 7.1 7.0 -7.7 -52.4 14.7 10.0 8.6 14.5 8.8 Wisconsin Crude Birthrate 22.4 19.2 17.4 24.2 25.2 17.5 15.9 15.4 -7.0 -31.3 Crude Death Rate 11.3 10.4 10.1 9.8 9.6 9.2 8.7 8.7 -2.6 -23.0 Rate of Natural Increase 11.1 7.3 14.4 15.6 7.2 6.7 -4.4 -39.6 8.8 8.3 Region Crude Birthrate . . . 26.2 22.2 23.4 16.0 18.6 15.5 17.7 15.8 -6.2 -27.9Crude Death Rate 12.7 10.0 9.8 9.6 8.8 8.5 8.6 -4.1 -32.3 9.1 Rate of Natural Increase 9.5 8.6 13.8 17.1 7.3 7.4 -2.1 -22.1 5.7 8.9

CRUDE BIRTH AND DEATH RATES AND RATE OF NATURAL INCREASE FOR THE UNITED STATES, WISCONSIN, AND THE REGION: SELECTED YEARS, 1920-1985

NOTE: Rates are computed as a three-year average centered on the year shown. The crude birth rate is the number of births per 1,000 population. The crude death rate is the number of deaths per 1,000 population.

Source: U. S. Bureau of Health and Human Services, U. S. Bureau of the Census, Wisconsin Department of Health and Social Services, and SEWRPC.

Table 7

County	Natural Increase				Net Migration				
	1950-1960	1960-1970	1970-1980	1980-1985	1950-1960	1960-1970	1970-1980	1980-1988	
Kenosha	14,038	15,125	7,757	3,705	11,339	2,177	-2,537	-5,684	
Milwaukee	150,808	122,192	60,106	32,632	14,186	-103,984	-149,367	-58,050	
Ozaukee	5,925	6,090	4,798	2,481	9,155	9,930	7,722	-1,997	
Racine	21,472	20,442	12,841	6,932	10,724	8,615	-10,547	-10,871	
Walworth	5,732	4,685	2,451	1,559	5,052	6,391	5,612	-863	
Washington	7,501	8,122	7,163	3,999	4,716	9,598	13,846	-1,598	
Waukesha	19,746	25,699	18,010	9,680	52,602	47,387	30,858	-3,979	
Region	225,222	202,355	113,126	60,988	107,774	-19,886	-104,413	-83,042	

NATURAL INCREASE AND NET MIGRATION IN THE REGION BY COUNTY: 1950-1985

Source: U. S. Bureau of the Census, Wisconsin Department of Health and Social Services, and SEWRPC.

1970 and 1980, and about 83,000 persons between 1980 and 1985.

The combined effect of these two primary components of population change, natural increase and migration, has changed dramatically since 1950. Between 1950 and 1960, substantial increases due to both natural increase and net in-migration resulted in a population increase in the Region of about 333,000 persons. Between 1960 and 1980, population gains due to natural increase, while declining, were still greater than the losses being experience from net out-migration, resulting in smaller overall population gains in each decade. Between 1980 and 1985 however, it was estimated that the rate of
Figure 6

PERCENT INCREASE OF POPULATION IN THE 15 LARGEST STANDARD METROPOLITAN STATISTICAL AREAS IN THE UNITED STATES AND IN THE REGION: 1950-1960



Source: U. S. Bureau of the Census and SEWRPC.

natural increase was less than the total net outmigration, resulting in an overall population loss in the Region of about 22,000 persons.

The relationship between natural increase and net migration has varied widely with respect to individual counties in the Region. Between 1950 and 1960, each county in the Region experienced net in-migration. This migration pattern changed over time to where each county was estimated to have experienced net out-migration between 1980 and 1985. Between 1980 and 1985, Ozaukee, Walworth, Washington, and Waukesha Counties had gains from natural increase greater than the losses from net out-migration; while Kenosha, Milwaukee, and Racine Counties' gains from natural increase were less than their losses from net out-migration.

The trend toward smaller population increases due to natural increase in the Region parallels a similar trend in the Nation, while migration patterns vary greatly throughout the various areas of the Nation. As a result of migration between the states, shifts in population growth patterns in the Nation in recent decades have favored the southern and western areas of the Nation over the north-central and northeastern areas.

Figure 7

PERCENT INCREASE OF POPULATION IN THE 15 LARGEST STANDARD METROPOLITAN STATISTICAL AREAS IN THE UNITED STATES AND IN THE REGION: 1980-1990



Source: U. S. Bureau of the Census and SEWRPC.

From 1950 to 1960, only three of the 15 largest metropolitan areas in the Nation in 1950 experienced higher rates of growth than the Southeastern Wisconsin Region (see Figure 6). During this period, the Region's population increased by 27 percent, from 1,240,618 persons to 1,573,614 persons. From 1980 to 1990, however, 10 of the 15 largest metropolitan areas in the Nation in 1980 experienced higher rates of population growth than the regional increase of about 3 percent, from 1,764,796 persons in 1980 to 1.810,364 in 1990 (see Figure 7). The declining rates of population growth experienced in the Region since 1950 were similar to the trends experienced in many of the large metropolitan areas of the Northeastern and Midwestern United States. In contrast, many of the large metropolitan areas located in the southern and western areas of the Nation experienced increasing population growth rates since 1950. Only two of the 15 largest Standard Metropolitan Statistical Areas in the United States in 1950 were located in the southern or western states, while five of the 15 largest Standard Metropolitan Statistical Areas in 1980 were located in southern or western states. As indicated in Figure 7, of the six largest Standard Metropolitan Statistical Areas experiencing 10 percent or greater increase in population between 1980 and 1990,

Figure 8



URBAN AND RURAL POPULATION IN THE REGION: CENSUS YEARS 1850-1980

Source: U. S. Bureau of the Census and SEWRPC.

five such areas were located in southern or western states. In this same time period, two of the 15 largest Standard Metropolitan Statistical Areas located in the northern and eastern parts of the nation, Detroit and Pittsburgh, experienced population losses of 2.4 percent and 7.3 percent, respectively.

Consideration of the changes in resident population briefly presented herein is important to any areawide planning effort. The absolute and the percentage figures presented herein indicate that the rapidly growing population of the 1950s and 1960s in the Southeastern Wisconsin Region have been replaced by an essentially stable population in the 1970s and 1980s.

Population Distribution

The total number of inhabitants and their spatial distribution are important factors to be considered in any land use planning effort. The Southeastern Wisconsin Region, like most metropolitan regions of the United States, is becoming increasingly urban. In 1850 the population of the Region was approximately 75 percent rural, and 25 percent urban.¹ By 1900 this relationship had nearly reversed to 30 percent

¹"Urban" population is defined as all persons living in incorporated or unincorporated places of 2,500 persons or more, and all persons living in other incorporated or unincorporated territories included in "urbanized areas" as defined by the U. S. Bureau of the Census. rural and 70 percent urban. By 1960, almost 98 percent of the resident population of the Region was classified as urban, and only about 2 percent as rural. The rural-urban distribution of the regional population has not changed significantly since 1960. In 1980, over 99 percent of the regional population was classified as urban (nonfarm), while less than 1 percent was classified as rural (farm). The change in the rural-urban population distribution over the entire 130-year period is shown graphically in Figure 8. This trend toward continuing urbanization has been one of the most significant distributional changes taking place in the Region, State, and Nation since the mid-1800s. Map 10 displays the densities of population distribution in the Southeastern Wisconsin Region in 1963 and 1985.

Population growth since 1900 has not been uniform throughout the Region. As indicated in Table 8, the highest rates of population increase between 1900 and 1930 occurred in Milwaukee, Kenosha, and Racine Counties, all "urban counties." From 1930 to 1970, dispersion of the urban population and decentralization of urban work and leisure-related activities completely reversed this trend. The growth trends of the early 1900s were also reversed; between 1970 and 1985, Milwaukee and Racine Counties registered population losses. Waukesha County experienced the largest population increase of the five counties experiencing population growth between 1970 and 1985. All counties experienced population gains between 1985 and 1990.

Varying rates of change in population growth in the Region have resulted in significant distributional shifts of population among the seven counties (see Figures 9 and 10). Since 1930 the outlying counties, notably Ozaukee, Washington, and Waukesha have exhibited the highest rates of population increase, as shown in Table 8. The Milwaukee County proportion of the total regional population increased by about 6 percentage points between 1900 and 1930, and then decreased by about 19 percentage points from 1930 to 1990. In contrast, the Waukesha County proportion of the total regional population decreased by approximately 2 percentage points between 1900 and 1930, and increased by about 12 percentage points from 1930 to 1990. This diffusion of population has created certain areawide environmental and developmental problems, all related to changing land use.

Map 10

POPULATION DISTRIBUTION IN THE REGION: 1963 AND 1985





The 1963 resident population of the Region was estimated at 1,674,000 persons, of which about 80 percent was concentrated in Milwaukee, Racine, and Kenosha Counties. By 1985 the resident population of the Region had reach a level of about 1,743,000 persons, of which about 70 percent was concentrated in Milwaukee, Racine, and Kenosha Counties. The proportion of the population residing in Ozaukee, Washington, and Waukesha Counties, the counties which experienced the most rapid population increase between 1963 and 1985, increased from about 16 percent in 1963 to about 25 percent in 1985. This decentralization of population has resulted in the creation of new, and the intensification of existing, environmental and developmental problems. These problems transcend the geographic limits and the fiscal capabilities of local units of government, and therefore require the cooperation of all concerned units and agencies of government for sound resolution.

Source: U. S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

	190	0	193	30	1960		1970		1985		1990	
County	Population	Percent of Region	Population	Percent of Region	Population	Percent of Region	Population	Percent of Region	Population	Percent of Region	Population	Percent of Region
Kenosha Milwaukee Ozaukee Racine Walworth Washorth Washington Waukesha	21,707 330,017 16,363 45,644 29,259 23,589 35,229	4.3 65.8 3.3 9.1 5.8 4.7 7.0	63.277 725,263 17,394 90,217 31,058 26,551 52,358	6.3 72.1 1.7 9.0 3.1 2.6 5.2	100,615 1,036,041 38,441 141,781 52,368 46,119 158,249	6.4 65.9 2.4 9.0 3.3 2.9 10.1	117,917 1,054,249 54,461 170,838 63,444 63,839 231,335	6.7 60.0 3.2 9.7 3.6 3.6 13.2	121,158 939,570 67,465 169,193 72,203 87,249 285,904	7.0 53.9 3.9 9.7 4.1 5.0 16.4	128,181 959,275 72,831 175,034 75,000 95,328 304,715	7.1 53.0 4.0 9.7 4.1 5.3 16.8
Region	501,808	100.0	1,006,118	100.0	1,573,614	100.0	1,756,083	100.0	1,742,742	100.0	1,810,364	100.0

POPULATION DISTRIBUTION IN THE REGION BY COUNTY: SELECTED YEARS, 1900-1990

	1900-193	0 Change	1930-196	0 Change	1960-197	0 Change	1970-198	5 Change	1985-199	0 Change	1900-1990) Change
County	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	41,570 395,246 1,031 44,573 1,799 2,962 17,129	191.5 119.8 6.3 97.7 6.1 12.6 48.6	37,338 310,778 21,047 51,564 21,310 19,568 105,891	59.0 42.9 121.0 57.2 68.6 73.7 202.2	17,302 18,208 16,020 29,057 11,076 17,720 73,086	17.2 1,8 41.7 20.5 21.2 38.4 46.2	3,241 -114,679 13,004 -1,645 8,759 23,410 54,569	2.7 -10.9 23.9 -1.0 13.8 36.7 23.6	7,023 19,705 5,366 5,841 2,797 8,079 18,811	5.8 2.1 8.0 3.5 3.9 9.3 6.6	106,474 629,258 56,468 129,390 45,741 71,739 269,486	490.5 190.7 345.1 283.5 156.3 304.1 765.0
Region	504,310	100.5	567,496	56.4	182,469	11.6	-13,341	-0.8	67,622	3.9	1,308,556	260.8

Source: U. S. Bureau of the Census, Wisconsin Department of Health and Social Services, and SEWRPC.

Population Characteristics

Certain other population characteristics are also important to planning. These include age, sex, and racial composition, marital status, household size, educational attainment, and personal income. Insofar as these demographic characteristics affect the rate of population growth and change through natural increase, they have important implications for land use planning. These characteristics also have important implications for such factors as trip generations rates essential for transportation system planning.

The age composition of the resident population of the Region in 1950, 1960, 1970, 1980, and 1990 is set forth in Table 9. In general, as the resident population of the Region increased during the 1950s and 1960s individual age groups increased in size, although these increases were not proportionately equal and a few individual age groups even experienced decreases during the two decades. With the stabilization of the total population during the 1970s and 1980s, more age groups experienced decreases between 1970 and 1990 than during the two previous decades; increases in certain age groups were offset by decreases in other age groups. Major decreases occurred in the age groups under 15 years of age during the 1970s as the large birth cohorts of the "baby boom" were replaced by the smaller birth cohorts of the late 1960s and 1970s. The aging of these same cohorts resulted in large increases in the size of the age groups between 20 and 34 years of age during the 1970s and between 30 and 44 years of age during the 1980s.

Two important patterns emerge from an examination of these data, both of which are evident when the data are displayed graphically (see Figure 11). The first pattern is the wide fluctuations that have occurred over the past three decades in the proportion of the total population in the younger age groups. The second is the steady increase in the proportion of the total population made up of the older age groups, particularly the group 70 years of age and older. The increases at the upper end and the wide fluctuations at the lower end of the age structure have had, and will be expected to continue to have, important implications for public policy formulation in the areas of education, recreation, health and welfare, transportation, and housing.

Figure 9





Source: U. S. Bureau of the Census and SEWRPC.

The relative difference in age structure between geographic areas and between time periods can be assessed by examination of the median age of the population, the age above and below which there are an equal number of persons. The national median age level rose steadily from 1890 when it was 22 years to 1950 when it was just over 30 years. As indicated in Table 10,

Figure 10

PERCENTAGE DISTRIBUTION OF POPULATION IN THE REGION BY COUNTY: SELECTED YEARS, 1900-1990



Source: U. S. Bureau of the Census and SEWRPC.

during the next two decades the national median age declined to just below 30 years in 1960 and to 28 years in 1970 before rising again to 30 years in 1980. In Wisconsin, the median age declined from 31 years in 1950 to 29 years in 1960 and to 27 years in 1970, before returning to 29 years in 1980 and then increasing to almost 33 years in 1990. In 1950 the median age in the Region was 32 years, by 1960 it had declined to 30 years, and in 1970 it was below 28 years, before rising to 30 years again in 1980 and then increasing to almost 33 years in 1990. Each county in the Region has followed a similar pattern of a decline in the median age between 1950 and 1970 and an increase to 1990. Within the Region in 1990, Milwaukee County had the lowest median age, 32.3; Ozaukee County had the highest median age, 34.6. The spatial distribution of the total population by age, as represented by the relative proportion of persons aged 17 years or younger, 18 to 34 years, 35 to 64 years, and those 65 years and older, for 1960 and 1990, is shown on Map 11.

One measure of the impact of age composition on the productive capacity of a population is the dependency ratio. It is generally assumed that

AGE COMPOSITION OF THE POPULATION IN THE REGION: CENSUS YEARS 1950-1990

					Popula	tion	······································			
	195	0	196	0	197	o	198	<u>o</u>	199	0
Age Group	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Detailed										
Under 5	127,140	10.2	190,196	12.1	153.243	8.7	128,085	7.3	138,444	7.7
5-9	96,595	7.8	166,607	10.6	183,283	10.4	127,834	7.2	137,582	7.6
10-14	80,342	6.5	137,895	8.8	186,865	10.6	146,252	8.3	128,651	7.1
15-19	78,949	6.4	103,816	6.6	163,033	9.3	168,897	9.6	123,812	6.8
20-24	93,453	7.5	94,010	6.0	132,672	7.5	166,934	9.5	132,736	7.3
25-29	102,038	8.2	100,013	6.4	114,042	6.5	153,984	8.8	154,747	8.5
30-34	96,252	7.8	108,477	6.9	98,001	5.6	134,573	7.6	161,435	8.9
35-39	94,477	7.6	108,543	6.9	95,857	5.5	104,594	5.9	146,066	8.1
40-44	87,973	7.1	100,175	6.4	104,631	6.0	89,464	5.1	126,119	7.0
45-49	81,577	6.6	94,877	6.0	103,140	5.9	87,770	5.0	97,337	5.4
50-54	77,227	6.2	85,559	5.4	93,714	5.3	94,349	5.3	81,990	4.5
55-59	68,622	5.5	76,281	4.8	85,424	4.9	90,688	5.1	77,337	4.3
60-64	56,472	4.6	66,226	4.2	72,567	4.1	76,201	4.3	77,637	4.3
65-69	41,591	3.4	55,454	3.5	57,494	3.3	64,547	3.7	70,577	3.9
70-74	27,736	2.2	40,977	2.6	46,711	2.7	50,400	2.8	56,505	3.1
75-84	25,716	2.1	37,468	2.4	52,762	3.0	61,869	3.5	74,328	4.1
85 and Older	4,458	0.3	7,040	0.4	12,448	0.7	18,478	1.0	25,061	1.4
Functional										
Under 5	127,140	10.2	190,196	12.1	153,243	8.7	128,085	7.3	138,444	7.6
5-17	223,029	18.0	370,213	23.5	472,342	26.9	375,653	21.3	338,629	18.7
18-24	126,310	10.2	132,115	14.8	193,211	11.0	234,264	13.3	184,152	10.2
25-44	380,740	30.7	417,208	20.1	412,831	23.5	482,615	27.3	588,367	32.5
45-64	283,898	22.9	322,943	20.5	354,845	20.2	349,008	19.8	334,301	18.5
65 and Older	99,501	8.0	140,939	9.0	169,415	9.7	195,294	11.0	226,471	12.5
All Ages	1,240,618	100.0	1,573,614	100.0	1,755,887	100.0	1,764,919	100.0	1,810,364	100.0

	;			Popu	lation				
	Net Ch 1950-	ange 1960	Net Ch 1960-	nange 1970	Net Ch 1970-	nange 1980	Net Change 1980-1990		
Age Group	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Detailed									
Under 5	63,056	49.6	-36,953	-19,4	-25,158	-16.4	10,359	8.1	
5-9	70,012	72.5	16.676	10.0	-55,449	-30.3	9,748	7.6	
10-14	57,553	71.6	48,970	35.5	-40,613	-21.7	-17,601	-12.0	
15-19	24,867	31.5	59,217	57.0	5,864	3.6	-45,085	-26.7	
20-24	557	0.6	38,662	41.1	34,262	25.8	-34,198	-20.5	
25-29	-2,025	-2.0	14,029	14.0	39,942	35.0	763	0.5	
30-34	12,225	12.7	-10,476	-9.7	36,572	37.3	26,862	20.0	
35-39	14,066	14.9	-12,686	-11.7	8,737	9.1	41,472	39.7	
40-44	12,202	13.9	4,456	4.4	-15,167	-14.5	36,655	41.0	
45-49	13,300	16.3	8,263	6.3	-15,370	-14.9	9,567	10.9	
50-54	8,332	10.8	8,155	9.5	635	0.7	-12,359	-13.1	
55-59	7,659	11.2	9,143	12.0	5,264	6.2	-13,351	-14.7	
60-64	9,754	17.3	6,341	9.6	3,634	5.0	1,436	1.9	
65-69	13,863	33.3	2,040	3.7	7,053	12.3	6,030	9.3	
70-74	13,241	47.7	5,734	14.0	3,689	7.9	6,105	12.1	
75-84	11,752	45.7	15,294	40.8	9,107	17.3	12,459	20.1	
85 and Older	2,582	57.9	5,408	76.8	6,030	48.4	6,583	35.6	
Functional									
Under 5	63,056	49.6	-39,953	-19.4	-25,158	-16.4	10,359	8.1	
5-17	147,184	66.0	102,129	27.6	-96,689	-20.5	-37,024	-9.9	
18-24	5,805	4.6	61,096	46.2	41,053	21.2	-50,112	-21.4	
25-44	36,468	9.6	-4,377	-1.0	69,784	16.9	105,752	21.9	
45-64	39,045	13.8	31,902	9.9	-5,837	-1.6	-14,707	-4.2	
65 and Older	41,438	41.6	28,476	20.2	25,879	15.3	31,177	16.0	
All Ages	332,996	26.8	182,273	11.6	9,032	0.5	45,445	2.6	

Source: U. S. Bureau of the Census and SEWRPC.





Source: U. S. Bureau of the Census and SEWRPC.

the age group 18 to 64 years of age comprises the "productive" segment of the population, while persons under 18 years of age and those 65 years of age and older comprise "dependent" segments. A rough measure of the dependency load that the productive population must carry is the ratio of the population under 18 years of age and 65 years of age and older to the population 18

MEDIAN AGE OF THE POPULATION IN THE UNITED STATES, WISCONSIN, AND THE REGION FOR CENSUS YEARS 1950-1990

		М	edian A	ge	
Geographic Area	1950	1960	1970	1980	1990
United States	30.2	29.5	28.1	30.0	NA
Wisconsin	31.0	29.4	27.2	29.4	32.9
Kenosha County	31.5	28.8	26.9	29.3	32.5
Milwaukee County	32.5	30.5	28.6	30.0	32.3
Ozaukee County	30.7	27.3	25.6	30.2	34.6
Racine County	31.4	28.5	26.0	28.9	32.9
Walworth County	33.1	30.3	26.4	29.5	33.1
Washington County	30.3	27.0	24.9	28.1	32.5
Waukesha County	30.6	27.0	25.4	29.7	34.0
Region	32.2	29.7	27.6	29.7	32.8

NOTE: NA indicates data not available at time of writing.

Source: U. S. Bureau of the Census and SEWRPC.

to 64 years of age, multiplied by 100. This ratio purports to measure how many dependents each 100 persons in the productive years must, on the average, support. Table 11 shows the dependency ratios for the Region, the State, and the Nation in 1950, 1960, 1970, 1980, and 1990.

In 1950 every 100 "productive" persons supported 64 persons in the Nation, 67 persons in the State, and 57 persons in the Region. By 1960 the dependency ratio had increased dramatically in all three areas. For the Region, however, this increase was greatest. In 1960 the dependency ratio was 82 persons for the Nation, 88 persons for the State, and 80 persons for the Region. By 1970 the dependency ratio for the Region had increased to 83 persons, while for the Nation and State it had declined slightly to 79 and 87 persons, respectively. Between 1970 and 1980, the dependency ratio decreased for all three areas and was 65 persons for the Nation, 69 persons for the State, and 66 persons for the Region. Between 1980 and 1990, dependency ratios remained relatively stable. Decreases in the dependency ratios in the 1970 to 1980 time period may be attributed to large declines in the very young cohorts as the birthrate in the Region declined, which more than offset increases in the very old cohorts.

The sex composition of the regional population has also been changing. The change has generally been toward a higher proportion of females, particularly in the older age groups (see Figure 11 and Table 12). This trend is further Map 11

RELATIVE DISTRIBUTION OF RESIDENT POPULATION BY AGE FOR MINOR CIVIL DIVISIONS IN THE REGION: 1960 AND 1990



PERCENT OF TOTAL POPULATION



ILLINOIS

PERCENT OF TOTAL POPULATION AGED 0 TO 17 YEARS: 1990



PERCENT OF TOTAL POPULATION AGED 18 TO 34 YEARS: 1960



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PERCENT OF TOTAL POPULATION AGED 18 TO 34 YEARS: 1990

PERCENT OF TOTAL POPULATION AGED 35 TO 64 YEARS: 1960



PERCENT OF TOTAL POPULATION AGED 35 TO 64 YEARS: 1990



Map 11 (continued)

PERCENT OF TOTAL POPULATION AGED 65 OR MORE YEARS: 1960

PERCENT OF TOTAL POPULATION AGED 65 OR MORE YEARS: 1990



This map shows the spatial distribution of resident population by age, as represented by the proportion of the resident population for the years 1960 and 1990 in each of following four age groups: 17 years or younger, 18 to 34 years, 35 to 64 years, and 65 years and older. A comparison of the maps indicates a significant reduction in the number of communities with a high proportion of population in the 0 to 17 age group; a significant increase in the number of communities with a high proportion of population in the 0 to 17 age group; and a slight increase in the number of communities with a high proportion of population in the 65-and-older age group between 1960 and 1990. Persons aged 0 to 17 years comprised 38 percent or more of the total resident population of 83 communities, or about 58 percent of all the communities in the Region in 1960. By 1990, however, there were no communities in the Region where persons in this age group comprised 34 percent or more of the total population. Conversely, persons aged 35 to 64 years comprised 34 percent or more of the total population in 102 communities, or about 25 percent of all the communities in the Region. Persons ages 65 and older comprised 16 percent or more of the total population in five communities, or about 3 percent of all communities in the Region. Persons ages 65 and older comprised 16 percent or more of the total population in five communities, or about 3 percent of all communities, or about 14 percent of all communities in the Region in 1990. The reduction in the proportion of public policy in the areas of education, recreation, health and welfare, transportation of the total population in the middle-aged and elderly age groups has important implications for the formation of public policy in the areas of education, recreation, health and welfare, transportation, and housing.

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DEPENDENCY RATIOS OF THE POPULATION IN THE UNITED STATES, WISCONSIN, AND THE REGION FOR CENSUS YEARS 1950-1990

	Dependency Ratio									
Geographic Area	1950	1960	1970	1980	1990					
United States	64.4 67.3 56.9	81.9 88.5 80.4	79.0 87.1 82.7	65.1 69.0 65.6	NA 69.7 67.2					

NOTE: NA indicates data not available at time of writing.

Source: U. S. Bureau of the Census and SEWRPC.

Table 12

SEX RATIOS OF THE POPULATION BY URBAN-RURAL RESIDENCE IN THE REGION BY COUNTY FOR CENSUS YEARS 1950-1980

				N	umber of	f Males	per 100) Female	s –				
		1950			1960			1970			1980		
County	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	
Kenosha	101.9	99.7	107.8	102.0	100.3	106.7	95.9	94.2	100.3	96.4	94.3	102.1	
Milwaukee	96.5	95.9	106.7	95.7	95.7	а	92.0	92.0	a	90.6	90.6	a	
Ozaukee	104.0	96.7	107.7	100.0	96.7	107.2	99.6	97.9	103.3	98.4	96.9	103.0	
Racine	99.8	96.5	109.9	97.6	95.1	104.5	95.6	93.4	103.3	95.8	92.9	106.4	
Walworth	100.9	92.2	106.9	99.3	93.3	103.1	98.1	92.3	101.9	95.8	88.0	100.3	
Washington	103.6	92.6	109.7	102.3	96.0	105.7	99.9	97.0	102.6	99.2	95.5	102.6	
Waukesha	103.0	98.7	105.2	101.7	100.3	104.2	99.2	98.0	104.1	99.4	98.1	103.9	
Region	98.0	96.2	107.2	97.3	96.2	104.8	94.3	93.2	102.6	93.8	92.4	103.0	

^aSince 1960, the U. S. Bureau of the Census has defined all Milwaukee County communities as urban.

Source: U. S. Bureau of the Census and SEWRPC.

evidenced by the fact that in 1950, the ratio of males to females in the Region was about 98 males to every 100 females; in 1980, the ratio was about 94 males to every 100 females. In 1950, 1960, 1970, and 1980, males outnumbered females only in the rural populations of the Region. Much of the change resulting in a higher proportion of women in the Region is due to the fact that women have a longer life expectancy than men. In addition to changes in the age and sex composition, the racial composition of the regional population has also been changing significantly (see Table 13). In the 1990 Census, about 84 percent of the regional population was reported as white, compared to 95 percent in 1960. The balance of the population was nonwhite, a category which by federal definition includes persons reporting their race as Black, American Indian, Japanese, Chinese, Filipino, or

RACIAL COMPOSITION OF THE POPULATION IN THE REGION: 1960, 1970, 1980, AND 1990

							· · · -					
		1960	_		1970			1980			1990	
Race	Number	Percent of Total	Percent of Nonwhite	Number	Percent of Total	Percent of Nonwhite	Number	Percent of Total	Percent of Nonwhite	Number	Percent of Total	Percent of Nonwhite
White	1,499,662	95.30	••	1,626,056	92.60		1,558,076	88.27		1,527,404	84.37	
Nonwhite							_					
Black	69,591	4.42	94.10	119,321	6.80	91.91	167,876	9.51	81.16	219,931	12.15	77.72
American Indian	2,225	0.14	3.01	4,617	0.26	3.56	7,353	0.42	3.55	9,098	0.50	3.22
Japanese	748	0.05	1.01	1,237	0.07	0.95	988	0.06	0.48	1,145	0.06	0.41
Chinese	603	0.04	0.82	1,234	0.07	0.95	2,061	0.12	1.00	3,206	0.18	1.13
Filipino	247	0.02	0.33	693	0.04	0.53	1,543	0.09	0.75	1,999	0.11	0.71
Other	538	0.03	0.73	2,729	0.16	2.10	27,022	1.53	13.06	47,581	2.63	16.81
Subtotal	73,952	4.70	100.00	129,831	7.40	100.00	206,843	11.73	100.00	282,960	15.63	100.00
Total	1,573,614	100.00		1,755,887	100.00		1,764,919	100.00		1,810,364	100.00	

Source: U. S. Bureau of the Census and SEWRPC.

Table 14

RACIAL COMPOSITION OF THE POPULATION IN THE REGION BY COUNTY: 1990

						Popu	lation		· · · · · · · · · · · · · · · · · · ·				
						Non	white		-				
	wr	lite	ВІ	ack	Americ	an Indian	Other		Sut	ototal	To	Total	
County	Number	Percent of County	Number	Percent of County	Number	Percent of County	Number	Percent of County	Number	Percent of County	Number	Percent of County	
Kenosha Milwaukee Ozaukee Racine Walworth Washington	119,187 718,918 71,676 152,098 72,747 94,465 298,313	93.0 74.9 98.4 86.9 97.0 99.1	5,295 195,470 492 16,999 454 125	4.1 20.4 0.7 9.7 0.6 0.1	469 6,921 127 512 199 207	0.4 0.7 0.2 0.3 0.3 0.2	3,230 37,966 536 5,425 1,600 531	2.5 4.0 0.7 3.1 2.1 0.6	8,994 240,357 1,155 22,936 2,253 863 6 402	7.0 25.1 1.6 13.1 3.0 0.9	128,181 959,275 72,831 175,034 75,000 95,328	100.0 100.0 100.0 100.0 100.0 100.0	
Region	1,527,404	97.9 84.4	219,931	12.1	9,098	0.2	4,643 53,931	3.0	6,402 282,960	15.6	304,715 1,810,364	100.0	

Source: U. S. Bureau of the Census and SEWRPC.

other race. In both 1960 and 1970, the overwhelming majority, about 94 and 92 percent respectively, of the nonwhite population in the Region was comprised of Blacks. However, by 1990, the reported Black population had declined to 78 percent of the nonwhite population.

As indicated in Table 14, the nonwhite population comprised about 7 percent of the total population in Kenosha County; about 25 percent in Milwaukee County; about 13 percent in Racine County; and 3 percent or less in the other four counties of the Region in 1990. Furthermore, the nonwhite populations of the Region were concentrated in the central cities of Kenosha, Milwaukee, and Racine. About 91 percent of the nonwhite population in the Region, and 96 percent of all Blacks in the Region, resided in these three cities in 1990.

It should be noted that at least a portion of the decline in the percentage of the population classified as "white" and a portion of the increase in the percentage of the population classified as "other nonwhite" between 1970 and 1990 may be attributed to changes in the classification of certain racial groups and to changes in the Bureau of the Census questionnaire review and edit procedures. For instance, Asian Indians were classified as white in 1970 but were

	Persons o Origin or	f Spanish Descent ^a	Perso Spanish L	ons of anguage ^b	Perso Puerto Ri or Pare		
County	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Total Population
Kenosha	2,201	1.9	2,690	2.3	242	0.2	117,917
Milwaukee	24,949	2.4	17,960	1.7	3,801	0.4	1,054,063
Ozaukee	469	0.9	370	0.7	37	0.1	54,421
Racine	5,004	2.9	5,440	3.2	219	0.1	170,838
Walworth	1,755	2.8	790	1.2	7	d	63,444
Washington	1,106	1.7	305	0.5	0	0.0	63,839
Waukesha	4,147	1.8	3,272	1.4	554	0.2	231,365
Region	39,631	2.3	30,827	1.8	4,860	0.3	1,755,887

INDICATORS OF SPANISH-AMERICAN POPULATION IN THE REGION BY COUNTY: 1970

^aPersons of Spanish origin or descent include persons who report Mexican, Puerto Rican, Cuban, Central or South American, and other Spanish origin or descent.

^bPersons of Spanish language include persons who report Spanish as their mother tongue, as well as persons in families in which the head or wife reports Spanish as his or her mother tongue.

^cPersons of Puerto Rican birth or parentage include persons known to have been born in Puerto Rico and other persons with one or both parents born in Puerto Rico.

^dThis percentage is less than one-tenth of 1 percent.

Source: U. S. Bureau of the Census and SEWRPC.

included in the Asian and Pacific Islander category in 1980 and 1990. In addition, a much larger proportion of the Spanish-origin population reported their race as "other" on the Census questionnaire in 1980 and 1990 than in 1970. Whereas in 1970, persons who marked the "other" race category and wrote in a Spanish designation such as Mexican, Venezuelan, Cuban, or similar identification were clerically reclassified as "white." This was not done in 1980 and 1990. Consequently, a much larger proportion of the Spanish-origin population was classified as "other nonwhite" in 1980 and 1990 than in 1970.

Persons of Spanish origin are considered to constitute an ethnic, not a racial, minority population group in the Region. In 1970, the number of persons in this group was estimated from responses to three questions asked on a

sample basis. As set forth in Table 15, these responses indicated that between 1.8 and 2.3 percent of the resident population of the Region was of Spanish origin. In the federal Censuses of 1980 and 1990, Spanish origin was determined on the basis of a question asked all persons. For this reason, the counts of persons of Spanish origin in 1980 and 1990 are not directly comparable to any available data on Spanish origin from the 1970 Census. As set forth in Table 16, about 2.6 percent of the resident population of the Region in 1980, about 46,500 persons, were of Spanish origin, with about 63 percent of them residing in Milwaukee County. By 1990, almost 68,000 persons, or 3.8 percent of the resident population of the Region, were of Spanish origin, about 66 percent of whom resided in Milwaukee County. Significant concentrations of persons of Spanish origin in 1980 and 1990 also occurred in Kenosha, Racine, and Waukesha Counties.

		1980		1990					
	Perso Spanisł	ons of n Origin		Perso Spanisl	ons of n Origin				
County	Number	Percent of Total	Total Population	Number	Percent of Total	Total Population			
Kenosha	3,578	2.9	123,137	5,580	4.4	128,181			
Milwaukee	29,343	3.0	964,988	44,671	4.7	959,275			
Ozaukee	530	0.8	66,981	517	0.7	72,831			
Racine	7,201	4.2	173,132	9,034	5.2	175,034			
Walworth	1,330	1.9	71,507	2,017	2.7	75,000			
Washington	472	0.6	84,848	670	0.7	95,328			
Waukesha	3,998	1.4	280,326	5,448	1.8	304,715			
Region	46,452	2.6	1,764,919	67,937	3.8	1,810,364			

PERSONS OF SPANISH ORIGIN IN THE REGION BY COUNTY: 1980 AND 1990

Source: U. S. Bureau of the Census and SEWRPC.

Table 17

MARITAL STATUS OF THE POPULATION IN THE REGION: 1950-1990

	1950		1950 1960		1970		1980		1990		Change 1950-1990	
Marital Status	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Absolute	Percent
Single	227,616 631,206 93,273	23.9 66.3 9.8	245,967 745,619 108,924	22.3 67.8 9.9	342,122 790,607 135,816	27.0 62.3 10.7	392,529 787,725 182,494	28.8 57.8 13.4	409,274 775,921 220,492	29.1 55.2 15.7	181,658 144,715 127,219	79.8 22.9 136.4
Total	952,095	100.0	1,100,510	100.0	1,268,545	100.0	1,362,748	100.0	1,405,687	100.0	453,592	47.6

NOTE: Marital status tabulated for persons 14 years and older in 1950, 1960, and 1970 and for persons 15 years and older in 1980 and 1990.

Source: U. S. Bureau of the Census and SEWRPC.

One of the most noteworthy changes in the composition of the regional population has taken place in marital status. Marital status affects population growth directly, since, historically, most childbearing has been by married females. Within the Region in 1988, 69 percent of all births were to married females. This percentage varied greatly within the Region, however, from a high of 90 percent in Waukesha County to a low of 59 percent in Milwaukee County. Within the City of Milwaukee in 1988, only 49 percent of all births were to married females, compared to 61 percent in the City of Racine, 67 percent in the City of Kenosha, and 83 percent in the City of Waukesha. Moreover, both death rates and migration rates vary substantially with marital status, so that marital status affects several aspects of population dynamics. The marital status of the regional population in 1950, 1960, 1970, 1980, and 1990 is presented in Table 17. In 1950, 1960, and 1970, marital status was tabulated for all persons 14 years of age and older, while in 1980 and 1990 marital status was tabulated for all persons 15 years of age and older. While the total population of marriageable age in the Region increased by almost 453,600, or by about 48 percent, from 1950 to 1990, the reported number of married persons increased by only about 144,700, or about 23 percent. During the same 40-year period, the number of persons

County	1950	1960	1970	1980	1985	1990
Kenosha	21,958	29,545	35,468	43,064	44,178	47,029
Milwaukee	249,232	314,875	338,605	363,653	368,194	373,048
Ozaukee	6,591	10,417	14,753	21,763	22,916	25,707
Racine	31,399	40,736	49,796	59,418	61,249	63,736
Walworth	12,369	15,414	18,544	24,789	25,615	27,620
Washington	9,396	12,532	17,385	26,716	28,482	32,977
Waukesha	23,599	42,394	61,935	88,552	93,192	105,990
Region	354.544	465,913	536,486	627,955	643,826	676,107

NUMBER OF HOUSEHOLDS IN THE REGION BY COUNTY: 1950-1990

	1950- Cha	1960 nge	1960- Cha	60-1970 Change		1970-1980 1 Change		1980-1985 Change		1985-1990 Change		1950-1990 Change	
County	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	
Kenosha	7,587	34.6	5,923	20.0	7,596	21.4	1,114	2.6	2,851	6.5	25,071	114.2	
Milwaukee	65,643	26.3	23,730	7.5	25,048	7.4	4,541	1.2	4,854	1.3	123,816	49.7	
Ozaukee	3,826	58.0	4,336	41.6	7,010	47.5	1,153	5.3	2,791	12.2	19,116	290.0	
Racine	9,337	29.7	9,060	22.2	9,622	19.3	1,831	3.1	2,487	4.1	32,337	103.0	
Walworth	3,045	24.6	3,130	20.3	6,245	33.7	826	3.3	2,005	7.8	15,251	123.3	
Washington	3,136	33.4	4,853	38.7	9,331	53.7	1,766	6.6	4,495	15.8	23,581	251.0	
Waukesha	18,795	79.6	19,541	46.1	26,617	43.0	4,640	5.2	12,798	13.7	82,391	349.1	
Region	111,369	31.4	70,573	15.1	91,469	17.0	15,871	2.5	32,281	5.0	321,563	90.7	

Source: U. S. Bureau of the Census and SEWRPC.

reported as single increased by approximately 181,700, or about 80 percent, while the number of persons either widowed or divorced increased by over 127,200, more than double that in 1950. These trends are similar to recent patterns observed nationally with marriages occurring at increasingly older ages, and with higher rates of divorce.

One of the most important characteristics of the regional population with respect to land use and public facility planning is the number and size of the households.² From 1950 to 1985 the total number of households in the Region increased by about 289,300, or about 82 percent (see Table 18). During this time period, Milwaukee County had the largest absolute gain, increasing by about 119,000 households, or about 48 percent; Waukesha County had the largest percentage gain, increasing by about 69,600

households, or just less than 300 percent. Between 1985 and 1990, the total number of households increased by about 32,300, or about 5 percent, reaching a level of 676,100 by 1990. During this time period, Waukesha County had the largest absolute gain, increasing by about 12,800 households, or about 14 percent, while Washington County experienced the largest percentage gain, increasing by about 4,500 households, or about 16 percent.

The total number of households in the Region has increased at a more rapid rate than the household population (see Table 19). Household population in the Region has increased, albeit at decreasing rates, since 1950. Between 1950 and 1960 the household population increased by about 29 percent. This rate of increase declined to about 1 percent between 1970 and 1980. Between 1980 and 1985, household population in the Region declined about 1 percent and then increased about 4 percent between 1985 and 1990. With the total number of households increasing at a faster rate than household population, household size throughout the Region has steadily declined (see Table 20). In 1950, the household size in the Region was about

²A household is defined as the person or persons occupying a separate dwelling unit, as opposed to persons who reside in group quarters, such as dormitories or boardinghouses, or are inmates of institutions.

HOUSEHOLD POPULATION IN THE REGION BY COUNTY: 1950-1990

County	1950	1960	1970	1980	1985	1990
Kenosha	73,707	99,381	115,710	120,460	118,355	125,577
Milwaukee	831,324	1,010,342	1,029,104	940,172	914,729	933,426
Ozaukee	23,122	38,012	53,951	66,211	66,640	71,732
Racine	105,761	138,238	166,977	170,189	166,205	172,209
Walworth	40,183	50,532	58,534	67,973	68,764	71,761
Washington	33,378	45,585	63,135	83,946	86,318	94,271
Waukesha	82,718	155,145	226,789	275,616	281,661	300,144
Region	1,190,193	1,537,235	1,714,200	1,724,567	1,702,672	1,769,120

	1950- Cha	1960 nge	1960- Cha	1970 nge	1970- Cha	1970-1980 Change		1980-1985 Change		1985-1990 Change		1990 nge
County	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Kenosha	25,674	34.8	16,329	16.4	4,750	4.1	-2,105	-1.7	7,222	6.1	51,870	70.4
Milwaukee	179,018	21.5	18,762	1.9	-88,932	-8.6	-25,443	-2.7	18,697	2.0	102,102	12.3
Ozaukee	14,890	64.4	15,939	41.9	12,260	22.7	429	0.6	5,092	7.6	48,610	210.2
Racine	32,477	30.7	28,739	20.8	3,212	1.9	-3,984	-2.3	6,004	3.6	66,448	62.8
Walworth	10,349	25.8	8,002	15.8	9,439	16.1	791	1.2	2,997	4.4	31,578	78.6
Washington	12,207	36.6	17,550	38.5	20,811	33.0	2,372	2.8	7,953	9.2	60,893	182.4
Waukesha	72,427	87.6	71,644	46.2	48,827	21.5	6,045	2.2	18,483	6.6	217,426	262.9
Region	347,042	29.2	176,965	11.5	10,367	0.6	-21,895	-1.3	66,448	3.9	578,927	48.6

Source: U. S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

Table 20

HOUSEHOLD SIZE IN THE REGION BY COUNTY: 1950-1990

County	1950	1960	1970	1980	1985	1990
Kenosha	3.36	3.36	3.26	2.80	2.68	2.67
Milwaukee	3.34	3.21	3.04	2.59	2.48	2.50
Ozaukee	3.51	3.65	3.66	3.04	2.91	2.79
Racine	3.37	3.39	3.35	2.86	2.71	2.70
Walworth	3.25	3.28	3.16	2.74	2.68	2.60
Washington	3.55	3.64	3.63	3.14	3.03	2.86
Waukesha	3.51	3.66	3.66	3.11	3.02	2.83
Region	3.36	3.30	3.20	2.75	2.64	2.62

	1950- Cha	1960 nge	1960- Cha	1970 nge	1970-1980 Change		1980-1985 Change		1985-1990 Change		1950-1990 Change	
County	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Kenosha	0.00	0.0	-0.10	-3.0	-0.46	-14.1	-0.12	-4.3	-0.01	-0.4	-0.69	-20.5
Milwaukee	-0.13	-3.9	-0.17	-5.3	-0.45	-14.8	-0.11	-4.2	0.02	0.8	-0.84	-25.1
Ozaukee	0.14	4.0	0.01	0.3	-0.62	-16.9	-0.13	-4.3	-0.12	-4.1	-0.72	-20.5
Racine	0.02	0.6	-0.04	-1.2	-0.49	-14.6	-0.15	-5.2	-0.01	-0.4	-0.67	-19.9
Walworth	0.03	0.9	-0.12	-3.7	-0.42	-13.3	-0.06	-2.2	-0.08	-3.0	-065	-20.0
Washington	0.09	2.5	-0.01	-0.3	-0.49	-13.5	-0.11	-3.5	-0.17	-5.6	-0.69	-19.4
Waukesha	0.15	4.3	0.00	0.0	-0.55	-15.0	-0.09	-2.9	-0.19	-6.3	-0.68	-19.4
Region	-0.06	-1.8	-0.10	-3.0	-0.45	-14.1	-0.11	-4.0	-0.02	-0.8	-0.74	-22.0

Source: U. S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

		1970			1980	<u>^ *</u>		- <u></u>	
	Single- House	Person sholds		Single- House	Person holds		Single-Person Households		
County	Number	Percent of Total	Total Households	Number	Percent of Total	Total Households	Number	Percent of Total	Total Households
Kenosha	5,666	16.0	35,468	9,467	22.0	43,064	10,923	23.2	47,029
Milwaukee	67,598	20.0	338,605	100,014	27.5	363,653	109,528	29.4	373,048
Ozaukee	1,432	9.7	14,753	3,218	14.8	21,763	4,374	17.0	25,707
Racine	7,669	15.4	49,796	12,246	20.6	59,418	14,049	22.0	63,736
Walworth	3,069	16.6	18,544	5,429	21.9	24,789	6,609	23.9	27,620
Washington	2,019	11.6	17,385	3,940	14.7	26,716	5,657	17.2	32,977
Waukesha	5,649	9.1	61,935	12,163	13.7	88,552	17,619	16.6	105,990
Region	93,102	17.4	536,486	146,477	23.3	627,955	168,759	25.0	676,107

SINGLE-PERSON HOUSEHOLDS IN THE REGION BY COUNTY: 1970, 1980, AND 1990

Source: U. S. Bureau of the Census and SEWRPC.

3.36 persons per household, ranging from a low of 3.25 in Walworth County to a high of about 3.55 in Washington County. By 1985, the household size in the Region had decreased to about 2.64 persons per household, a decrease of 0.72 persons per household, or about 21 percent, since 1950. In 1985, Milwaukee County had the lowest household size, about 2.48 persons per household, while Washington County still had the largest household size, about 3.03 persons per household, in the Region. By 1990, the household size in the Region had decreased to about 2.62 persons per household and all counties in the Region had household sizes of less than 3 persons per household. The overall decline in the number of persons per household since 1950 has occurred primarily as a result of the rapid increase in the number of one-person households, and is indicative of a tendency for unmarried persons to maintain occupancy away from relatives. Between 1970 and 1980, single person households increased from about 93.100 to about 146,500, an increase of about 53,400, or 57 percent. As shown in Table 21, Between 1980 and 1990 single person households increased by about 22,300, or 15 percent, reaching a level of about 168,800 by 1990. The spatial distribution of average household sizes in the Region for the years 1960 and 1990 is shown on Map 12.

The level of educational attainment of the population 25 years of age and older in the

Region has shown a significant increase since 1950. Since most formal education is completed by age 25, educational attainment is most relevant when related to the population 25 years of age and older. Table 22 sets forth the educational attainment levels of this age group in the Region for the census years 1950 through 1980. In 1950, about 47,700 persons, or about 6 percent of the regional population 25 years of age and older, had completed four or more years of college. This number increased steadily so that by 1980 about 167,300 persons, or about 16 percent of the population 25 years of age and older, had completed four or more years of college. The percentage of persons in this age group with some college education increased from 7 percent in 1950 to nearly 16 percent in 1980. About 228,400 more individuals had completed high school in 1980 than in 1950, an increase from 23 percent of those 25 years of age and older in 1950, to 39 percent in 1980. The percentage of those with only some elementary schooling declined from 19 percent in 1950 to 5 percent in 1980. The percentage of persons who completed only eighth grade decreased from 27 to 9 percent during this 30-year period. These data indicate that about 85 percent of the persons who were 25 years of age and older in 1980 had more than an eighth grade education. The spatial distribution of educational attainment levels in the Region for the years 1960 and 1980 is shown on Map 13.

Map 12

AVERAGE HOUSEHOLD SIZE IN THE REGION: 1960 AND 1990



The total number of households in the Region increased by about 45 percent, from about 466,000 in 1960 to about 676,000 in 1990. The average size of households in the Region decreased significantly during this time, from 3.30 persons per household in 1960 to 2.62 persons per household in 1990. This decrease is attributable to, among other factors, the decline in birthrates after 1960 and an attendant decrease in average family size as well as to a significant increase in the number of one-person households. As shown on the above map, most areas of the Region experienced a decline in average household size between 1960 and 1990.

EDUCATIONAL ATTAINMENT LEVELS OF THE POPULATION 25 YEARS OF AGE AND OLDER IN THE REGION: SELECTED YEARS, 1950-1980

	1950		19	1960		1970		1980		1950-1970 Change		1980 nge
Educational Level Achieved	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No School Years Completed	8,420	1.1	11,305	1.3	9,830	1.0	5,937	0.6	1,410	16.7	-3,893	-39.6
Some Elementary School	141,490	18.7	131,150	14.9	89,452	9.5	54,003	5.3	-52,038	-36.8	-35,449	-39.6
Completed Elementary School	202,820	26.8	191,349	21.7	143,104	15.3	94,935	9.2	-59,716	-29.4	-48,169	-33.7
Some High School	116,285	15.4	162,249	18.4	170,115	18.2	145,110	14.1	53,830	46.3	-25,005	-14.7
Completed High School	170,830	22.6	237,848	27.0	325,357	34.7	399,214	38.9	154,527	90.5	73,857	22.7
Some College	54,365	7.2	79,033	9.0	99,195	10.6	160,643	15.6	44,830	82.5	61,448	61.9
Four or More Years of College	47,660	6.3	68,016	7.7	99,936	10.7	167,257	16.3	52,276	109.7	67,321	67.4
Schooling Unkown	15,280	1.9					••			••		
Total	757,150	100.0	880,950	100.0	936,989	100.0	1,027,099	100.0	179,839	23.8	90,110	9.6

NOTE: In 1950, 15,280 persons did not report the number of school years completed.

Source: U. S. Bureau of the Census and SEWRPC.

Personal income is an important economic indicator. The following analysis of personal income is based on the conversion of all reported income figures to constant dollars³ to provide for a more meaningful comparison of change in income over time.

Aggregate and per capita personal income levels for the United States, Wisconsin, and the Region as reported for the census years 1950 through 1980 and as estimated for 1985 are set forth in Table 23. As shown in this table, the aggregate personal income within the Region as measured in constant 1985 dollars increased by about 181 percent between 1950 and 1980. This rate of increase was less than the 209 percent increase for the State and 225 percent increase for the Nation over this same period. Between 1950 and 1960, aggregate personal income increased at a greater rate in the Region than in either the State or the Nation; during the two most recent decades, the rates of increase for both the State and the Nation exceeded the rate of increase for the Region.

The Region has consistently exhibited higher per capita personal income levels than either the State or the Nation throughout the 1950 to 1980 period. The 1980 per capita income levels were \$12,928, \$11,484, and \$11,571 for the Region, State, and Nation, respectively, expressed in constant 1985 dollars. Per capita income levels for the Region, State, and Nation converged over this period of time, however, as the rates of increase for both the State and the Nation were greater than for the Region. Between 1950 and 1980 per capita income levels, measured in constant dollars, increased by about 98 percent for the Region, by about 126 percent for the State, and by about 121 percent for the Nation.

Income levels have declined between 1980 and 1985, partly because of the recession of the early 1980s, partly because of the changing structure of the economy. This decline has been greater in the Region, where per capita income declined by 11 percent, compared to declines of about 10 and 7 percent in the State and Nation respectively. Similarly, between 1980 and 1985 aggregate personal income dropped by about 12 percent in the Region but by only about 9 percent and 1 percent in the State and Nation, respectively. The spatial distribution of regional income on a household basis for 1963 and 1980 is shown on Map 14.

Single-family housing values in the Region in the Census years 1950 through 1990 are set forth in Table 24. Measured in constant 1990 dollars, the median market value of a single-family housing unit in the Region increased from about \$62,000 in 1950 to about \$93,100 in 1980

³Income figures have been converted to constant 1985 dollars using the U.S. Bureau of Labor Statistics Consumer Price Index (CPI) for urban wage earners and clerical workers. The A series—all items, was the specific series used.

Map 13

MEDIAN YEARS OF EDUCATION COMPLETED IN THE REGION: 1960 AND 1980



The level of educational attainment of the regional population has increased significantly since 1960. By 1980, 71 percent of the regional population 25 years of age and over had completed high school, compared to 44 percent in 1960; 16 percent had completed four or more years of college, compared to about 8 percent in 1960. By 1980, the median educational attainment level had reached 12 years throughout the Region except in the central portion of the City of Milwaukee.

INCOME TRENDS IN THE UNITED STATES, WISCONSIN, AND THE REGION: SELECTED YEARS, 1950-1985

	1						F	ercent Chang	9	
Geographic Area	1950	1960	1970	1980	1985	1950-1960	1960-1970	1970-1980	1980-1985	1950-1980
United States Aggregate Personal Income (millions of dollars)			· · · · ·							
Reported Dollars Constant 1985 Dollars Per Capita Personal Income	\$165,063 806,059	\$ 331,700 1,304,258	\$ 635,563 2,025,448	\$1,653,331 2,621,356	\$2,602,185 2,602,185	101.0 61.8	91.6 55.3	160.1 29.4	57.4 -0.7	901.6 225.2
Reported Dollars	1,070 5,226	1,849 7,271	3,128 9,968	7,298 11,571	10,797 10,797	72.8 39.1	69.2 37.1	133.3 16.1	47. 9 -6.7	582.1 121.4
Wisconsin Aggregate Personal Income (millions of dollars) Reported Dollars Constant 1985 Dollars Per Capita Personal Income Reported Dollars Constant 1985 Dollars	\$ 3,581 17,486 1,043 5,093	\$ 7,287 28,653 1,844 7,250	\$ 13,457 42,886 3,048 9,706	\$ 34,083 54,039 7,243 11,484	\$ 49,276 49,276 10,298 10,298	103.5 63.9 76.8 42.4	84.7 49.7 65.2 33.9	153.3 26.0 137.8 18.3	44.6 -8.8 42.2 -10.3	851.8 209.0 594.4 125.5
Region Aggregate Personal Income (millions of dollars) Reported Dollars Constant 1985 Dollars Per Capita Personal Income Reported Dollars Constant 1985 Dollars Agented Dollars Constant 1985 Dollars	\$ 1,660 8,107 1,338 6,534	\$ 3,492 13,730 2,219 8,725	\$ 6,029 19,213 3,433 10,940	\$ 14,391 22,817 8,154 12,928	\$ 20,054 20,054 11,502 11,502	110.4 69.4 65.8 33.5	72.7 39.9 54.7 25.4	138.7 18.8 137.5 18.2	39.4 -12.1 41.1 -11.0	766.9 181.4 509.4 97.9

NOTE: Census years for previous year while 1985 = 1985.

Source: U. S. Bureau of the Census, U. S Bureau of Economic Analysis, and SEWRPC.

and then declined to a level of \$73,700 in 1990. The greatest increase occurred between 1970 and 1980, when the median market value of a singlefamily housing unit in the Region almost tripled in actual dollars and increased by about 28 percent as measured in constant 1990 dollars. The spatial distribution of median single-family housing value in the Region for 1960 and 1990 is shown on Map 15.

THE ECONOMIC BASE OF THE REGION

Changes in the resident population of an area are generally closely related to changes in the economic activity in that area. As shown in Figure 12, historic population and employment trends have followed quite similar patterns in the Region. This is generally true not only because much of the population migration into an area is dependent upon the availability of jobs in that area, but also because jobs must ultimately be available to hold the natural increase and prevent the out-migration of native young people entering the labor force. The rapid historic growth of population in the Region may, therefore, be basically attributed to increasing economic activity in the Region.

Labor Force Size and Composition

The segment of the population which can be most closely related to the economy is the labor force. The labor force of an area is defined as those residents 16 years of age and older⁴ enumerated at their place of residence who are

⁴Through 1960 the labor force was defined as including persons 14 years of age and older. Since 1970, the labor force has been defined as persons 16 years of age and older. The effect of this change in definition on comparative analyses is minimal. The number of employed persons in the Region aged 14 and 15 in 1970 was approximately 7,600, or about 1 percent of the regional labor force.

Map 14

MEDIAN HOUSEHOLD INCOME IN THE REGION: 1963 AND 1980



The maps above show the distribution of median household income in the Region for 1963 and 1980. The income ranges for each year, while different in actual dollar value, are equivalent in constant dollar value. A household income of \$8,000 in 1963, for example, was equivalent to a household income of \$22,000 in 1980. Comparison of the above maps indicates significant increases in household income, measured in constant dollars, throughout most of the Southeastern Wisconsin Region.

				_							,
	19	50	19	60	19	70	19	BO	19	90	_
Market Value	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	
Less than \$10,000 \$10,000-14,999	50,423 45,369	42.1 37.8	28,760 72,371	12.7 31.9	14,536 42,822	5.4 15.8	1,438 2,961	0.4 0.9			
Less than \$15,000	14,876	12.4	 73,697	32.6	 72,767	26.9	5,800	1.8	1,237 1,374	0.4 0.4	
\$20,000 or More	9,295	7.7	51,525	22.8	 132,238	 49.0	108,531	33.0	57,263	 16.9	
\$50,000 or More					7,963	2.9 	 181,455	 55.1	 196,248	57.9	
\$100,000 or More							29,132	8.8 	 56,190	 16.6	
\$150,000-199,999									14,989 5,219	4.4 1.5	
\$250,000 or More			••						6,341	1.9	-
Total	119,963	100.0	226,353	100.0	270,326	100.0	329,317	100.0	338,861	100.0	_
Median Market Value Reported Value	\$11,100		\$15,700		\$20,400		\$57,900		\$73,700		
Percent Change from Previous Census			41.4		29.9		183.8		27.3		
Value	62.000		71 700		72 600		93 100		73 700		

15.6

TRENDS IN SINGLE-FAMILY HOUSING VALUES IN THE REGION FOR CENSUS YEARS 1950-1990

NOTE: Includes only those single-family housing units for which value is tabulated.

Source: U. S. Bureau of the Census and SEWRPC.

Percent Change from

Previous Census

either employed at one or more jobs or are actively seeking employment. It is this employed portion of the labor force which provides the economic support for the total population. The size of the labor force, while indicative of the availability of labor in the Region, cannot be equated with the number of available jobs in the Region, since some resident labor force members are employed at jobs located outside of the Region, some nonresidents will be employed within the Region, some members of the regional labor force will be employed at two or more places, and still other members may be unemployed but actively seeking employment.

Table 25 shows the changes in the labor force in the United States, Wisconsin, and the Region from 1950 to 1990. During the 20-year period between 1950 and 1970, the labor force in the Region increased from about 538,700 persons in 1950, to 736,100 persons in 1970, an overall increase of 197,400 persons, or 37 percent, and a percentage increase greater than that of either the State or the Nation. Between 1970 and 1985, the labor force growth rate of about 19 percent in the Region was less than that of either the State or the Nation; with 36 and 43 percent increases, respectively. Within the Region, however, Ozaukee, Washington, and Waukesha Counties, with 61, 73, and 61 percent increases respectively between 1970 and 1985, had labor force increases greater than those of either the State or the Nation. Between 1985 and 1990, the labor force growth rate for the Region, 8.9 percent, approximated the growth rates for the State and the Nation, 9.0 percent and 9.2 percent, respectively. It should also be noted that since labor force is enumerated at place of

28.2

-20.8

1.3

Map 15

MEDIAN SINGLE-FAMILY HOUSING VALUE IN THE REGION: 1960 AND 1990



The above maps show the median value of single-family housing in the Region for the years 1960 and 1990. The housing value ranges shown for each year, while different in actual dollar value, are equivalent in constant dollar value. A single-family home worth \$21,000 in 1960, for example, was equivalent to a single-family home worth \$96,000 in 1990. Single-family housing value data were available in 1960 for only the more urban portions of the Region, but were available for the entire Region in 1990. Single-family housing values, as measured in constant dollars, increased significantly in many areas of the Region between 1960 and 1990. The lowest single-family housing values remain in the central cities of the Region and certain outlying rural areas, particularly the southwestern portion of the Region.

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POPULATION AND EMPLOYMENT



Source: U. S. Bureau of the Census; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

residence, the size of the labor force in individual counties does not necessarily reflect a concomitant number of job opportunities in these same counties. For example, many of the members of the labor force in the suburban areas of Ozaukee, Washington, and Waukesha Counties work at jobs in Milwaukee County.

The labor force participation rate is the relationship between the labor force and the total population. The labor force participation rate is defined as the proportion of the total population 16 years of age and over who are in the labor force. This measure has tended to increase steadily over time. The regional participation rate has risen from about 57 percent in 1950 to about 66 percent in 1980 (see Table 26). The increase in the total participation rate is due almost entirely to the increase in the female participation rate, which rose from about 32 percent in 1950 to about 54 percent in 1980. Over this same time period, the male participation rate showed a modest decrease, from about 82 percent in 1950 to about 79 percent in 1980. A trend toward earlier retirement among males is believed to account, in part, for this decrease.

Number of Available Jobs

Another measure of economic activity which is closely related to the labor force is the number of jobs available within the Region. Since jobs are enumerated at their location, they are often referred to as "place-of-work" data. It should be noted that the enumeration of jobs does not distinguish between full-or part-time jobs, or indicate whether or not the job is held by a resident of the jurisdiction in which the job is enumerated or by a commuter. Therefore, "placeof-residence" data and "place-of-work" data for a particular geographic area will often differ in absolute values, but generally exhibit similar trends.

Table 27 sets forth changes in the number of jobs available in the Nation, State, and Region for the period 1950 to 1985. The number of jobs in the Region increased by about 58 percent during the period, from about 552,700 jobs in 1950 to about 871,900 jobs in 1985. During this same period, the number of jobs available in the United States increased by about 109 percent, and the number of jobs available in the State increased by about 85 percent. Since 1970, the rate of increase in the creation of new jobs in the Region has dropped behind such rates for both the State and the Nation, in spite of the fact that the absolute increase in the number of jobs in the Region was greater since 1970 than it was during either of the two preceding decades.

These disparate rates of growth are shown in Figure 13 for the period 1968 to 1985. This time span includes the four most recent economic expansions and the three intervening recessions. As shown, the amount of economic activity in the Region as measured by the number of available jobs has changed at varying rates in recent years. The national economic recession centered on 1970 resulted in relative stagnation in the number of jobs available in the Nation and the State, but a slight loss of jobs in the Region. Between 1971 and 1972, the recovery in the Region lagged behind that of the Nation and the State. Between 1972 and 1974, growth in the national economy created jobs in the Nation, State, and Region at approximately equal rates, but the 1975 recession resulted in slightly greater relative job loss in the Region than in either the Nation or the State. The recovery beginning in 1976, like the 1972 recovery, began more slowly in the Region than in the Nation and State. Again, the job growth rates in the Nation, State, and Region were approximately equal from 1977 through 1979. The national recession of 1979 to 1983 again resulted in larger relative job loss for the Region than for either the Nation or the

LABOR FORCE TRENDS IN THE UNITED STATES, WISCONSIN, AND THE REGION BY COUNTY: SELECTED YEARS, 1950-1990

	Civilian Labor Force											
Area	1950 ^a	1960 ^a	1970 ^b	1980 ^b	1985 ^c	1990 ^c						
Kenosha County	32,500	39,700	47,200	59,600	54,100	52,400						
Milwaukee County	385,300	431,800	454,100	478,200	471,700	507,900						
Ozaukee County	9,600	14,400	22,100	34,500	35,500	40,800						
Racine County	46,800	55,000	68,300	84,300	83,800	91,400						
Walworth County	16,400	20,400	26,300	34,700	36,700	39,500						
Washington County	14,300	17,400	25,700	42,100	44,500	50,700						
Waukesha County	33,800	58,200	92,400	142,800	148,400	170,200						
Region	538,700	636,900	736,100	876,200	874,700	952,900						
Wisconsin	1,396,400	1,527,700	1,744,000	2,263,400	2,373,000	2,586,000						
United States	59,303,700	68,144,100	80,051,000	104,449,800	114,325,000	124,800,000						

	1950-1 Chang	970 ge	1970-1 Chang	985 ge	1985-1 Chang	990 ge	1950-1 Chang	990 je
Area	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Kenosha County	14,700	45.2	6,900	14.6	-1,700	-3.1	19,900	61.2
Milwaukee County	68,800	17.9	17,600	3.9	36,200	7.7	122,600	31.8
Ozaukee County	12,500	130.2	13,400	60.6	5,300	14.9	31,200	325.0
Racine County	21,500	45.9	15,500	22.7	7,600	9.1	44,600	95.3
Walworth County	9,900	60.4	10,400	39.5	2,800	7.6	23,100	140.9
Washington County	11,400	79.7	18,800	73.2	6,200	13.9	36,400	254.5
Waukesha County	58,600	173.4	56,000	60.6	21,800	14.7	136,400	403.6
Region	197,400	36.6	138,600	18.8	78,200	8.9	414,200	76.9
Wisconsin	347,600	24.9	629,000	36.1	213,000	9.0	1,189,600	85.2
United States	20,747,300	35.0	34,274,000	42.8	10,475,000	9.2	65,496,300	110.4

^aThe 1950 and 1960 censuses defined the labor force as those persons 14 years of age or older who were employed or temporarily unemployed.

^bThe 1970 and 1980 censuses defined the labor force as those persons 16 years of age or older who were employed or temporarily unemployed. The significance of this shift in definitions involving the two age groups is considered minimal in the Region. For example, the number of employed persons in the Region aged 14 and 15 in 1970 was approximately 7,600 persons, or about 1 percent of the labor force. Comparable information is not available for 1980.

^cAnnual average data used for 1985 and 1990.

Source: U. S. Bureau of the Census, U. S. Bureau of Economic Analysis, and SEWRPC.

Participant	Proportion	1950	1960	1970	1980
Total	Civilian Labor Force	538,700 43.4	636,900 40.5	736,100 41.9	876,200 49.6
	of Labor-Force Age	56.7	58.0	61.5	65.9
Male	Civilian Labor Force	383,600	430,600	451,100	497,000
	Percent of Total Labor Force Percent of Population	71.2	67.6	61.3	56.7
	of Labor-Force Age	82.4	80.0	79.4	78.8
Female	Civilian Labor Force	155,100	206,300	285,000	379,200
	Percent of Total Labor Force Percent of Population	28.8	32.4	38.7	43.3
	of Labor-Force Age	32.0	36.5	45.3	54.3

PARTICIPATION OF THE POPULATION IN THE LABOR FORCE IN THE REGION FOR CENSUS YEARS 1950-1980

Source: U. S. Bureau of the Census and SEWRPC.

Table 27

NUMBER OF JOBS AVAILABLE IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950-1985

	Year										
Geographic Area	1950	1960	1970	1980	1985						
United States	58,911,000 1,348,100 552,700	68,798,500 1,582,800 647,900	83,888,000 1,837,700 753,700	103,961,300 2,256,300 884,200	123,175,600 2,491,314 871,900						
		Percent Cha	nge from Previo	ous Time Period	<u> </u>						
United States		16.8 17.4 17.2	21.9 16.1 16.3	23.9 22.8 17.3	18.5 10.4 -1.4						

Source: U. S. Bureau of Labor Statistics, U. S. Bureau of Economic Analysis, Wisconsin Department of Industry, Labor and Human Relations, and SEWRPC.

State. The recovery also lagged in the Region, resulting in slower growth rates than either the Nation or the State.

Changes in Distribution of Economic Activity

Significant changes in the distribution of economic activity within the Region have occurred in the past 40 years. These changes are indicated in Table 28 in terms of job trends during the past four decades. The number of jobs in the Region increased from 552,700 jobs in 1950 to 990,300 jobs in 1990, an increase of about 79 percent. The largest increase in the number of jobs during this period occurred in Waukesha County. Between 1950 and 1990, about 157,000 jobs were added in Waukesha County, an increase of over 1,000 percent and almost 36 percent of the total job growth in the Region. Other counties which experienced large relative job growth rates during this period were Ozaukee and Washing-

Figure 13

RELATIVE JOB GROWTH IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1968-1985



Source: U. S. Department of Labor; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

ton Counties, whose relative increases were in excess of 400 and 300 percent, respectively. The employment data available indicate a general shift in economic activity toward counties in the Region other than Milwaukee. Between 1950 and 1990, Milwaukee County's proportion of total regional jobs decreased from about 79 percent to about 58 percent. The proportion of regional jobs in all the remaining counties except Kenosha County increased. Total regional jobs in Kenosha County fluctuated between 5 and 6 percent over this period. The largest increase, from about 3 percent of the jobs within the Region in 1950 to about 17 percent in 1990, occurred in Waukesha County. The distribution of jobs within the Region in 1963 and 1985 is shown on Map 16.

Structure of the Economy

For land use and public facility planning purposes, the character of the regional economy can probably best be described in terms of its industrial structure, because the number and type of industries directly affect land use and public facility requirements. In this regard, economic activity in the Region can be classified into eight major industry groups: 1) agriculture; 2) construction and mining; 3) manufacturing; 4) retail trade; 5) transportation, communication, and utilities; 6) finance, insurance, and real estate; 7) private services; and 8) government services.

As shown in Table 29 and Figure 14, significant changes in economic activity within the Region occurred between 1970 and 1990. Total employment in the Region increased by 130,500 jobs, or 17 percent, between 1970 and 1980. Employment

then declined by 65,500 jobs, or about 7 percent, to a level of 818,700 jobs by 1982, before recovering from the 1979 to 1983 recession to a level of 871,900 jobs in 1985, an increase of about 53,200 jobs, or about 6 percent over the 1982 employment level. Employment losses in the manufacturing industries were especially large and continued for another year after other employment sectors began experiencing employment gains. Between 1980 and 1983, employment in manufacturing industries decreased by about 55,100, jobs or about 18 percent, to about 250,200 jobs before increasing to a level of about 265,400 jobs in 1985, an increase of about 15,200 jobs, or about 6 percent, over the 1983 manufacturing employment level. The losses in manufacturing employment were partially offset by employment gains in service⁵; finance, insurance and real estate; and government; increasing by 13,300 jobs, 10,000 jobs, and 8,500 jobs, respectively, between 1980 and 1985. Total employment levels in the Region continued to rise after 1985, increasing by 118,400 jobs, or about 14 percent, to a level of 990,300 jobs in 1990, with increases occurring in all but the agricultural and finance. insurance, and real estate categories.

The gains and losses of employment in each industry type has resulted in a change in employment distribution (see Table 30). Manufacturing industries, which accounted for about 38 percent of all jobs in the Region in 1970. decreased to about 30 percent in 1985. By 1985, services accounted for about 25 percent of the total jobs in the Region, increasing from about 21 percent in 1970. Like the Southeastern Wisconsin Region, the State and the Nation both experienced a decrease in the proportion of manufacturing employment and an increase in the proportion of service employment between 1970 and 1985. In 1985, manufacturing employment comprised a larger proportion of total employment for the Region than for the State and Nation, as has historically been the case. Service employment also comprised a larger proportion of total employment for the Region than for the State and Nation.

⁵Includes self-employed.

DISTRIBUTION OF JOBS IN THE REGION BY COUNTY: SELECTED YEARS, 1950-1990

									· · · · ·			
	1950 1960		60	1970		1980		1985		1990		
County	Jobs	Percent	Jobs	Percent	Jobs	Percent	Jobs	Percent	Jobs	Percent	Jobs	Percent
Kenosha	27,700	5.0	40,100	6.2	40,000	5.3	50,100	5.7	42,500	4.9	46,500	4.7
Milwaukee	438,100	79.3	486,200	75.0	507,100	67.3	542,300	61.3	527,300	60.5	578,200	58.4
Ozaukee	6,200	1.1	9,500	1.5	19,800	2.6	25,600	2.9	26,900	3.1	32,200	3.3
Racine	43,200	7.8	48,500	7.5	62,700	8.3	76,100	8.6	74.500	8.5	82,200	8.3
Walworth	12,300	2.2	18,300	2.8	24,500	3.3	31,100	3.5	28,100	3.2	37,100	3.7
Washington	9,700	1.8	14,500	2.2	23,100	3.1	31,400	3.6	31,300	3.6	41,800	4.2
Waukesha	15,500	2.8	30,800	4.8	76,500	10.1	127,600	14.4	141,300	16.2	172,300	17.4
Region	552,700	100.0	647,900	100.0	753,700	100.0	884,200	100.0	871,900	100.0	990,300	100.0

	1950-1960 Change		1960-1970 Change		1970-1980 Change		1980-1985 Change		1985-1990 Change		1950-1990 Change	
County	Jobs	Percent										
Kenosha	12,400	44.8	-100	-0.2	10,100	25.3	-7,600	-15.2	4,000	9.4	18.800	67.9
Milwaukee	48,100	11.0	20,900	4.3	35,200	6.9	-15,000	-2.8	50,900	9.7	140,100	32.0
Ozaukee	3,300	53.2	10,300	108.4	5,800	29.3	1,300	5.1	5,300	19.7	26,000	419.4
Racine	5,300	12.3	14,200	29.3	13,400	21.4	-1,600	-2.1	7,700	10.3	39,000	90.3
Walworth	6,000	48.8	6,200	33.9	6,600	26.9	-3,000	-9.6	9,000	32.0	24,800	201.6
Washington	4,800	49.5	8,600	59.3	8,300	35.9	-100	-0.3	10,500	33.5	32,100	330.9
Waukesha	15,300	98.7	45,700	148.4	51,100	66.8	13,700	10.7	31,000	21.9	156,800	1,011.6
Region	95,200	17.2	105,800	16.3	130,500	17.3	-12,300	-1.4	118,400	13.6	437,600	79.2

Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

SUMMARY

This chapter has described historic trends in, and the contemporary state of, the demographic and economic bases of the Southeastern Wisconsin Region. The interrelationships between these two bases are so numerous and close that the state of, and trends in, one cannot be properly considered without consideration of the other. The most important findings of these inventories and analyses include:

1. The resident population of the Region stood at 1,810,364 persons in 1990. Following decades of rapid population growth, the Region has experienced substantially reduced population growth since 1970. The total resident population of the Region increased from 1,240,618 persons in 1950 to 1,573,614 persons in 1960, an increase of 332,996 persons, or about 27 percent. By 1970, the total resident population of the Region had increased to 1,756,083 persons, an increase of 182,469 persons, or about 12 percent, over the 1960 population level. The resident population of the Region increased by only 8,713 persons, or by less than 1 percent, between 1970 and 1980, to 1,764,796 persons. It is estimated that between 1980 and 1985, the regional population decreased by 22,054 persons, or about 1 percent. Recently released data from the 1990 federal Census indicates a recovery during the second half of the 1980s, with the 1990 regional population level exceeding the 1980 and 1985 levels by 45,568 persons and 67,622, respectively.

Map 16

DISTRIBUTION OF JOBS IN THE REGION: 1963 AND 1985





Total employment in the Region increased by 38 percent from about 631,000 jobs in 1963 to about 872,000 jobs in 1985. In 1963 nearly 90 percent of all jobs were located in the three largely urban counties, Kenosha, Milwaukee, and Racine. By 1985 the proportion of jobs in these three counties had declined to about 74 percent, reflecting continued decentralization of employment in the Region. Employment growth was especially rapid in Waukesha County between 1963 and 1985, and as a result, that County's share of the total regional employment increased from about 5 percent to about 16 percent during this time.

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REGIONAL EMPLOYMENT BY CATEGORY: 1970, 1980, 1982, 1983, 1985, AND 1990

		_								
	Jobs									
	1970	1980	1982	1983	1985	1990				
Employment Category	Number	Number	Number	Number	Number	Number				
Agricultural	11,900	12,800	12,100	12,200	11,000	9,800				
Construction and Mining	28,900	28,300	21,000	20,700	25,100	34,800				
Manufacturing	287,600	305,300	261,700	250,200	265.400	278.000				
Transportation, Communication,										
and Utilities	36,700	39,600	38,200	36,100	39.000	40,900				
Retail Trade	115,700	131,900	119,300	125,000	133,300	155,700				
Finance, Insurance,										
and Real Estate	32,800	41,200	43,300	43,700	51,200	49,900				
Services ^a	156,800	204,400	204,200	214,300	217,700	281,700				
Government ^D	83,300	120,700	118,900	123,900	129,200	139,500				
Total Jobs	753,700	884,200	818,700	826,100	871,900	990,300				

	1970-1980 Change		1980-1982 Change		1982-1983 Change		1983-1985 Change		1985-1990 Change		1970-1990 Change	
Employment Category	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Agricultural Construction and Mining Manufacturing Transportation, Communication, and Utilities Retail Trade Finance, Insurance, and Real Estate Services ⁸ Government ^b	900 -600 17,700 2,900 16,200 8,400 47,600 37,400	7.6 -2.1 6.2 7.9 14.0 25.6 30.4 44.9	-700 -7,300 -43,600 -1,400 -12,600 2,100 -200 -1,800	-5.5 -25.8 -14.3 -3.5 -9.6 5.1 -0.1 -1.5	100 -300 -11,500 -2,100 5,700 400 10,100 5,000	0.8 -1.4 -4.4 -5.5 4.8 0.9 4.9 4.2	-1,200 4,400 15,200 2,900 8,300 7,500 3,400 5,300	-9.8 21.3 6.1 8.0 6.6 17.2 1.6 4.3	-1,200 9,700 12,600 1,900 22,400 -1,300 64,000 10,300	-10.9 38.6 4.7 4.9 16.8 -2.5 29.4 8.0	-2,100 5,900 -9,600 4,200 40,000 17,100 124,900 56,200	-17.6 20.4 -3.3 11.4 34.6 52.1 79.7 67 5
Total Jobs	130,500	17.3	-65,500	-7.4	7,400	0.9	45,800	5.5	118,400	13.6	236,600	31.4

^aIncludes self-employed.

^bIncludes education.

Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

Table 30

PERCENTAGE DISTRIBUTION OF TOTAL EMPLOYMENT BY MAJOR INDUSTRY GROUP IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1970, 1980, AND 1985

	Percent of Total Employment												
		1970			1980			1985		Point Change: 1970-1985			
Industry Group	Region	Wisconsin	United States	Region	Wisconsin	United States	Region	Wisconsin	United States	Region	Wisconsin	United States	
Agricultural	1.6	7.9	4.8	1.4	6.9	4.2	1.3	5.9	3.6	-0.3	-2.0	-1.2	
Construction and Mining	3.8	4.2	5.3	3.2	3.7	5.6	2.9	3.2	5.4	-0.9	-1.0	0.1	
Manufacturing	38.1	31.3	27.7	34.5	29.4	25.1	30.3	27.6	23.4	-7.8	-3.7	-4.3	
Transportation, Communication,	ļ						ĺ						
and Utilities	4.9	4.6	5.4	4.5	4.3	5.0	4.5	4.3	4.8	-0.4	-0.3	-0.6	
Retail Trade	15.4	15.5	13.6	14.9	15.6	14.4	15.3	15.8	14.9	-0.1	0.3	1.3	
Finance, Insurance,							Į					ļ	
and Real Estate	4.4	3.5	4.6	4.7	3.8	4.6	5.9	4.8	5.9	1.5	1.3	1.3	
Services	20.7	19.1	21.6	23.1	20.5	22.3	25.0	21.5	23.6	4.3	2.4	2.0	
Government	11.1	13.9	17.0	13.7	15.8	18.8	14.8	16.9	18.4	3.7	3.0	1.4	
Total Jobs	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0				

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 14

PERCENTAGE DISTRIBUTION OF



Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

Regional population change is determined 2. primarily by natural increase and net migration. Crude birthrates in the Region have declined in recent decades, from about 26.2 births per 1,000 persons in 1960 to about 16.0 births per 1,000 persons in 1985. Over the same time period, death rates declined from 9.1 persons per 1,000 of population to 8.6 persons per 1,000 of population. Natural increase accounted for a gain of about 202,400 persons in the Region between 1960 and 1970, and of another 113,100 persons between 1970 and 1980. Between 1980 and 1985, natural increase is estimated to have accounted for a gain of 61,000 persons in the Region. Even with these changes in crude birth and death rates, natural increase remained the major positive component of population change. Between 1960 and 1970, the Region underwent a transition from net inmigration to net out-migration of persons. Net out-migration accounted for a loss of about 19,900 persons from the Region

between 1960 and 1970 and another 104,400 persons between 1970 and 1980. Through 1980, natural increase gains offset out-migration losses in the Region, resulting in continued population gains. Between 1980 and 1985, however, net outmigration was estimated at 83,000 persons and was larger than the natural increase.

- 3. During the first three decades of the 1900s, the highest rates of population increase occurred in the now urban counties of Kenosha, Milwaukee, and Racine. Since 1930, however, the highest rates of increase have occurred in the suburban and exurban areas of Ozaukee, Washington, and Waukesha Counties. The demands for public services and facilities created by this decentralization of population affect both the older urban centers and the newer suburban and rural-fringe areas of the Region.
- The relationship between natural increase 4. and net migration has varied among the counties in the Region. Between 1950 and 1960, all seven counties experienced substantial natural increase and net in-migration. Migration patterns changed over time to where each county was estimated to have experienced net outmigration between 1980 and 1985. Ozaukee, Walworth, Washington, and Waukesha Counties had gains from natural increase greater than the losses from net outmigration between 1980 and 1985. Conversely, in Kenosha, Milwaukee, and Racine Counties, the gains from natural increase were less than the losses from net out-migration.
- 5. In reviewing age data for the Region, two very important patterns emerge. The first is the wide fluctuations that have occurred over the past three decades in the proportion of total population in the younger age groups. The second is the steady increase in the proportion of the total population made up of older age groups, particularly the 70 years of age and older category. One result of this change in age composition between 1950 and 1970 was a decline in proportion of those segments, by age, of the population classed "productive" and an increase of those segments of the population classed as "dependent," that is, of persons under 18 and 65 years of age or older. Between 1970 and 1990, the number

of dependent persons declined from about 83 persons to about 67 persons per every 100 "productive" persons. This decrease in the dependency ratio reflects a decline during this period in the very young cohort group which more than offset increases in the very old cohort group.

- 6. The sex composition in the Region has generally changed slowly toward a higher proportion of females to males. The number of males per 100 females in the regional population declined from about 98 in 1950 to about 94 in 1980. This change may be attributed generally to an aging of the Region's population and specifically to an increasingly longer life expectancy for women than for men.
- 7. Marital status, a historic indication of potential for population growth, has exhibited a trend since 1950 toward a larger proportion of single, widowed, or divorced persons in that portion of the regional population of marriageable age. Between 1950 and 1990, the number of married persons in the Region increased from about 631,200 persons to about 775,900 persons, an increase of about 144,700 persons, or about 23 percent. During the same time period, the number of single, widowed, or divorced persons increased from about 320,900 persons in 1950 to about 629,800 persons in 1990, an increase of about 308,900 persons, or about 96 percent. This general trend reflects in part a decision by younger persons in the Region not to marry or to marry at later ages.
- 8. A population characteristic of particular importance to land use and public facility planning is the number and size of households. The total number of households in the Region increased from about 354,500 in 1950 to about 643,800 in 1985, an increase of about 289,300 households, or about 82 percent. During the same time, the household population increased from about 1,190,200 persons to about 1,702,700 persons, an increase of about 512,500 persons, or about 43 percent. Since the number of households increased at a faster rate than total household population, the household size declined in the Region from 3.36 persons per household in 1950 to 2.64 in

1985. The rapid decline in the average number of persons per household is due in part to dramatic increases in the number of one-person households. Recently released data from the 1990 federal Census indicate that the total number of households in the Region reached 676,100 in 1990, with the average household size decreasing further to 2.62 persons per household.

- 9. Educational attainment levels in the Region have increased steadily since 1950. In 1980, about 727,100 persons, or about 71 percent of the resident population of the Region 25 years of age and older, had completed 12 or more years of formal education, compared to about 524,500 persons, or about 56 percent, in 1970; to about 384,900 persons, or about 44 percent in 1960; and to about 272,900 persons, or about 36 percent, in 1950. The number of persons in the Region 25 years of age and older completing four or more years of college increased from about 47,700 persons, or about 6 percent, in 1950 to about 68,000 persons, or about 8 percent, in 1960; to about 99,900 persons, or about 11 percent, in 1970; and to about 167,300 persons, or about 16 percent, in 1980.
- 10. Personal income levels in the Region increased steadily between 1950 and 1980 before showing some decline. Total income in the Region, as measured in constant 1985 dollars, increased from about \$8.1 billion in 1950 to about \$13.7 billion in 1960, about 69 percent; increasing again by about 40 percent to \$19.2 billion in 1970; and increasing again by about 19 percent to \$22.8 billion in 1980. Between 1980 and 1985, however, total personal income in the Region is estimated to have decreased from \$22.8 billion to about \$20.1 billion, or by about 12 percent. Per capita income levels indicate a trend similar to that of total personal income. Per capita income, as measured in constant 1985 dollars, increased from about \$6,500 in 1950 to about \$8,700 in 1960, or by about 34 percent; increasing to about \$10,900 in 1970, or by about 25 percent; and again increasing to about \$12,900 in 1980, or by about 18 percent. Between 1980 and 1985, per capita income was estimated to have

decreased from \$12,900 to about \$11,500, or 11 percent. Between 1950 and 1980, per capita personal income grew at a rate less than that of either the State of Wisconsin or the United States. Between 1980 and 1985, per capita income in the Region declined at a faster rate than that of either the State or the Nation.

- 11. The period from 1950 to 1980 saw a substantial increase in single-family housing values in the Region. Measured in constant 1990 dollars, the median value of single-family housing units in the Region increased from about \$62,000 in 1950 to about \$93,100 in 1980. While increasing in actual dollars, the median value of singlefamily housing units in the Region, expressed in constant 1990 dollars, decreased from \$93,100 in 1980 to \$73,700 in 1990.
- 12. Population and employment levels in the Region have historically followed quite similar patterns because population migrations between regions of the United States have been largely dependent upon the availability of jobs in these areas. The rapid historical growth of population in the Region, therefore, may be attributed primarily to the increasing economic activity in the Region. In the last two decades, significant changes in the distribution of economic activity in the Region have occurred as economic activity has decentralized from the established urban areas to the suburban areas of the Region. This trend is consistent with, but more moderate than, the population movements that have characterized the "urban sprawl" nature of much of the development in the Region since 1950.
- 13. The segment of the population which can be most closely related to the economy is the labor force, defined as all residents 16 years of age or older who are either employed or unemployed but seeking work. From 1950 to 1990, the regional labor force, which is enumerated by place of residence, increased by about 414,200, or by about 77 percent, from 538,700 to 952,900, a rate of growth less than that of either the State or the Nation. Within the Region, however, four counties, Ozaukee, Walworth, Wash-

ington, and Waukesha, experienced significant growth in the labor force, increasing by about 31,200, or by about 325 percent, from 9,600 to 40,800; by about 23,100, or by about 141 percent, from 16,400 to 39,500; by about 36,400, or by about 255 percent, from 14,300 to 50,700; and by about 136,400, or by about 404 percent, from 33,800 to 170,200, respectively, in these counties.

- 14. The labor force participation rate, which is the relationship between the labor force and total population, has increased from 57 percent in 1950 to about 66 percent in 1980. Much of this increase is due to increases in the number of working age females entering the labor force. In 1950, females accounted for about 155,100, or about 29 percent of the total regional civilian labor force. By 1980, females accounted for about 379,200, or about 43 percent of the total regional civilian labor force, an increase of about 224,100, or about 145 percent from 1950.
- One of the most important measures of the 15. economy of an area is the number of employment opportunities, or jobs, available in the area. Historically, the number of jobs available in the Region has changed at varying rates, generally corresponding to the state of the national economy. Overall, between 1950 and 1990, the number of jobs in the Region increased by about 437,600 jobs, or by about 79 percent. The number of jobs in the Region increased steadily from about 552,700 in 1950, to about 884,200 in 1980. Between 1980 and 1982, the number of jobs decreased by about 65,500 jobs, or about 7 percent, from about 884,200 jobs to about 818,700 jobs. Between 1982 and 1985, however, total employment increased by about 53,200 jobs, or about 6 percent, from about 818,700 jobs to about 871,900 jobs, as the Region emerged from the recessionary period of 1979 to 1983.
- 16. For land use and public facility planning purposes, the character of the regional economy can best be described according to the distribution of economic activity in the following eight major categories: 1) agriculture; 2) construction and mining; 3)

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manufacturing; 4) trade; 5) transportation, communication, and utilities; 6) finance, insurance, and real estate; 7) services; and 8) government. Historically employment in the Region was concentrated in manufacturing, which represented about 287,600 jobs, or about 38 percent; about 305,300 jobs, or 35 percent; and about 265,400 jobs. or 30 percent of the total regional employment in 1970, 1980, and 1985, respectively. This decrease in percentage of employment in manufacturing has been accompanied by an increasing percentage of regional employment in public and private services. reflecting a national trend of increased demand for consumer goods and services and a decentralization of manufacturing away from the older manufacturing belt in the northeast and north-central parts of the Nation.

The data presented in this chapter relate to historical changes in the demographic and economic bases of the Region. These data are important considerations in any land use and public facility planning effort, since these data provide the principal bases for the demographic and economic analyses and forecasts which determine the general scale and geographic distribution of the demand for land use and supporting facilities and services. Certain conclusions from the many possible interpretations of the data presented in this chapter follow.

Following a long period of steady and rapid growth, the population of the Region stabilized during the 1970s and 1980s. The stable population levels of the Region since 1970 may be attributed to declining birth rates and increasing out-migration. While the population of the Region stabilized, the movement of persons from the older urban central areas of the Region to the outlying areas of the Region, that is, the decentralization of the population which began after 1950, has continued largely unabated. This movement has markedly changed the development pattern of the Region, increasingly requiring outlying areas of the Region to provide many of the facilities and services once required only in the older, more highly developed urban areas of the Region.

The number of households has steadily increased throughout the Region, even though the overall population level has been relatively unchanged. The number of single-person households being formed and maintained, together with the trend toward smaller family size, has resulted in a significantly smaller household size throughout the Region. This trend has created a continued demand for residential land and supporting facilities and services, even though overall population levels have stabilized.

The number of jobs in the Region has reflected national trends and policies. Job levels have fluctuated in response to overall business cycles. such as the severe recession of the early 1980s, which had a significant impact on employment levels both nationally and in the Region. The long term trend in employment levels in the Region, however, has been one of steady increase. While the number of jobs has increased steadily, the types of jobs in the Region have been rapidly changing. Manufacturing has traditionally been, and still is, the largest employment category in the Region. However, the dominance of manufacturing jobs is lessening, while service employment is gaining in prominence. In addition to changes in type of employment, there is continuing decentralization of employment within the Region, with employment moving away from the larger and older urban industrial centers to outlying areas of the Region.

The preparation of a regional land use plan and related public facilities plans requires economic and demographic base forecasts in order to identify future urban land development and public facility needs. Presently, there is much uncertainty regarding probable future trends in some of the key determinants of the scale and location of development in the Region. It is unclear whether the current moderation of population growth is a temporary phenomenon or a more permanent departure from the steady and rapid growth rates of past decades. The extent to which the number of households in the Region can continue to increase further without an increase in regional population levels is clearly limited. Finally, the extent to which the decentralization of population and employment opportunities, observed in the Region over the past several decades, will continue is unclear. The land use planning process must recognize the uncertainty regarding future economic and social conditions in the Region and must be carried out in a manner which takes into account a wide range of possible future conditions.
Chapter V

THE NATURAL RESOURCE AND PUBLIC UTILITY BASE

INTRODUCTION

The natural resources of an area are vital to its economic development and its ability to provide a pleasant and habitable environment for human life. Natural resources not only condition, but are conditioned by, regional growth and development. Any meaningful comprehensive regional planning effort must, therefore, recognize the existence of a limited natural resource base to which urban and rural development must be properly adjusted if serious environmental problems are to be avoided. This is particularly true in southeastern Wisconsin, where an increasing number of urbanites are becoming year-round residents of outlying areas of the Region, seeking not only the varied recreational opportunities that are offered by these areas, but also the feeling of open space which these areas lend to residential development. A sound evaluation and analysis of the natural resource capabilities is, therefore, particularly important to planning for the development of the Region.

The principal elements of the natural resource base of the Region are the climate, air, physiography, geology, soils, minerals, surface waters and associated shorelands and floodlands, groundwater and associated recharge and discharge areas, woodlands, wetlands, and fish and wildlife habitat. Existing park and open space sites and historic sites, while not strictly a part of the natural resource base, are closely linked to the underlying resource base, and are therefore considered in this chapter along with that base.

Without a proper understanding and recognition of these elements and of the interrelationships which exist between them, human use and alteration of the natural environment proceeds at the risk of excessive costs in terms of both monetary expenditures and environmental degradation. The natural resource base is subject to grave misuse through improper land use and supporting public utility and facility development. Such misuse may lead to severe environmental problems which are difficult and costly to correct, and to the deterioration and destruction of the natural resource base itself. The preparation and evaluation of a land use plan must include careful assessment of the effects of urban and rural development upon the supporting natural resource base.

Public utility systems are one of the most important and permanent elements influencing regional growth and development. Moreover, certain utility facilities are closely linked to the surface water and groundwater resources of the Region, and may, therefore, affect the natural resource base. This is particularly true of sanitary sewerage, stormwater management, and water supply facilities, which are in a sense modifications of, or extensions to, surface and groundwater systems. Knowledge of the location and capacities of these utilities is, therefore, essential to intelligent land use planning. Because the public utility systems are so closely linked to the natural resource base, these systems are considered together with that base.

CLIMATE

Climate, especially extreme variations in three principal elements of climate-temperature. precipitation, and snow cover-directly affects the growth and development of an area. Climate determines to a large extent the recreational interests and pursuits that can be followed by residents of an area, ranging from swimming, boating, and numerous other summer recreation activities to skiing, snowmobiling, and ice skating in winter. Climate also has important economic implications. Rainfall and temperature affect the kinds of agricultural crops which can be produced, as well as the yields. Rainfall, temperature, and snow cover affect the design of buildings and structures of various kinds and the cost of operating and maintaining both private and public facilities and services. Climate, then, does have important implications for regional development.

General Climatic Conditions

Wisconsin's mid-continent location, far removed from the moderating effect of the oceans, gives the Region a typical continental type climate characterized primarily by a continuous progression of markedly different seasons and a large range in annual temperature. Low temperatures during the long, cold winter are accentuated by prevailing frigid northwesterly winds during the

TEMPERATURE CHARACTERISTICS AT SELECTED LOCATIONS IN THE REGION

								(Observatio	on Station ^a											
	_			Lakes	shore Location	15							Inla	Ind Locations							
	Por	t Washington			Milwaukee			Kenosha		\ \	West Bend			Waukesha		Li	ake Geneva		1		
	1	959-1988		1	940-1988		1	948-1988		1	940-1988		1940-1987			1945-1988			Regional Summary		
Month	Average Daily Maximum ^b	Average Daily Minimum ^b	Mean ^C	Average Daily Maximum ^b	Average Daily Minimum ^b	Mean ^C	Average Daily Maximum ^b	Average Daily Minimum ^b	Mean ^c	Average Daily Maximum ^b	Average Daily Minimum ^b	Mean ^C	Average Daily Maximum ^b	Average Daily Minimum ^b	Mean ^C	Average Daily Maximum ^b	Average Daily Minimum ^b	Mean ^c	Average Daily Maximum ^d	Average Daily Minimum ^d	Mean ^e
January	26.6	10.5	18.6	27.2	12.4	19.8	28.4	12.2	20.3	26.4	9.6	18.0	26.6	10.7	18.7	28.2	11.4	19.8	27.2	11.1	19.2
March	39.7	24.5	32.1	40.4	26.5	33.0	41.1	25.8	33.5	39.5	23.2	31.4	40.6	23.5	32.1	42.5	24.5	33.5	40.6	24.5	32.6
May	61.1	43.5	42.5 52.3	64.6	36.2	44.8 54.6	63.5	35.8 44.1	44.3 53.8	54.9 66.6	34.1 44.0	44.5 55.3	55.9 67.5	35.2 45.4	45.6 56.5	57.4 69.9	35.6 45.8	46.5 57.9	65.5	35.2 44.6	44.7 55.1
June	71.7 77.7	53.1 60.3	62.4 69.0	75.1 80.3	55.0 61.5	65.1 70.9	74.7 79.8	53.9 60.9	64.3 70.4	77.1 82.0	54.3 59.7	65.7 70.9	78.1 83.1	55.2 60.5	66.7 71.8	80.3 84.5	56.2 61.5	68.3 73.0	76.2 81.2	54.6 60.7	65.4 71.0
August	77.2 70.2	59.5 52.8	68.4 61.5	78.8 71.0	61.2 53.3	70.0	78.8	60.6 52 9	69.7 62.3	79.8	58.6 50.7	69.2 61.3	80.8	59.3 51.3	70.1	82.9 75.0	60.3 52.5	71.6 63.8	79.7	59.9 52.3	69.8 62.2
October	59.2	42.0	50.6	60.1	42.6	51.4	60.9	42.3	51.6	60.9	41.1	51.0	62.2	40.8	51.5	63.1	42.4	52.8	61.1	41.9	51.5
December	45.3 34.4	18.5	26.5	32.0	18.2	25.1	46.9 34.7	30.9 18.7	38.9 26.7	44.8 31.8	28.9	36.9 24.0	45.0 32.1	17.2	37.0 24.7	46.2 32.8	30.2 17.9	38.2 25.4	45.6 33.0	17.8	25.4
Yearly Average	53.7	37.1	45.4	54.9	38.1	46.5	55.5	38.0	46.8	55.5	36.1	45.8	56.3	36.9	46.6	58.0	37.8	47.9	55.7	37.3	46.5

⁴Observation stations were selected both on the basis of the length of record available and geographic location within the Southeastern Wisconsin Region. Part Washington, Milwaukee, and Kenosha are representative of areas with temperatures influenced by Lake Michigan, whereas West Bend, Waukesha, and Lake Geneva are typical of inland areas having temperatures that are not generally influenced by Lake Michigan. Kenosha and Lake Geneva are representative of southerly areas in the Region, whereas Port Washington and West Bend typify northern locations.

b The monthly average daily maximum temperature and the monthly average daily minimum temperature are obtained by using daily measurements to compute an average for each month in the period of record. The results are then averaged for all the months in the period of record.

^CThe monthly mean temperature is the mean of the average daily maximum temperature and the average daily minimum temperature for each month.

The monthly average daily maximum and minimum temperatures for the Region as a whole were computed as averages of the corresponding values for the six observation stations.

The monthly mean for the Region as a whole is the mean of the regional monthly average daily maximum and average daily minimum, which is equivalent to the average of the monthly means for the six observation static

ource: Wisconsin Statistical Reporting Service, National Climatic Data Center, and SEWRPC.

winter period; summer high temperatures are reinforced by the warm southwesterly winds common during that season.

The Southeastern Wisconsin Region is positioned astride cyclonic storm tracks along which low pressure centers move from the west and southwest. The Region also lies in the path of high pressure centers moving in a generally southeasterly direction. This location at the confluence of major migratory air masses results in the Region as a whole being influenced by a continuously changing pattern of different air masses having alternately low and high pressure centers and results in frequent weather changes being superimposed on the aforementioned large annual range in weather characteristics, particularly in winter and spring, when distinct weather changes normally occur at least once every two or three days. These temporal weather changes consist of marked temperature variations as well as variations in the type and amount of precipitation, relative humidity, wind magnitude and direction, and cloud cover.

Because of its proximity to Lake Michigan, the Region also exhibits spatial variations in weather, particularly during the spring, summer, and fall, when the temperature differential between the lake water and the land air masses tends to be the greatest. During these periods the presence of the lake tends to moderate the climate of the eastern border of the Region. It is common, for example, for midday summer temperatures in shoreline areas to be 10°F lower than inland areas due to the effects of cooling lake breezes generated by air rising from the warmer land surfaces. This Lake Michigan temperature influence is generally limited to a narrow band lying within several miles of the shoreline.

Temperature

Data for six selected temperature observations stations in southeastern Wisconsin, three of which-Port Washington, Milwaukee, and Kenosha—are located near the Lake Michigan shoreline, and three of which-West Bend, Waukesha, and Lake Geneva—are located at least 15 miles inland, are presented in Table 31 and Figure 15. These data, which encompass periods of record ranging from 29 to 48 years for the various observations, indicate the temporal and spatial variations in temperature and the temperature ranges which may be expected to occur within the Region. The temperature data also illustrate how regional air temperatures lag approximately one month behind summer and winter solstices during the annual cycle, with the result that July is the warmest month in southeastern Wisconsin and January the coldest.

Figure 15



TEMPERATURE CHARACTERISTICS AT SELECTED LOCATIONS IN THE REGION

Source: Wisconsin Statistical Reporting Service, National Climatic Data Center, and SEWRPC.

The effects of Lake Michigan are also indicated by those data when comparisons are made between inland and shoreland observation stations that have the same latitude, that is, are generally located along the same east-west line so as to eliminate temperature effects attributable to latitude. It is also possible to identify latitudinal temperature effects by comparing data for observation stations generally located along the same longitudinal, or north-south, line.

The growing season, which is defined as the number of days between the last 32°F freeze in the spring and the first in the fall, averages about 165 days for the Region. The lakeshore area has a growing season of about 175 days, while inland locations have a shorter growing season of about 155 days. The last 32°F frost in the spring normally occurs during the last week of April for areas near Lake Michigan, and during the first half of May for inland locations. The first freeze in the fall usually occurs in a two-week span during mid-October for all locations in the Region. Lake Michigan's moderating effect inhibits spring frost formation in the eastern extremities of southeastern Wisconsin, thereby giving that portion of the Region a slightly longer growing season.

Precipitation

Precipitation within the Region takes the form of rain, sleet, hail, and snow. It ranges from gentle showers of trace quantities to destructive thunderstorms, as well as major rainfallsnowmelt events causing property and crop damage, inundation of poorly drained areas, and stream flooding.

Precipitation and snowfall data for six representative precipitation observation stations in southeastern Wisconsin located on the Lake Michigan shoreline at Port Washington, Milwaukee, and Kenosha and inland at West Bend, Waukesha, and Lake Geneva are presented in Table 32 and Figure 16. These data, which encompass periods of record ranging from 43 to 94 years for the various observation stations, illustrate the temporal and spatial variations in the type and amount of precipitation that normally occur within the Region.

Precipitation data indicate that Lake Michigan does not have as pronounced an effect on precipitation within the Region as it does on temperature. A minor Lake Michigan effect is evident in a rainfall reduction of up to about 0.5 inch per month in late spring and summer in the eastern

		_	_	÷										
	Observation Station ⁸													
													-	
		Lakeshore Locations Inland Locations												
	Port Washington Milwaukee Kenosha				sha	West	Bend	Wauk	sha	Lake Geneva				
	1940-1988	1894-1988 ^b	1940-1988	1940-1988	1945-1988	1945-1988	1940-1988	1930-1988	1940-1987	1930-1987	1945-1988	1945-1988	Summ	nai Vary
Month	Average Total Precipitation	Average Snow and Sieet	Average Total Precipitation	Average Snow and Sleet	Average Total Precipitation	Average Snow and Sieet	Average Total Precipitation	Average Snow and Sleet						
January	1.35	11.5	1.62	12.2	1.50	12.2	1.36	12.4	1.49	11.3	1.89	12.6	1.54	12.0
February	1.07	9.8	1.38	10.9	1.07	10,6	1.03	8.9	1.16	7.1	1.39	7.9	1.18	9.2
March	1.99	7.7	2.48	9.6	2.19	7.2	2.01	9.9	2.38	9.6	2.67	9.6	2.29	8.9
April	3.02	1.8	3.20	2.8	3.44	1.5	2.79	2.0	3.10	1.6	3.63	2.0	3.20	2.0
Мау	2.88	0.1	2.89	0.0	3.22	0.1	2.95	0.2	3.28	0.2	3.35	0.1	3.10	0.1
June	3.18	0.0	3.53	0.0	3.57	0.0	3.56	0.0	3.70	0.0	4.16	0.0	3.62	0.0
July	3.24	0.0	3.31	0.0	3.78	0.0	3.91	0.0	3.51	0.0	4.26	0.0	3.67	0.0
August	3.21	0.0	3.24	0.0	3.53	0.0	3.33	0.0	3.64	0.0	3.81	0.0	3.46	0.0
September	3.44	0.0	3.09	0.0	3.33	0.0	3.59	0.0	3.31	0.0	3.42	0.0	3.36	0.0
October	2.21	0.2	2.19	0.2	2.37	0.1	2.36	0,1	2.30	0.0	2.56	0.1	2.33	0.1
November	2,14	2.5	2.34	2.1	2.30	1.7	2.31	3.2	2.33	2.9	2.40	3.6	2.30	2.7
December	1.76	7.6	2.13	11.4	1.96	8.9	1.62	10.4	1.83	8.6	2.20	11.2	1.92	9.7
Yearly Average	29.49	41.2	31.40	49.2	32.26	42.3	30.82	47.1	32.03	41.3	35.74	47.1	31.97	44.7

PRECIPITATION CHARACTERISTICS AT SELECTED LOCATIONS IN THE REGION

^a Observation stations were selected both on the basis of the length of record available and geographic location within the Southeastern Wisconsin Region. Port Washington, Milwaukee, and Kanosha are representative of areas where precipitation would be influenced by Lake Michigan, whereas Wast Bend, Waukesha, and Lake Geneva are typical of inland areas having precipitation that is not generally influenced by Lake Michigan. Kenosha and Lake Geneva are representative of southerly areas in the Region, whereas Port Washington and West Bend typity northern locations.

^bSnow and sleet data for Port Washington are based upon the periods 1894 to 1950 and 1960 to 1988; data are not evailable for the period 1951 to 1959.

Source: Wisconsin Statistical Reporting Service, National Climatic Data Center, and SEWRPC.

areas of the Region relative to the western areas. This may be attributable to the cool lake waters maintaining a cooler lower atmosphere, which inhibits convective precipitation.

The influence of Lake Michigan as a source of moisture is reflected by slightly higher seasonal snowfalls for the entire Region relative to inland areas lying west of the Region. Minor intraregional spatial snowfall differences occur in that seasonal snowfall tends to be greatest in the topographically higher northwest portion of the Region because moisture masses moving through that area are forced up onto the higher terrain where lower temperatures normally associated with increased height induce more snowfall than that which would occur in the absence of the topographic barrier.

Snow Cover

Snow depth as measured at Milwaukee for the 88-year period of 1900 through 1988 is summarized and presented in Table 33. It should be emphasized that the tabulated data pertain to snow depth on the ground as measured at the place and time of observation, and are not a direct measure of average snowfall. Recognizing that snowfall and temperatures, and therefore snow accumulation on the ground, vary spatially within the Region, the Milwaukee area data presented in Table 33 should be considered as an approximation of conditions that would be encountered in other parts of the Region. As indicated by the data, snow cover is most likely during the months of December, January, and February, during which at least a 0.40 probability exists of having one inch or more of snow cover at Milwaukee.

AIR QUALITY

In 1974, the Commission, in cooperation with the Wisconsin Department of Natural Resources, undertook an extensive air quality management planning effort. The findings and recommendations of this effort are set forth in SEWRPC Planning Report No. 28, A Regional Air Quality Attainment and Maintenance Plan for Southeastern Wisconsin: 2000, June 1980. The air quality management plan resulting from this effort was adopted by the Commission in June 1980. Since that adoption, considerable progress has been made in implementing the plan; progress which has been manifest by general improvements in monitored air pollutant levels in the Region over the past decade. Certain pollutant species, however, still exhibit ambient levels which remain of concern in all or portions



Source: Wisconsin Statistical Reporting Service, National Climatic Data Center, and SEWRPC.

of southeastern Wisconsin. The following sections of this report examine the quality of the existing air resource in southeastern Wisconsin, describe the changes which have been observed

in that resource during the last 10 years, and discuss the implications that air quality concerns may have on future regional development patterns.

	_										
	[Snow Cover ^a									
		1.0 Inch	ch or More 5.0 Inches or More		10.0 Inches or More		15.0 Inches or More		Average (inches)		
Month	Day	Number of Occurrences ^b	Probability of Occurrence ^C	Per Occurrence ^d	Overall ^e						
November	15 30	5 16	0.06 0.18	0 2	0.00 0.02	0 1	0.00 0.01	0 0	0.00 0.00	1.3 2.9	0.1 0.5
December	15 31	41 45	0.46 0.51	14 13	0.16 0.15	0 2	0.00 0.02	0	0.00 0.00	3.5 3.6	1.6 1.8
January	15 31	57 62	0.64 0.70	28 30	0.31 0.34	6 13	0.07 0.15	4 5	0.04 0.06	5.5 6.5	3.5 4.5
February	15 28	58 36	0.65 0.40	33 11	0.37 0.12	12 4	0.13 0.04	5 1	0.06 0.01	6.5 4.3	4.2 1.8
March	15 31	28 8	0.31 0.09	8 1	0:09 0.01	4	0.04 0.01	0 0	0.00 0.00	3.7 2.7	1.2 0.2

SNOW COVER PROBABILITIES AT MILWAUKEE BASED ON DATA FOR 1900-1988

*Data pertain to snow depth on the ground as it was measured at the time and place of observation, and are not a direct measure of average snowfall.

^bNumber of occurrences is the number of times during the period of record when measurements revealed that the indicated snow depth was equaled or exceeded on the indicated date.

^CProbability of occurrence for a given snow depth and date is computed by dividing the number of occurrences by 89, and is defined as the probability that the indicated snow cover will be reached or exceeded on the indicated date.

^dAverage snow cover per occurrence is defined as the sum of all snow cover measurements in inches for the indicated date divided by the number of occurrences for that date—that is, the number of times in which 1.0 inch or more of snow cover was recorded.

e Overall average snow cover is defined as the sum of all snow cover measurements in inches for the indicated date divided by 89—that is, the number of observation times.

Source: Wisconsin Statistical Reporting Service, National Climatic Data Center, and SEWRPC.

Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) has promulgated ambient air quality standards to be adopted nationally as minimum levels to be attained and maintained to ensure protection of human health-primary standards-and welfare-secondary standards-with an adequate margin of safety. These standards are based on the compilation of a large body of evidence linking air pollutant levels and adverse impacts through laboratory, clinical, and epidemiological studies. The findings and results of these studies are collectively referred to as air quality criteria. Air quality criteria are an expression of the scientific knowledge concerning the relationship between various concentrations of pollutants in the ambient air and their adverse impact on humans, plants, animals, and materials. It should be noted that, although the EPA retains responsibility for establishing ambient air quality standards based upon the assembled criteria, individual states are permitted to adopt alternative standards as long as they are more stringent than those set by the federal government.

In 1971, the EPA established the initial ambient air quality standards for six pollutant species: particulate matter, sulfur oxides, carbon monoxide, nitrogen dioxide, hydrocarbons, and photochemical oxidants. The standards, however, are under continuous review. As the body of air quality criteria has accumulated through the years, the EPA has revised, added, and eliminated certain pollutants and the corresponding standards. The National Ambient Air Quality Standards (NAAQS) in effect in 1990, as adapted for Wisconsin, are set forth in Table 34.

As indicated by Table 34, the hydrocarbon ambient air quality standard has been eliminated, while the standard for photochemical oxidants has been replaced by a standard for ozone. Also, an ambient air quality standard for

WISCONSIN AMBIENT AIR QUALITY STANDARDS AS FOUND IN NR 404.03, WISCONSIN ADMINISTRATIVE CODE, ADAPTED FROM NATIONAL AMBIENT AIR QUALITY STANDARDS

	· · · · · · · · · · · · · · · · · · ·			
Pollutant	Time of Average	Primary Standard ^a	Secondary Standard ^a	Method of Determination
Particulate Matter (PM ₁₀)	Annual (arithmetic mean) 24-hour	50 µg 150 µg ^b	50 μg 150 μg ^b	High-volume sampler with size selective inlet
Particulate Matter (TSP)	24-hour		150 µg ^b	High-volume sampler
Sulfur Oxides (SO _x) (measured as SO ₂)	Annual (arithmetic mean) 24-hour Three-hour	80 µg (0.03 ppm) 365 µg (0.14 ppm) ^b 	 1,300 µg (0.5 ppm) ^b	Pulsed and continuous fluorescence
Carbon Monoxide (CO)	Eight-hour One-hour	10 mg (9 ppm) ^b 40 mg (35 ppm) ^b	Same as primary Same as primary	Nondispersive infrared
Nitrogen Dioxide (NO ₂)	Annual (arithmetic mean)	100 µg (0.05 ppm)	Same as primary	Chemiluminescence
Ozone (O ₃)	One-hour	0.12 ppm (235 µg) ^b	Same as primary	Ultraviolet absorption, and chemiluminescence
Lead (Pb)	Calendar quarter (arithmetic mean)	1.5 µg		Atomic absorption ^C

NOTE: Former Standards

Particulate Matter (TSP) Annual (geometric mean) 75 µg 260 µg^b 60 µg 150 μg^b High-volume sampler

^aConcentration in weight per cubic meter (all except ozone corrected to 25°C and 760 mm of Hg).

^bConcentration not to be exceeded more than once (separate days for ozone) per year.

^cAnalysis is conducted on acid extract of high-volume filter particulate.

24-hour

Source: Wisconsin Department of Natural Resources; and U. S. Environmental Protection Agency.

lead has been added to the list of criteria pollutants. Of particular importance is the change in the standards for particulate matter. Previously, the particulate matter standards were measured as total suspended particulates, or TSP. Recognizing that the smaller, more respirable-sized, particles were responsible for observed health-related impacts, the EPA replaced the TSP standards with standards for particles less than 10 microns in size, the PM_{10} standards, on July 1, 1987. The established PM_{10} standards are lower than the former TSP standards since the fine particles represent only a fraction of all airborne particulates.

The State of Wisconsin, while adopting the PM₁₀ standards, has retained the secondary 24hour average TSP standard. The Wisconsin

Department of Natural Resources (DNR) enforces the secondary 24-hour average TSP standard in order to protect the public welfare. The DNR maintains that the elimination of TSP as the indicator of the secondary 24-hour average standard has, in effect, relaxed the standard. The DNR position is that the level of the federal 24-hour average PM_{10} standard, set at 150 micrograms per cubic meter ($\mu g/m^3$) for both the primary and secondary levels, does not adequately compensate for the reduced particulate matter loading which is being measured. Among other damage, the DNR notes that soiling resulting from fugitive emissions of TSP have been known to create a public nuisance when ambient levels of particulate matter are above the level of the existing secondary 24-hour average standard, 150 μ g/m³, measured as TSP.

MONITORED TOTAL SUSPENDED PARTICULATE MATTER LEVELS IN THE REGION: 1988

Monitoring Site	Annual Average (geometric) µg∕m ³	Number of 24-Hour Average Exceedances ^a
600 E. Greenfield Avenue, Milwaukee	66	5
1540 W. Canal Street, Milwaukee	65	4
1335 Cleveland Court, Waukesha	64	9
1238 The Strand, Waukesha	60	19
233 N. 35th Street, Milwaukee	52	2
711 W. Wells Street, Milwaukee	51	
1344 White Rock Avenue, Waukesha	50	4
2969 S. Howell Avenue, Milwaukee	49	2
100 Bank Street, Waukesha	49	2
W239 N53 Highway K, Sussex	46 ^b	9
W224 N5045 Eastview Drive, Sussex	44 ^b	2
1313 W. Reservoir Street, Milwaukee	43	
W227 N5978 Avon Court, Sussex	42 ^b	6
1519 Washington Avenue, Racine	42	
Omega Landfill, 124th Street, Milwaukee	42	- -
625 52nd Street, Kenosha	41	
W249 N6424 Highway J, Sussex	40 ^b	
6415 35th Avenue, Kenosha	39	
2300 S. 51st Street, Milwaukee	37	
2210 Rapids Drive, Racine	36	

^aFor sites with two or more exceedances.

^bPartial year of monitoring.

Source: Wisconsin Department of Natural Resources.

Accordingly, the State of Wisconsin, and all but 14 other states, have retained the secondary 24hour average TSP ambient air quality standard.

Pollutant Levels

All of the criteria pollutants for which standards have been promulgated are monitored to some extent in southeastern Wisconsin depending on the observed severity and perceived areal distribution of the problem. The existing and historically monitored pollutant levels in the Region are described herein.

Particulate Matter: As noted above, the primary and secondary federally promulgated standards for particulate matter are presently measured as PM_{10} , while Wisconsin also retains the secondary 24-hour average TSP standard. Since monitoring for PM_{10} has only been conducted for the past few years, an historical perspective on the trend in particulate matter levels in the Region can be obtained only by reviewing the long-term TSP monitoring record. Accordingly, available monitoring data for both TSP and PM_{10} levels in southeastern Wisconsin are summarized herein.

<u>TSP Levels</u>: The DNR operated 20 TSP samplers within the Region during 1988, the latest year for which data are available. Most of these monitors were for special-purpose studies, such as measuring TSP levels near quarrying operations or industrial processes, and were sourceorientated. None of these 20 sites recorded TSP levels in excess of the former primary annual average standard of 75 μ g/m³, although four sites, two in the City of Milwaukee and two in the City of Waukesha, recorded levels which equalled or exceeded the secondary annual average standard of 60 μ g/m³.

Table 35 provides a summary of the observed annual average TSP levels monitored at each site in the Region during 1988 and indicates the number of days on which the 24-hour standard was exceeded during that year. As may be seen

Figure 17



MONITORED TOTAL SUSPENDED PARTICULATE MATTER LEVELS AT 711 W. WELLS STREET, MILWAUKEE: 1970-1988

in this table, 11 of the 20 active TSP monitoring sites recorded multiple exceedances of the 24-hour average standard in 1988. The site at 1238 The Strand in the City of Waukesha exhibited the greatest number of exceedances of this standard with 19 days. The next greatest number of exceedances—nine—occurred in the City of Waukesha at 1335 Cleveland Court and in the Village of Sussex at W239 N53 CTH K, Lisbon Road. The DNR has attributed the relatively large number of exceedances in the City of Waukesha principally to foundry operations, and in Sussex to quarrying operations. The DNR is working with the suspected culpable sources

Figure 18

MONITORED TOTAL SUSPENDED PARTICULATE MATTER LEVELS AT 1540 W. CANAL STREET, MILWAUKEE: 1970-1988



Source: Wisconsin Department of Natural Resources.

in these areas to control particulate matter emissions and thus the number of exceedances in the future may be expected to decrease.

Examples of the historical trends in TSP levels within the Region between 1970 and 1988 are shown in Figure 17 for the monitoring site at 711 W. Wells Street, City of Milwaukee; Figure 18 for the site at 1540 W. Canal Street, City of Milwaukee; and in Figure 19 for the site at 100 Bank Street, City of Waukesha. As indicated in these figures, annual average TSP levels have shown a general downward trend over the past 20 years. The 24-hour average TSP levels display

Source: Wisconsin Department of Natural Resources.

larger year-to-year variability due to fluctuations in weather, with drier weather generally producing higher TSP levels, and in the operational characteristics of contributing industrial sources. The observed decrease in monitored particulate matter levels in the Region may be attributed to the installation of controls on certain industrial processes and the prevention or capture of fugitive dust emissions.

 PM_{10} Levels: Ambient air quality monitoring for particles less than 10 microns in size began in the Region in 1987. During 1988, there were three active PM₁₀ monitoring sites operated in southeastern Wisconsin. Table 36 sets forth the annual average and the highest and second highest 24-hour average PM_{10} levels recorded at these monitoring sites. As may be seen in this table, no PM_{10} monitoring site in the Region recorded exceedances of the primary and secondary ambient air quality standard of 50 μ g/m³. Moreover, only the site in the City of Waukesha recorded even a single day with a PM_{10} level in excess of the 24-hour standards of $150 \ \mu g/m^3$. Although limited in both temporal and spatial extent, the PM_{10} monitoring data that are available would indicate that the fine particulate standards are presently being met in the Region.

<u>Sulfur Oxides</u>: Most sulfur oxide emissions, about 95 percent, are in the form of sulfur dioxide. Sulfur dioxide is a colorless, nonexplosive, nonflammable gas formed principally through the combustion of fossil fuels. As shown in Table 34, a primary annual average standard of 80 μ g/m³ (0.03 ppm) and a primary 24-hour average standard of 365 μ g/m³ (0.14 ppm) have been promulgated by the EPA to protect public health. In addition, a secondary, health-related standard of 1,300 μ g/m³ (0.5 ppm) has been established to prevent damage to plants, crops, animals, and structural materials.

There were six continuous monitoring sites in the Region measuring ambient sulfur dioxide levels during 1988, the latest year for which data are available. The annual average sulfur dioxide concentrations recorded at these six sites are shown in Table 37. As may be seen in this table, the highest annual average sulfur dioxide level measured in the Region in 1988 was 0.006 ppm (16 μ g/m³) in downtown Milwaukee, a level onefifth of the standard of 0.030 ppm (80 μ g/m³). Moreover, no monitoring site recorded an exceedance of either the 24-hour average or the three-

Figure 19

MONITORED TOTAL SUSPENDED PARTICULATE MATTER LEVELS AT 100 BANK STREET, WAUKESHA: 1970-1988



Source: Wisconsin Department of Natural Resources.

hour average sulfur dioxide standards. In fact, there have been no exceedances of the annual or short-term sulfur dioxide standards in southeastern Wisconsin since 1979.

Figure 20 indicates the annual average sulfur dioxide levels measured at two sites in Milwaukee County for each year between 1974 and 1988. As evident in this figure, annual average sulfur dioxide concentrations in the City of Milwaukee have decreased markedly since 1976. Similarly, as indicated in Figure 21, the peak 24-hour average sulfur dioxide concentrations at these two sites in Milwaukee County have demonstrated a distinct downward trend since 1978.

Monitoring Site	Annual Mean ^a (arithmetic)	Highest 24-Hour Average PM ₁₀ Concentration ^b	Second Highest 24-Hour Average PM ₁₀ Concentration ^b
Milwaukee County 600 E. Greenfield Avenue 4942 S. 16th Street	30 µg∕m ³ 27 µg∕m ³	78 μg∕m ³ 74 μg∕m ³	76 μg∕m ³ 64 μg∕m ³
Waukesha County 1238 The Strand	36 μg∕m ³	155 μg⁄m ³	146 µg∕m ³

MONITORED FINE PARTICULATE (PM10) LEVELS IN THE REGION: 1988

^aPrimary and secondary annual average PM₁₀ standard equals 50 $\mu g/m^3$.

^bPrimary and secondary 24-hour average PM₁₀ standard equals 150 μ g/m³, not to be exceeded more than once per year.

Source: Wisconsin Department of Natural Resources.

Coal-fired electric power generating plants are the predominant source of sulfur dioxide emissions in the Region. Conversion to lower sulfur content coals as fuels for such facilities over the past decade has led to the observed decrease in ambient sulfur dioxide levels in southeastern Wisconsin.

<u>Carbon Monoxide</u>: Carbon monoxide is a colorless, odorless gas formed principally from the incomplete combustion of fossil fuels. As shown in Table 34, an eight-hour average standard of 10 mg/m³ (9 ppm) and a one-hour average standard of 40 mg/m³ (35 ppm) have been established for this pollutant species. The primary and secondary ambient air quality standards for carbon monoxide have been set at the same level.

There were six carbon monoxide monitoring sites operated within the Region during 1988, the latest year for which data are available. Four sites were located in Milwaukee County, one in Racine County, and one in Waukesha County. Table 38 presents a summary of the eight-hour average and one-hour average carbon monoxide levels recorded at these sites during 1988. As indicated in this table, neither the eight-hour average nor the one-hour average carbon monoxide ambient air quality standards were

Table 37

MONITORED SULFUR DIOXIDE LEVELS IN THE REGION: 1988

Monitoring Site	Annual Average (arithmetic) ^a
52nd Street and 56th Avenue, Kenosha	0.005 ppm
600 W. Kilbourn Avenue, Milwaukee	0.006 ppm
2114 E. Kenwood Boulevard, Milwaukee	0.005 ppm
1578 S. 11th Street, Milwaukee	0.004 ppm
3950 E. Oakwood Road, Oak Creek	0.004 ppm
Chicago and County Line Roads, Oak Creek	0.003 ppm

^aPrimary annual average sulfur oxide ambient air quality standard equals 0.030 ppm (80 $\mu g/m^3$).

Source: Wisconsin Department of Natural Resources.

exceeded in the Region in 1988. The highest eight-hour average carbon monoxide level in that year, 7.7 ppm (8.7 mg/m³), was recorded at the Racine site. The corresponding highest onehour average carbon monoxide level, 13.9 ppm (15.6 mg/m³), occurred at 3481 W. Wisconsin Avenue in the City of Milwaukee.

Figure 20



MONITORED SULFUR DIOXIDE LEVELS (ANNUAL AVERAGE) IN MILWAUKEE: 1974-1988

Source: Wisconsin Department of Natural Resources.

Figure 21 MONITORED SULFUR DIOXIDE LEVELS (PEAK

24-HOUR AVERAGE) IN MILWAUKEE: 1974-1988



Source: Wisconsin Department of Natural Resources.

The trend in regional carbon monoxide levels may be ascertained from the data for the S. 39th Street monitoring site in Milwaukee presented in Figure 22. As may be seen in this figure, there has been a general downward trend in the maximum eight-hour average carbon monoxide concentrations measured between 1974 and 1988. There has not been an exceedance of the eighthour average carbon monoxide standard in southeastern Wisconsin since 1984. This observed general decrease in ambient carbon monoxide levels in the Region may be attributed principally to the influence of the federal Motor Vehicle Emissions Control Program supported by the state motor vehicle inspection and maintenance program.

Nitrogen Dioxide: Nitrogen dioxide is a reddish orange-brown gas with a characteristic pungent odor. It is a chemically active compound which, in addition to its potential adverse health effects, can contribute to ozone formation in the lower atmosphere. Nitrogen dioxide is rapidly formed in the ambient air from emissions of nitric oxide (NO) from gasoline combustion in motor vehicles and from other fossil fuel combustion sources. As shown in Table 34, primary and secondary annual average ambient air quality standards for nitrogen dioxide have both been established by the EPA at 100 μ g/m³ (0.05 ppm).

There were three monitoring sites in the Region measuring ambient nitrogen dioxide levels during 1988, the latest year for which data are available. The annual average nitrogen dioxide concentrations recorded at these three sites in 1988 are presented in Table 39. As indicated in this table, the highest annual average nitrogen dioxide concentration recorded in the Region in that year, 0.027 ppm (51 μ g/m³) at the Kilbourn Avenue site in Milwaukee, was only about onehalf of the ambient air quality standard of $0.05 \text{ ppm} (100 \text{ } \mu\text{g/m}^3).$

The annual average nitrogen dioxide ambient air quality standard has not been exceeded in the Region since monitoring for this pollutant species began in 1975. Figure 23 shows the average peak concentrations from all nitrogen dioxide monitoring sites in southeastern Wisconsin between 1975 and 1988. As shown in this figure, the highest average nitrogen dioxide concentrations in southeastern Wisconsin

MONITORED CARBON MONOXIDE LEVELS IN THE REGION: 1988

	Maximum Recorded Value				
Monitoring Site	Eight-Hour Average ^a	One-Hour Average ^b			
7528 W. Appleton Avenue, Milwaukee	6.3 ppm	12.5 ppm			
3481 W. Wisconsin Avenue, Milwaukee	5.7 ppm	13.9 ppm			
600 W. Kilbourn Avenue, Milwaukee	4.7 ppm	8.4 ppm			
3401 S. 39th Street, Milwaukee	3.1 ppm	6.2 ppm			
1521 Washington Avenue, Racine	7.7 ppm	12.1 ppm			
225 N. Grand Avenue, Waukesha	4.4 ppm	7.8 ppm			

^aPrimary and secondary eight-hour average carbon monoxide ambient air quality standard equals 9.0 ppm (10 mg/m³).

^bPrimary and secondary one-hour average carbon monoxide ambient air quality standard equals 35.0 ppm (40 mg/m³).

Source: Wisconsin Department of Natural Resources.

Table 39

MONITORED NITROGEN DIOXIDE LEVELS IN THE REGION: 1988

Monitoring Site	Annual Average (arithmetic) ^a
600 W. Kilbourn Avenue, Milwaukee (University of Wisconsin-Milwaukee- Civic Center)	0.027 ppm
2114 E. Kenwood Boulevard, Milwaukee (University of Wisconsin-Milwaukee)	0.019 ppm
52nd Street and 56th Avenue, Kenosha (Wisconsin Electric Power Company)	0.014 ppm

^aAnnual average primary and secondary ambient air quality standards equal 0.050 ppm (100 μ g/m³).

Source: Wisconsin Department of Natural Resources.

occurred in 1979. Since 1981, average nitrogen dioxide concentrations have remained fairly constant at a level below 0.030 ppm ($60 \,\mu g/m^3$).

Figure 22

MONITORED CARBON MONOXIDE LEVELS AT THE S. 39TH STREET MONITORING SITE IN MILWAUKEE: 1974-1988



Source: Wisconsin Department of Natural Resources.

Lead: Lead is a soft, dull gray, odorless and tasteless heavy metal. Lead is found in the atmosphere over southeastern Wisconsin primarily as a result of emissions from motor vehicles using leaded gasoline. Young children have been found to be the most susceptible to the harmful biological effects of lead. In sufficient doses, lead can cause neurological damage and adversely affect brain, kidney, and blood functions. In recognition of these potential impacts, the EPA promulgated a primary ambient air quality standard for lead on October 5, 1978. This standard was established at 1.5 μ g/m³ on a calendar quarter averaging basis.

Lead is monitored as a constituent of total suspended particulate matter; that is, a portion of a TSP sampling filter is analyzed for its lead content using atomic absorption methods. Using this technique, lead was measured at two sites in the City of Milwaukee during 1988-one at 711 W. Wells Street, and the other at 1700 W. St. Paul Avenue. Both lead monitoring stations were sited near the freeway system to monitor lead emissions from freeway traffic. The quarterly lead monitoring data from these two sites in 1988 are presented in Table 40. As may be seen in this table, neither monitoring site recorded lead concentrations in excess of the quarterly average ambient air quality standard of 1.5 μ g/m³. In general, monitored lead concentrations during 1988 were more than 90 percent below the standard.

As noted, atmospheric lead concentrations in southeastern Wisconsin are principally attributable to the combustion of gasoline with lead additives in motor vehicles. The EPA has placed restrictions on the lead content in gasoline, reducing the allowable level from 1.1 grams per gallon to 0.1 grams per gallon. Moreover, newer vehicles equipped with catalytic converters must use unleaded gasoline. It is probable that through federal legislation, as well as market forces, gasoline with lead additives will not be available after 1991.

The observed trend in ambient air lead concentrations reflect the decrease in the consumption of leaded gasoline by motor vehicles. Figure 24 shows the quarterly average monitored lead levels at the two recording sites in the City of Milwaukee between 1982 and 1988. As evidenced in this figure, lead concentrations in the Region have decreased by an order of magnitude over the past seven years since monitoring for this

Figure 23

PEAK MONITORED NITROGEN DIOXIDE LEVELS IN THE REGION 1975-1988



Source: Wisconsin Department of Natural Resources.

Figure 24



Source: Wisconsin Department of Natural Resources.

pollutant species began. A continuing decrease in ambient lead concentrations may be expected as the consumption of leaded gasoline decreases and as existing lead-bearing particulate matter is gradually eliminated from the environment.

Monitoring Site	Quarter	Concentration ^a (μg∕m ³)
711 W. Wells Street, Milwaukee	January-March	0.04
	April-June	0.10
	July-September	0.04
	October-December	0.05
1700 W. St. Paul Avenue, Milwaukee	January-March	0.13
	April-June	0.11
	July-September	0.07
	October-December	0.07

MONITORED LEAD LEVELS IN THE REGION: 1988

^aQuarterly average lead ambient air quality standard equals 1.5 μ g/m³.

Source: Wisconsin Department of Natural Resources.

<u>Ozone</u>: Ozone, the triatomic form of oxygen, is the principal constituent of a group of atmospheric pollutants collectively referred to as photochemical oxidants. Ozone, in sufficient concentrations, has been found to produce significant damage to the human respiratory system, to injure plants and animals, and to deteriorate materials. In order to protect human health and welfare, the EPA has promulgated primary and secondary one-hour average ozone ambient air quality standards, both at 0.12 ppm (235 μ g/m³), not to be exceeded more than once per year averaged over a consecutive threeyear period.

Ozone is certainly the most pervasive and ubiquitous of all the air pollutant species affecting ambient air quality in southeastern Wisconsin. A contributing factor to this problem is the fact that ozone is not emitted directly to the atmosphere, but rather is formed in the atmosphere through a photochemical process involving volatile organic compounds, nitrogen oxides, and other air pollutants. Ozone is also meteorologically dependent, requiring sufficient amounts of sunlight to initiate and sustain the photochemical process. With adequate sunlight, ozone may accumulate to unhealthy levels in the lower atmosphere many miles removed from the upwind sources of precursor emissions. In this manner, precursor emission sources in the greater Chicago area contribute significantly to elevated ozone levels throughout southeastern Wisconsin.

In 1988, the latest year for which data are available, the Wisconsin Department of Natural Resources maintained 12 ozone monitoring sites in southeastern Wisconsin. The highest one-hour average ozone concentration recorded at each of these 12 monitoring sites is shown in Table 41. Table 41 also indicates the number of days at each monitoring site which recorded a peak onehour average ozone concentration greater than, or equal to, 0.12 ppm (235 μ g/m³); that is, the number of exceedances of the ozone standard. As may be determined from this table, the ozone problem in the Region appears to be the most severe, in terms of both number of exceedances and magnitude of observed peak concentrations, along the Lake Michigan shoreline and, in particular, along that shoreline in Kenosha and Racine Counties north of the Illinois state line. The more inland counties of Walworth, Washington, and Waukesha display a lower magnitude of peak ozone concentrations and a lower frequency of standard exceedances. It has been concluded by the Regional Planning Commission and the Wisconsin Department of Natural Resources that the transport of ozone and its precursor emissions from areas south of the Region is a major contributor to the observed ozone problem in southeastern Wisconsin. An interstate study under the aegis of the U.S. Environmental Protection Agency was mounted in 1989 to investigate the occurrence, frequency, and severity of interstate transport of ozone and its precursor emissions in the four states bordering Lake Michigan. Nevertheless, the Wisconsin

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MONITORED OZONE LEVELS IN	THE REGION: 1988
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Monitoring Site	Maximum Hourly Ozone Level ^a (ppm)	Number of Exceedances
Chiwaukee 11838 First Court Pleasant Prairie	0.222	18
Barbershop Quartet Society 7944 Sheridan Road Kenosha	0.192	17
Bayside Site 601 E. Ellsworth Lane Bayside	0.190	14
Alverno College 3401 S. 39th Street Milwaukee	0.146	1
Appleton Avenue 7528 W. Appleton Avenue Milwaukee	0.181	2
University of Wisconsin-Milwaukee 2114 E. Kenwood Boulevard Milwaukee	0.211	14
Blakewood School 3501 Blakewood Avenue South Milwaukee	0.177	9
Grafton High School 1950 Washington Street Grafton	0.198	11
Racine Department of Air Pollution Control 1521 Washington Street Racine	0.200	16
Lake Geneva Site RR 4 Elgin Club Road Lake Geneva	0.130	3
Slinger Village Hall 220 Slinger Road Slinger	0.121	0
Carroll College 225 N. Grand Avenue Waukesha	0.132	1

^aPrimary and secondary one-hour average ozone ambient air quality standard equals 0.12 ppm (235 μg/m³).

Source: Wisconsin Department of Natural Resources.

Department of Natural Resources holds that some of the ozone problem is attributable to existing sources within the State.

As already noted, ozone concentrations in the lower atmosphere depend on both the quantity of precursor emissions and the amount of available sunlight. Thus, although the State of Wisconsin has successfully implemented a program to reduce ozone precursor emissions in southeastern Wisconsin, interstate transport and meteorological factors may be expected to mask any direct and corresponding decrease in monitored ozone concentrations. As illustrated in Figure 25, the average peak ozone levels from five monitoring sites in southeastern Wisconsin display a modest decreasing trend between 1974 and 1988. All values, however, are above the onehour average ozone standard of 0.12 ppm (235 μ g/m³), and the year-to-year variation is substantial. Similarly, Figure 26 presents the number of days the ozone standard was exceeded at five selected monitoring sites in the Region between 1978 and 1988.

Figure 25

PEAK MONITORED OZONE LEVELS IN THE REGION: 1974-1988



Source: Wisconsin Department of Natural Resources.



FREQUENCY OF OZONE STANDARD EXCEEDANCES AT SELECTED MONITORING SITES IN THE REGION: 1978-1988

Figure 26

Source: Wisconsin Department of Natural Resources.

WAUKESHA

When the air quality standard for ozone is exceeded, or expected to be exceeded, the Wisconsin Department of Natural Resources issues a health advisory for residents of the affected area. This advisory indicates that air pollution has reached a level where people who have respiratory or heart problems should consider restricting their activities temporarily. The Department also may require abatement of pollution emissions through an emergency episode program. When pollution grossly exceeds the air quality standards, the Department has the authority to require that industrial sources in the area which emit volatile organic compounds reduce such emissions. There are three levels of pollution recognized in the emergency episode program—the alert, warning, and emergency levels. These levels are reached when ozone levels rise to 0.20 ppm (400 μ g/m³), 0.40 ppm (800 μ g/m³), and 0.50 ppm (1,000 μ g/m³), respectively. Air quality levels reached the alert level in southeastern Wisconsin in 1988.

Figures 25 and 26 suggest that the ozone problem in the Region has not improved significantly over the past decade. Until the ozone problem is addressed on a multi-state basis, southeastern Wisconsin may be expected to continue to experience an ozone air pollution problem. This may be expected to be accompanied by certain constraints on regional growth and development as more stringent emission controls are implemented and enforced in the Region. These constraints are identified and discussed in the following section.

Air Quality Impacts on

Regional Development Patterns

In areas where observed pollutant levels exceed the established ambient air quality standards. designated as "nonattainment" areas by the EPA, growth and development patterns may be constrained. For example, industry seeking to locate or expand in a designated nonattainment area, or close enough to impact upon it, must apply air pollution emission control technology that meets the "Lowest Achievable Emission Rate" (LAER). In addition, depending on the emission levels concerned, new or expanding industries may be required to obtain a greater than one-for-one reduction in emissions from other sources in the vicinity so as to provide a net improvement in ambient air quality or to purchase emission offset credits. Nonattainment area designation may, therefore, create an

economic disincentive for industry with significant emission levels to locating or expanding within or near the boundaries of such an area. In order to eliminate this disincentive and relieve the potential constraint on development, it is necessary to demonstrate compliance with the ambient air quality standards and petition the EPA for redesignation of the nonattainment areas.

Although it has been shown in the foregoing sections that southeastern Wisconsin is presently in compliance with all of the established ambient air quality standards except the standard for ozone, prior exceedances of the standards for certain pollutant species has led the EPA to designate portions of the Region as nonattainment areas. Specifically, parts of southeastern Wisconsin have been designated as nonattainment areas for particulate matter and sulfur oxides. All seven counties have been designated as a nonattainment area for ozone. A portion of Milwaukee County had been designated a carbon monoxide nonattainment area: that designation. however, has now been rescinded. No portion of the Region has been designated as nonattainment areas for nitrogen dioxide or lead.

In 1978, the EPA delineated primary and secondary particulate matter nonattainment areas in a portion of the City of Waukesha and the central portion of Milwaukee County and delineated a secondary particulate matter nonattainment area in a portion of Milwaukee County encompassing General Mitchell International Airport, based upon the then available TSP monitoring data. At the same time, the EPA designated portions of Kenosha and Racine Counties as secondary particulate matter nonattainment areas. With the continuing improvements in monitored TSP levels experienced in the Region through the mid-1980s, the Wisconsin Department of Natural Resources (DNR) petitioned the EPA to rescind the primary particulate matter nonattainment area designations, and to adjust the boundaries of the secondary particulate matter nonattainment area boundaries, in Milwaukee and Waukesha Counties. In separate actions, the DNR also requested that the secondary particulate matter nonattainment areas in Kenosha and Racine Counties be changed to attainment. The EPA did subsequently agree to reclassify the Milwaukee County and Waukesha County particulate matter nonattainment areas as requested by the DNR, and removed the secondary nonattainment area encompassing General Mitchell International Airport. However, the EPA declined to reclassify the secondary particulate matter nonattainment areas in Racine and Kenosha Counties on June 23, 1989, and September 12, 1989, respectively. In doing so, the EPA cited the DNR's failure to provide adequate support as to the reasons the TSP standards were attained in those areas. Thus, the secondary particulate matter nonattainment areas as presently delineated in southeastern Wisconsin are shown on Map 17.

The DNR is presently in the process of substantiating that the particulate matter emission reductions in Kenosha and Racine Counties are real, permanent, and enforceable. It may be expected, therefore, that the DNR will successfully repetition the EPA to reclassify the secondary particulate matter nonattainment areas in those two counties to attainment. However, since the secondary particulate matter air quality standards continue to be exceeded in portions of Milwaukee and Waukesha Counties, the DNR is unable to seek a reclassification for those areas at the present time. Given the fact that EPA generally takes five or more years to act on a redesignation request, it is probable that the existing secondary particulate matter nonattainment areas in Milwaukee and Waukesha Counties will remain unchanged through the mid-1990s.

Based upon prior exceedances of the ambient air quality standards, a portion of Milwaukee County was designated as a sulfur dioxide nonattainment area in 1981. The boundaries of this sulfur dioxide nonattainment are shown on Map 18. No exceedance of any sulfur oxide ambient air quality standard, however, has been recorded in the Region since 1979. Accordingly, in October 1986 the DNR requested the EPA to reclassify the area to attainment. In May 1990, the EPA determined to retain the nonattainment area designation, despite the continued compliance with the sulfur oxide ambient air quality standard.

A portion of Milwaukee County was designated a carbon monoxide nonattainment area in 1978. As noted earlier, however, no violation of the carbon monoxide ambient air quality standards have been recorded in the Region since 1984. The DNR, therefore, has requested the EPA to reclassify this area to attainment status. The EPA acted favorably on the requested carbon monoxide redesignation in July 1990. The one-hour average ambient air quality standard for ozone, 0.12 ppm $(235 \,\mu\text{g/m}^3)$, is not to be exceeded on an average of more than once per year over a three-consecutive-year averaging period. Based upon ozone monitoring data for the years 1986, 1987, and 1988, the DNR has determined that every county in the Southeastern Wisconsin Region is presently in nonattainment for ozone. The average number of exceedances for the highest ozone monitoring site in each county between 1986 and 1988 is shown in Table 42.

In 1978, when counties in the Region were initially designated, Walworth and Washington Counties were declared unclassifiable for ozone due to a lack of available monitoring data. Since ozone precursor emissions from these two counties were suspected of contributing to the regional ozone problem, however, the DNR included them in the southeastern Wisconsin "ozone attainment demonstration area." As indicated, subsequent air quality monitoring has confirmed the status of Walworth and Washington Counties as nonattainment for ozone.

Within an ozone nonattainment area, industrial development involving any significant volatile organic compound emissions requires a greater than one-for-one reduction in emissions from other sources in the vicinity. As an alternative, new or expanding industries may purchase "emission offset credits" from the Wisconsin Department of Natural Resources or from other industries which may have acquired "credits" through the reduction of emissions. Operations with volatile organic compound emissions of less than 10 tons during the ozone season (May 1 to September 30) are not required to provide emission offsets.

It is apparent from the foregoing that there has been a general improvement in air quality conditions in southeastern Wisconsin, with a reduction in most major pollutants occurring over the past decade. Ozone remains the most serious air pollution problem. It is believed that ozone problems in the Region are attributable in large measure to precursor emissions from the large urban areas located to the south and southeast of the Region. The ozone problem thus remains largely beyond the control of the Region and State and can be effectively addressed only through a multi-state abatement effort. It may be concluded that, in the preparation of the year 2010 regional land use plan, existing air quality conditions do not warrant a change in plan design concepts from those of the adopted year 2000 land use plan.

PHYSIOGRAPHY

The landforms and physical features of the Region, such as the topography and drainage pattern, are important determinants of regional growth and development. The physiography of an area not only must be considered in sound land use and supporting transportation, utility, and community facility planning and development, but it also contributes directly to the natural beauty and overall quality of life in an area.

The Southeastern Wisconsin Region is located in the Upper Midwest between Lake Michigan on the east, the Green Bay-Lake Winnebago lowlands on the north, the Rock River basin on the west, and the low dunes and swampland at the headwaters of the Illinois River on the south. The seven-county Region extends for approximately 52 miles from east to west at its widest point, and approximately 72 miles from north to south. The Region encompasses approximately 2,613 square miles of land area and 76 square miles of inland water area, exclusive of Lake Michigan, or a total gross land and water area of approximately 2,689 square miles, or 1,721,113¹ acres. Topographic elevations range from approximately 580 feet above sea level at the Lake Michigan shore to about 1,320 feet at Holy Hill in southwestern Washington County. The Region lies astride a major subcontinental divide between the upper Mississippi River and the Great Lakes-St. Lawrence River drainage basins.

Physiographic and Topographic Features

Glaciation has largely determined the physiography and topography as well as the soils of the Region. The physiographic features, that is, surficial land forms of southeastern Wisconsin, are shown on Map 19. The variation in elevation within the Region is shown in a generalized

Map 17

DESIGNATED SECONDARY PARTICULATE MATTER NONATTAINMENT AREAS IN THE REGION



This map identifies the locations of secondary particulate matter nonattainment areas in the Region as designated by the U. S. Environmental Protection Agency. Four such areas have been designated, one each in the Cities of Kenosha, Milwaukee, Racine, and Waukesha. Together these designated secondary particulate matter nonattainment areas encompass an area of 9.0 square miles. The resident population of these areas stood at about 43,600 persons in 1980.

Source: U. S. Environmental Protection Agency.

manner on Map 20. There is evidence of four major stages of glaciation in the Region. The last and most influential in terms of present physiography and topography was the Wisconsin stage, which is believed to have ended in the State about 11,000 years ago.

The dominant physiographic and topographic feature is the Kettle Moraine, an interlobate glacial deposit, or moraine, formed between the Green Bay and Lake Michigan tongues, or lobes,

¹In 1963, the area of the Region was 1,721,182 acres; in 1970, it was 1,721,051 acres. These differences are due primarily to the net effect of landfills and of erosion along the Lake Michigan shoreline.

Map 17 (continued)

WAUKESHA SECONDARY NONATTAINMENT AREA

MILWAUKEE SECONDARY NONATTAINMENT AREA





RACINE SECONDARY NONATTAINMENT AREA

KENOSHA SECONDARY NONATTAINMENT AREA



Map 18



DESIGNATED SULFUR DIOXIDE NONATTAINMENT AREA IN MILWAUKEE



This map identifies the 7.4-square-mile area consisting of portions of the City of Milwaukee and Village of Shorewood in Milwaukee County which have been designated as a primary sulfur dioxide nonattainment area. About 51,900 persons resided in this nonattainment area in 1980.

Source: U. S. Environmental Protection Agency.

of the continental glacier which moved in a generally southerly direction from its origin in what is now Canada. Topographically high points in the Kettle Moraine include areas in southwestern Waukesha County north of Eagle, areas in central Waukesha County around Lapham Peak, and areas around Holy Hill and Hartford in southwestern and western Washington County. The Kettle Moraine, which is oriented in a general northeast-southwest direction across western Washington, Waukesha, and northwestern Walworth Counties, is a complex system of hummocky sand and gravel including kames, or crudely stratified conical hills; kettle holes, marking the site of buried glacial ice blocks that became separated from the ice mass and melted to form depressions; eskers, which consist of long, narrow ridges of drift deposited in tunnels in the ice; and abandoned drainageways. It forms some of the most attractive and interesting landscapes within the Region, and is, as well, the area of the highest elevation and the area of greatest local elevation difference, or relief, within southeastern Wisconsin. The Kettle Moraine of Wisconsin, much of which lies within the Region, is considered one of the finest examples of glacial interlobate moraine in the world. Because of its still predominantly rural character and its exceptional natural beauty, the Kettle Moraine and the surrounding area is and may be expected to continue to be subjected to increasing pressure for urban development.

COUNTIES IN THE SOUTHEASTERN WISCONSIN REGION: 1988				
County	Monitoring Site	Average Number of Exceedances 1986-1988	Attainment Status	
Kenosha	7944 Sheridan Avenue	8.7	Nonattainment	

University of Wisconsin-Milwaukee

Grafton High School

Lake Geneva

225 N. Grand

Slinger

1521 Washington Avenue

OZONE STANDARD ATTAINMENT STATUS FOR COUNTIES IN THE SOUTHEASTERN WISCONSIN REGION: 1988

Source:	Wisconsin	Department (of Natural	Resources.
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The remainder of the Region is covered by a variety of glacial landforms and features, including rolling landscapes of heterogeneous material deposited beneath the ice; end moraines, consisting of material deposited at the forward margins of the ice sheet; lacustrine basins, or former lake sites; outwash plains, formed by the action of flowing glacial meltwater; drumlins, or elongated mounds of glacial deposits streamlined parallel to the flow of the glacier; and eskers.

Glacial landforms are of economic significance because some are prime sources of sand and gravel for highway and other construction purposes. Many of the larger topographic depressions of the Region, including the kettle holes, have developed into the numerous lakes which dot large areas of western Washington, Waukesha, and Walworth Counties, and which are popular both as recreational areas and as residential centers.

Surface Drainage

Milwaukee

Ozaukee

Racine

Walworth

Washington

Waukesha

Surface drainage is poorly developed but highly diverse within the planning Region because of the effects of the relatively recent glaciation. The land surface is complex as a result of being covered by glacial drift, containing thousands of closed depressions that range in size from mere potholes to large areas. Significant areas of the Region are covered by wetlands, and many streams are mere threads of water through these wetlands. The 11 major watersheds of southeastern Wisconsin are depicted on Map 21, along with the surface drainage pattern of the major perennial stream system.

91

6.4

10.4

1.5

(two years)

1.3

3.0

Nonattainment

Nonattainment

Nonattainment

Nonattainment

Nonattainment

Nonattainment

A major subcontinental divide, oriented in a generally northwesterly-southeasterly direction, approximately bisects the Region; about 1,680 square miles west of the divide, or 62 percent of the Region, drain to the Mississippi River, while the remaining 1,009 square miles, or 38 percent, are tributary to the Great Lakes-St. Lawrence River drainage basin. The subcontinental divide not only exerts a major physical influence on the gross drainage pattern of the Region, but also carries with it certain legal constraints on the diversion of water across the divide, and thereby constitutes an important consideration in land use planning.

The surface water drainage pattern of southeastern Wisconsin may be further subdivided so as to identify 11 major watersheds, five of which, the Root River, Menomonee River, Kinnickinnic





Physiographic features, or surficial land forms, throughout southeastern Wisconsin, were largely determined by repeated stages of glaciation, the last of which, the Wisconsin stage, is believed to have ended in the State about 11,000 years ago. Included in the great variety of interesting and attractive glacial landforms covering the Region are ground and end moraines, abandoned lake basins, outwash plains, kames, eskers, and drumlins. The dominant feature is the Kettle Moraine, an interlobate moraine along a northeastto-southwest diagonal across the western part of the Region formed by and between the Green Bay and Lake Michigan lobes of the continental glacier.

Source: SEWRPC.

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TOPOGRAPHIC **CHARACTERISTICS** OF THE REGION



AUKER

ILLINOIS

The topography, or relative elevation, of the land surface throughout the Region is determined by the configuration of the bedrock geology combined with overlying glacial deposits. Elevations within southeastern Wisconsin range from a low of about 580 feet above sea level on the Lake Michigan shore to a high of 1,320 feet at Holy Hill in southwestern Washington County. Topographic highs and some of the most attractive landscapes and scenic views in the Region are coincident with the interlobate Kettle Moraine area in the western portion of the Region.

Source: SEWRPC.



ILLINOIS

A subcontinental divide traverses the Southeastern Wisconsin Region. That part of the Region lying east of this divide is tributary to the Great Lakes-St. Lawrence River drainage system, while that part of the Region lying west of this divide is tributary to the Mississippi River drainage system. This subcontinental divide has certain important implications for water resources planning and management, since major diversions of water across this divide are restricted by law and by interstate and international charter. The generally dendritic surface water drainage pattern of the Region, which is the result of the glacial land forms and features, divides the Region into 11 individual watersheds, three of which, the Des Plaines, Fox, and Rock River watersheds, lie west of the subcontinental divide. In addition to the 11 watersheds, there are numerous small catchment areas along the Lake Michigan shoreline that drain directly to the lake, which areas together may be considered to comprise a twelfth watershed.

Source: SEWRPC.

Figure 27

MAP AND CROSS-SECTION OF BEDROCK GEOLOGY IN THE REGION



Source: SEWRPC.

River, Oak Creek, and Pike River watersheds, are wholly contained within the Region. In addition to these 11 major watersheds, there are numerous small catchment areas contiguous to Lake Michigan that drain directly to the lake by local natural watercourses and artificial drainageways. Together, these areas may be considered to comprise a twelfth watershed. The drainage in the Region tends to exhibit a disordered dendritic pattern except for a small area of trellised or rectangular drainage evident in the Des Plaines River watershed and in the Racine County portion of the Root River watershed. The Fox River watershed and the headwaters of the Rock River and Des Plaines River watersheds drain to the south and southwest toward their confluences with the Illinois River, a tributary of the Mississippi River. The remainder of the Region drains in a generally easterly direction toward Lake Michigan by way of the Milwaukee, Menomonee, Root, and other drainages.

GEOLOGY

Knowledge of bedrock and of the surficial deposits overlying the bedrock is important to



land use, transportation, and other public facility and public utility planning. Bedrock conditions and the overlying surficial deposits directly affect the construction costs of such urban development projects and supporting public works facilities as streets and highways and public utilities, particularly those involving extensive trenching or tunneling. Moreover, the placement of urban improvements in relation to the bedrock and surficial deposits may directly or indirectly affect the quality and quantity of the groundwater resources of the Region.

Bedrock

The bedrock formations underlying the unconsolidated surficial deposits of southeastern Wisconsin consist of Cambrian through Devonian Period rocks of the Paleozoic Era that attain a thickness in excess of 1,500 feet along the eastern limits of the Region, which are in turn underlain by older, predominantly crystalline rocks of the Precambrian Era. The bedrock geology of the Region is shown in Figure 27 by means of a map of the surface of the bedrock supplemented by a representative vertical section. A stratigraphic column including a description of the lithologic characteristics of bedrock formations beginning with those dating back to the Ordovician Period and of glacial deposits is presented in Table 43. Bedrock formations in the Region dip gently down toward the east at an average slope of about 20 feet per mile, with the result that the bedrock lying immediately beneath the unconsolidated surficial deposits in the western extremities of the Region includes older rocks of the Ordovician Period, whereas in the east along Lake Michigan, younger rocks of the Silurian and Devonian Periods lie immediately beneath the surficial deposits.

Surficial Deposits

The bedrock of the Region is, for the most part, covered by deep, unconsolidated glacial deposits, attaining a thickness in excess of 500 feet in some buried preglacial valleys. Bedrock lies within 20 feet of the ground surface within areas of the Region which together total only about 150 square miles in extent. A few localized areas exist where the bedrock is actually exposed at the surface. These shallow drift areas and rock outcrops tend to occur in Washington and Waukesha Counties along a northeasterlysouthwesterly alignment generally paralleling the interlobate Kettle Moraine, and reflect the presence of a preglacial ridge known as the Niagaran escarpment. Map 22 depicts the spatial variation of the thickness of surficial deposits overlying the bedrock which may be generally expected within the Region.

MINERAL AND ORGANIC RESOURCES

Sand and gravel, building stone, and organic material are the three principal mineral and organic resources in the Region that have significant commercial value. The commercial utilization of the Region's mineral resources, which is limited to the mining of nonmetal deposits, is primarily directed toward supplying the construction materials needed for the continuing development of southeastern Wisconsin. Planning for future land development in the Region should take into consideration the location of mineral and organic resources, since urbanization of lands overlying these resources may make it economically impossible to effi-

Table 43

STRATIGRAPHIC COLUMN OF BEDROCK AND GLACIAL DEPOSITS IN THE REGION

System	Series	Formation	Lithologic Description
Quaternary		Recent deposits	Soils, muck, peat, alluvium, beach sand and gravel. Zero to five feet thick
		Pleistocene deposits	Till and outwash sand and gravel. Zero to 430 feet thick
		Kenwood	Shale, black, carbonaceous. Fossiliferous. No outcrops. Found in City of Milwaukee intake tunnel—Lake Michi- gan. Approximately 55 feet thick
Devonian	Middle Erian	Milwaukee	Shale, shaly limestone; lower one-third dolomite. Fossilif- erous, Approximately 130 feet thick
		Thiensville	Dolomite, thick- to thin-bedded. Some fossils. Small amounts of bitumen. Approximately 65 feet thick
		Lake Church	Dolomite, thick- to thin-bedded. Fossiliferous. Pyritic in places. Approximately 27 feet thick
Silurian	Cayugan	Waubakee	Dolomite, thin-bedded, hard and brittle. Fossils scarce. Approximately 30 feet thick
	Niagaran	Racine	Dolomite, fine to coarsely crystalline. Thick- to thin- bedded. Barren to fossilifer- ous. Approximately 100 feet thick
		Manistique	Dolomite—lower part thin- bedded. Fossils. Upper—fairly thin-bedded, cherty. Many corals. Approximately 150 feet thick
		Burnt Bluff	Dolomite, thick-bedded or thin- bedded. Lower part, a few fossils. Upper part, semilitho- graphic. No fossils. Approxi- mately 110 feet thick
	Alexandrian	Mayville	Dolomite, thick-bedded, com- pact to coarsely crystalline. Brecciated in places, cherty, many reef structures. Approximately 175 feet thick
Ordovician	Cincinnatian	Meda	Red-brown oolitic iron ore and nonoolitic ore. Missing in Racine, Milwaukee, Ozaukee, Door, and Dodge Counties. In lenses up to approximately 55 feet thick
		Maquoketa	Shale, dolomitic, and beds of dolomite. Fossiliferous. Ninety to 225 feet thick
	Champlainian	Salena	Dolomite, thick- to thin-bedded, fine to coarsely crystalline. Cherty, Shaly and sandy in places; some fossils. Approxi- mately 272 feet thick

Source: SEWRPC.

ciently utilize these resources in the future. Failure to recognize these resources in the land use and public facility planning process may



ILLINOIS Most of the Region is covered by unconsolidated glacial drift deposited by continental glaciers. This drift attains a thickness in excess of 500 feet in some preglacial valleys. Dolomitic bedrock lies within 20 feet of the surface or is actually exposed as outcrops in areas totaling about 150 square miles. The northeasterly-southwesterly alignment of the rock outcrops indicates the presence of a buried preglacial bedrock ridge, an important consideration in planning for, and construction of, septic tank systems, public sewerage systems, and other public works projects involving extensive trenching and excavation.

Source: T. O. Friz, <u>Man and the Materials of Construction, How They Interrelate in the Seven Counties of Southeastern Wisconsin,</u> Ph.D. Dissertation, University of Wisconsin, Madison, 1969. eventually result in severe shortages and concomitant increases in the costs of those materials, which would ultimately be reflected in both consumer prices and the community tax structure.

Sand and Gravel

The Region has an abundant supply of sand and gravel deposits as a result of its glacial history. The deposits of highest quality are found in glacial outwash areas, particularly near the Kettle Moraine, where the washing action of flowing meltwaters has sorted the unconsolidated material to form more or less homogeneous, and therefore commercially attractive, deposits.

Deposits of sand and gravel are scattered throughout the Region. The greatest concentration of commercial surface mining activity, however, occurs in Waukesha County, because sand and gravel in that area has the most favorable quantity and quality characteristics. Sand and gravel deposits are important sources of concrete aggregate, gravel for road subgrade and surfacing, sand for mortar and molding sand.

Stone Quarries

Niagaran dolomite, which lies immediately below the glacial deposits throughout most of the Region (see Figure 27), has commercial value where it is found relatively close to the ground surface, both as a dimensional building stone and, when crushed, as an aggregate for construction or as an agricultural soil conditioner. The dolomite is mined in open quarries, and all the major commercial operations within the Region that produce stone for building purposes are located in Waukesha County, concentrated in rock outcrop areas (see Map 22) in the northeastern portion of that County. Waukesha County quarries yield thinly bedded, compact, and finegrained dolomite well-suited for the mining and production of dimensional building stone. Although it is in fact dolomite, that is, primarily calcium magnesium carbonate, the high-quality dimensional building stone commercially mined and produced in Waukesha County is commonly known or referred to as limestone, that is, primarily calcium carbonate, or Lannon stone. Crushed limestone is produced not only in Waukesha County but also at other quarries throughout the Region.

Organic Deposits

Organic deposits are widely distributed throughout southeastern Wisconsin in small, scattered, low-lying, poorly drained areas. At these locations, excessive moisture inhibits oxidation and decay of the residues of water-tolerant plants, thus producing organic peat deposits and muck soils with significant resulting fertilization potential. These organic deposits overlie the glacial drift of the Region and exhibit variable depths ranging from less than a foot to many feet.

Organic deposits have environmental value, often covering areas suitable for certain kinds of wildlife habitat and recreation areas, and have commercial value in their ability to support field crops like corn or soybeans, specialized crops such as vegetables, and sod farming and peat mining, the last of which is excavated from open pits and marketed as an additive to improve soils for potted plants, gardens, and greenhouse nurseries. Agricultural use of organic deposits is contingent upon bed depth sufficient so that artificial drainage can be developed and maintained.

SOILS

In a region such as Southeastern Wisconsin, with its wide range of land uses, soil properties exert a strong influence on the use of land, and especially on the impacts of changes in land use. This is true because soils form the boundary between the solid earth and the atmosphere where maximum activity by humans, plants, and animals occurs. Soils incorporate strong imprints of past natural conditions, conditions that can determine the environmental impacts of land uses, whether those uses be residential, commercial, industrial, recreational, or agricultural. Thus, any comprehensive land use planning effort needs to examine not only how soils and land are currently used, but also how they can best be used and managed over time.

A detailed, areawide soil survey was carried out at the instigation of the Regional Planning Commission to gather, compile, and publish the information needed about the soils of southeastern Wisconsin for preparation of a variety of land-related plans. The results of the surveys were published as SEWRPC Planning Report No. 8 and five soil survey reports and maps published by the U. S. Department of Agriculture, Soil Conservation Service.²

The information on the spatial relationships among soils in the landscape and on the characteristics and properties of all soils in the Region has proven to be invaluable for preparation and adoption of planning standards; for the analysis of existing land uses; for land use plan synthesis, test, and evaluation; and, very importantly, for plan implementation. Soil surveys lend themselves to planning applications because the properties and qualities of soils which are recorded in making a detailed soil survey can be interpreted to assist in the development and selection of desirable spatial distribution patterns for residential, commercial, industrial, recreational, and agricultural land use development, as well as in the selection of highway, railway, airport, pipeline, and other transportation facility locations. Soil survey information can assist in the selection and development of wildlife habitat and other environmentally oriented land uses.

General Soil Groups in the Region

Map 23 shows the location and spatial extent of seven broad groups of soils in southeastern Wisconsin. The map is useful for gaining a broad perspective of the patterns of the soils in the Region and the implications of those patterns for regional development. For any specific application of the soils data, however, it is imperative that the detailed soil survey maps and reports noted above be referred to. The soils designated as Group A on Map 23 cover about 29 percent of the Region and occupy gently rolling and rolling glaciated uplands. Predominant soils are of medium texture, permeable to water and air, easily penetrated by plant roots, and often contain appreciable amounts of carbonate minerals in the subsoil. Stones, cobbles, and gravels are common in and on many soils. This group of soils occurs in broad belts on either side of the Kettle Moraine. The belt east of the Kettle Moraine often abuts soils in Group D, which have formed from finer textured glacial deposits on more gently undulating landscapes. The major soils in Group A have been responsive to good management when farmed for crops common to the Region; can be protected from excessive erosion by readily available practices; have good internal and surface drainage; and possess characteristics which make them well suited for all types of urban development. Most soils in group A developed under a vegetative cover of deciduous forests and prairie savannas. These soils can support a wide variety of native and introduced plant species.

The predominant soils in Group B are loamy to somewhat sandy, occupy broad plains of sand and gravel washed out from the Kettle Moraine, and also occur along major stream valleys which carried meltwater of the glacial ice sheets. Smaller bodies of these soils are also common in the Kettle Moraine and along parts of the Lake Michigan shore. This group of soils covers approximately 14 percent of the Region. The major soils are suited for farming, although crops may suffer from lack of water during dry weather unless irrigated. The soils, landforms, and underlying sandy-gravelly outwash in this group have few limitations for urban land uses.

The heart of the Kettle Moraine is included in Group C. Pronounced changes in topography, soils, and underlying glacial materials occur within short distances. Short, steep slopes and pits or kettles with no surface drainage outlets are common, and shallow, gravelly soils formed in the glacial deposits predominate. Some closed depressions contain wet soils or glacial lakes. Approximately 8 percent of the Region is covered by this group of soils. Limitations for both rural and urban land uses are highly dependent on local soil, slope, and topographic conditions. The Kettle Moraine State Forest occupies large parts

²SEWRPC Planning Report No. 8, Soils of Southeastern Wisconsin, 1966; U. S. Department of Agriculture, Soil Conservation Service, Soil Survey of Kenosha and Racine Counties, Wisconsin, 1970; U. S. Department of Agriculture, Soil Conservation Service, Soil Survey of Milwaukee and Waukesha Counties, Wisconsin, 1971; U. S. Department of Agriculture, Soil Conservation Service, Soil Survey of Ozaukee County, Wisconsin, 1970; U. S. Department of Agriculture, Soil Conservation Service, Soil Survey of Walworth County, Wisconsin, 1971; U. S. Department of Agriculture, Soil Conservation Service, Soil Survey of Ozaukey tion Service, Soil Survey of Washington County, Wisconsin, 1971.



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This generalized soil map provides a broad perspective on the patterns of the soils in the Region and the implications of those patterns for regional development. For example, about one-half of the 2,689 square mile Region is covered by soils in groups D, E, F, or G which are generally poorly suited for development with conventional onsite soil absorption sewage disposal systems. The detailed soil survey completed for the Region in 1966 provides more definitive soils data for use in local, as well as regional, planning and development.

Source: U. S. Soil Conservation Service and SEWRPC.

of this map unit. Dispersed residential development on large estate-type lots is a growing land use.

The soils included in Group D have characteristics which reflect their origins as glacial deposits that were moved by ice from what is now Lake Michigan. These soils are clayey in texture, generally slow to drain, sticky and plastic when wet, with many of the constituent soils having high water tables. Slopes are gentle, and broad; poorly drained depressions are extensive. Urban development on these soils generally requires a high level of supporting improvements, including careful attention to stormwater drainage. Basements commonly need footing drains and sump pumps to remove groundwater. Cultivated plants grow well in many of these soils if careful attention is given to avoid tillage or compaction from vehicular or foot traffic when soils are wet. Native vegetation on these soils included both deciduous forests and tall grass prairies. This group of soils covers nearly 31 percent of the Region.

The distinctive characteristic of soils in Group is E is their shallow depth over bedrock. Dolomitic limestone bedrock commonly occurs within four feet of the land surface. This limits the use for plant growth, urban development, and safe onsite disposal of sewage. Commercial production of building stone and crushed stone for construction are extensive in areas covered by these soils. This group of soils occurs in small units, which in the aggregate occupy 1 percent of the Region.

The soils of Group F are predominantly wet; loamy, silty or clayey in texture; and occur along drainageways of streams, lake basins, or low stream terraces. Many are subject to flooding. The soils of this group predominate in the environmental corridors which follow the stream drainage systems. This group of soils occupies approximately 11 percent of the Region. The characteristics of the soils in this group limit successful use for nearly all forms of development. Many areas can provide excellent wildlife habitat, urban greenways, and similar open land uses.

The soils designated as Group G are organic deposits of peat and muck of various depths which occur throughout the Region and which occupy the basins of former lakes and glacial kettles. While some areas are used for specialized crop and sod production, many lack the artificial drainage systems needed to control water levels for such land uses. In their natural state these soils comprise excellent wetland wildlife habitats. These soils are unsuited for urban development. Approximately 6 percent of the Region is occupied by soils in this group.

General descriptions and small scale maps of major groups of soils such as those given above serve to provide a valuable overview of areawide soil distribution patterns. Such descriptions and maps are, however, too small and generalized to be used for planning the uses of any specific tract of land. The detailed soil surveys and related interpretations are the data needed for more detailed and definitive planning. For land uses such as onsite disposal of sewage, an even more intensive study of the proposed disposal site is required.

Soil Suitability Interpretations

Detailed soil surveys can be interpreted for several land uses in which the properties and qualities of the soil are important to the outcome. Interpreting soil surveys involves evaluating those characteristics of a soil which influence the particular use of land and predicting the kinds and degrees of limitations those soil properties and qualities, taken together, are likely to impose on the land use in question.

Interpretations for farming can be used by individuals and organizations who already own or operate farmed land and also by parties contemplating purchasing or leasing of land for farming. These interpretations include interpretations for the application of soil conservation practices appropriate for meeting the conservation compliance requirements of the federal Food Security Act of 1985; yields under defined levels of management; limitations for specific crops; and adaptability for particular crops including those grown with irrigation. The intensity of land use for farming has increased throughout much of the Region over the past two decades. Irrigation has increased substantially in areas where adequate groundwater is available and rates of application of pesticides and fertilizers have increased. This intensified land use has increased the risk of groundwater contamination from nitrates and pesticide residues which may leach below the root zone of plants. Persons interested in site-specific planning for agricultural use should contact the county land conservation agency and the U. S. Soil Conservation Service for the most current relevant interpretive information.

Interpretations of soil surveys for specific types of urban land use are of great importance in southeastern Wisconsin. Among the most important land uses concerned are residential with public sanitary sewer service and residential without public sanitary sewer service. The most important soil properties which relate to these land uses are: depth to bedrock, depth to water table, permeability, presence of coarse textures and/or gravels and stones, flooding hazard, and slope.

Detailed soil surveys show that much of the Region has severe limitations for one or more of these types of urban development. Map 24 shows that approximately 901 square miles, or about 34 percent of the Region, are covered by soils which have severe limitations for residential development with public sanitary sewer service, or stated differently, are poorly suited for residential development of any kind.³

The technology and governmental regulations related to the use of onsite domestic sewage disposal systems are undergoing rapid change. That change requires new interpretations of soil suitability for onsite sewage disposal systems. At the time the original detailed soil survey of the Region was made, disposal of domestic sewage was based primarily on one type of technology, the conventional septic tank system, involving gravity distribution to, and disposal of, partially treated effluent through in-ground trenches or beds. Interpretations of soil suitability for onsite sewage disposal in both the aforereferenced SEWRPC Planning Report No. 8 and the detailed soil survey reports of the U. S. Soil Conservation Service were based on that conventional technology.

In the past 15 years alternative onsite sewage disposal systems have been designed, field tested, and, in some cases, approved by the regulatory agencies concerned for use under more limiting soil conditions than those for which conventional systems would be acceptable. These alternative systems include shallow in-ground; at-grade; and mound soil absorption systems. The interpretations set forth in SEWRPC Planning Report No. 8 and the detailed soil survey reports of the U.S. Soil Conservation Service were, moreover, prepared prior to the adoption of Chapter ILHR 83 of the Wisconsin Administrative Code, which governs the siting and design of onsite sewage disposal systems in the State. Current regulatory practice under Chapter ILHR 83, contrary to good land use planning practice and the principles incorporated in the regional land use plan, unfortunately tends to foster, rather than discourage, the use of onsite sewage disposal systems; and, as part of the field investigations to determine site suitability for onsite sewage disposal systems, every effort is made to identify areas capable of accommodating an onsite system. As a result, very small and isolated areas capable of supporting such systems may be identified within broader areas which may be, for the most part, unsuitable.

Under the current land use planning effort, then, it was determined that the classification and mapping of soils based upon suitability for onsite sewage disposal systems should be reviewed and revised as necessary to reflect current technology and regulatory practice. Soil classifications were developed to reflect suitability for conventional onsite sewage disposal systems and the most common alternative onsite sewage disposal system, the mound system, in accordance with the soil and site specifications set forth in ILHR 83. The classifications were based upon soil characteristics as indicated in the detailed soil surveys as well as the actual

³It should be noted that the U.S. Soil Conservation Service no longer provides an interpretation of soil mapping units for residential development served with public sanitary sewers per se. The interpretations for residential development served with public sanitary sewers presented herein are a composite of current Soil Conservation Service ratings for two components of residential development—namely, dwellings with basements and local streets and roads. It should also be noted that the Soil Conservation Service ratings for these uses have become more conservative over time, with current ratings for many soils showing a stronger limitation than those given in the published soil surveys. As a result, the area covered by soils with severe limitations for residential development served by public sanitary sewers as indicated herein is greater than that indicated in SEWRPC Planning Report No. 25.

SOIL SUITABILITY FOR CONVENTIONAL ONSITE AND MOUND SEWAGE DISPOSAL SYSTEMS IN THE REGION BASED UPON CURRENT ADMINISTRATIVE RULES: FEBRUARY 1991

	Conventional Systems		Mound Systems	
Rating	Square Miles	Percent of Region	Square Miles	Percent of Region
Unsuitable Undetermined	1,420 608 458 203	52.8 22.6 17.1 7.5	911 561 1,014 203	33.9 20.9 37.7 7.5
Total	2,689	100.0	2,689	100.0

^aIncludes disturbed areas for which no soil survey data are available and surface water.

Source: SEWRPC.

field experience of county and state technicians responsible for overseeing the location and design of such systems.

The resulting soil classifications are shown graphically on Maps 25 and 26. Specifically, Map 25 depicts soil suitability for conventional onsite sewage disposal systems based upon the criteria set forth in Section ILHR 83.10 of the Wisconsin Administrative Code⁴; and Map 26 depicts soil suitability for mound sewage disposal systems based upon criteria set forth in Section ILHR 83.23.⁵On these maps, areas shown as "suitable" have a high probability of meeting the code requirements for the system being considered, and areas shown as "unsuitable" have a high probability of not meeting the code requirements. Areas shown as "undetermined" include soils having a range of characteristics including slopes which spans the applicable administrative code criteria, so that no classification can be assigned. It should be recognized that Maps 25 and 26 are intended to illustrate the overall pattern of soil suitability for onsite sewage disposal systems, and, in this respect, are useful in regional and local land use planning work. Detailed site investigations based on the requirements of Chapter ILHR 83

⁴Register February 1985, No. 350.

are, however, essential to the determination of whether or not the soils on any specific tract of land are suitable for development served by onsite sewage disposal systems.

As indicated in Table 44, about 1,420 square miles, or about 53 of the total area of the Region, are covered by soils classified as unsuitable for conventional onsite sewage disposal systems: about 458 square miles, or 17 percent, are covered by soils classified as suitable for such systems; and about 608 square miles, or just over 22 percent, are covered by soils of undetermined suitability. The remaining 203 square miles, or about 8 percent of the Region, consist either of disturbed land for which no soil survey data are available or of surface water. In comparison, about 911 square miles, or about 34 percent of the total area of the Region, are covered by soils classified as unsuitable for mound sewage disposal systems; about 1,014 square miles, or just over 37 percent, are covered by soils classified as suitable for such systems; and about 561 square miles, or 21 percent, are covered by soils of undetermined suitability. Clearly, the emergence of mound sewage disposal systems and other alternative onsite sewage disposal systems has opened substantial additional areas of the Region to urban development without centralized sanitary sewerage service. It is significant in this respect that the area of the Region classified as unsuitable for mound systems is

⁵<u>Ibid</u>.

Map 24

SUITABILITY OF SOILS IN THE REGION FOR RESIDENTIAL DEVELOPMENT WITH PUBLIC SANITARY SEWER SERVICE

LEGEND



ILLINOIS

About 901 square miles, or about 34 percent of the total area of the Region, are covered by soils which have severe limitations for residential development with public sanitary sewer service, or, stated differently, are poorly suited for residential development of any kind. These soils, which include wet soils with a high water table or poor drainage, organic soils which are poorly drained and provide poor foundation support, and soils which have a flood hazard, are especially prevalent in the riverine areas of the Region. Source: U. S. Soil Conservation Service and SEWRPC.
Map 25

SUITABILITY OF SOILS IN THE REGION FOR CONVENTIONAL ONSITE SEWAGE DISPOSAL SYSTEMS UNDER CURRENT ADMINISTRATIVE RULES: FEBRUARY 1991



About 1,420 square miles, or about 53 percent of the total area of the Region, are covered by soils unsuitable for conventional onsite sewage disposal systems; about 458 square miles, or 17 percent, are covered by soils suitable for such systems; and about 608 square miles, or about 22 percent, are covered by soils requiring more detailed field investigation for suitability determination. The remaining 203 square miles, or 8 percent of the Region, consist of disturbed areas for which soil survey data are not available and surface water.

Source: U. S. Soil Conservation Service and SEWRPC.

SOIL SUITABILITY FOR MOUND SEWAGE DISPOSAL SYSTEMS IN THE REGION BASED UPON PROPOSED ADMINISTRATIVE RULES (FINAL DRAFT RULES): FEBRUARY 1991

Rating	Square Miles	Percent of Region
Unsuitable	881	32.8
Undetermined	460	17.1
Suitable	1,145	42.6
Other ^a	203	7.5
Total	2,689	100.0

⁸Includes disturbed areas for which no soil survey data are available and surface water.

Source: SEWRPC.

very similar to the area identified as having severe limitations for residential development with public sanitary sewer service.

The technology of onsite sewage disposal systems may be expected to continue to change and administrative rules governing onsite sewage disposal systems are also subject to change. Accordingly, the suitability of soils for onsite sewage disposal systems needs to be reevaluated from time to time. Soil and site criteria for alternative onsite sewage disposal systems have been under systematic study and development since Chapter ILHR 83 was adopted in 1985. Criteria developed under the research activities of the Small Scale Waste Management Project of the University of Wisconsin-Madison and University of Wisconsin-Extension have been incorporated into proposed new rules for alternative onsite disposal systems. The suitability of soils in the Region for mound sewage disposal systems based upon final draft rules under consideration in February 1991 is shown on Map 27. Under the proposed rules, the area of the Region covered by soils classified as unsuitable for mound systems would decrease from 911 square miles to 881 square miles; the area covered by soils classified as suitable would increase from 1,014 square miles to 1,145 square miles; and the area covered by soils of undetermined suitability would decrease from 561 square miles to 460 square miles (see Table 45).

The decreasing importance of soil limitations as a constraint on urban development utilizing onsite sewage disposal systems, as a result of technological change and changes in regulatory practice, has important implications for regional settlement patterns insofar as it enables the proliferation of scattered urban development in rural areas. Such scattered development will contribute to the destruction of the natural resource base, disrupt local farming economies. and result in incomplete neighborhoods which are difficult to provide with basic urban services and facilities. Public and private costs of accommodating unsewered development in marginal areas will also be affected. Initially, higher costs will be associated with the design and installation of the required alternative onsite sewage disposal systems and construction of supporting roadways and other public improvements in areas which are not well suited for such uses. Over time, higher costs will also be associated with the correction of costly problems, such as drainage and flood control and water pollution resulting from failure of the onsite systems, and with the provision of urban facilities and services over broad areas within which scattered urban development may have been permitted to occur on small areas of suitable soils.

Soil-related criteria for commercial and industrial land uses and for transportation route location have remained essentially unchanged since publication of SEWRPC Planning Report No. 8. Accordingly, that publication and the detailed soil survey reports and maps should be referred to for information on soil interpretations for those land uses.

WATER RESOURCES

Surface water resources, consisting of lakes, streams, and associated floodlands, form the most important single element of the natural resource base of the Region. Their contribution to the economic development, recreational activity, and aesthetic quality of the Region is immeasurable. The groundwater resources of southeastern Wisconsin are closely interrelated with the surface water resources inasmuch as they sustain lake levels and provide the base flow of streams. The groundwater resources, along with Lake Michigan, constitute the major sources of supply for domestic, municipal, and industrial water users.

MAJOR LAKES IN THE REGION BY COUNTY

		Major Lakes	a		
		Surface Area			
County	Number ^b	Acres	Percent of Region		
Kenosha	17	3,414	9.4		
Milwaukee					
Ozaukee	3	358	1.0		
Racine	11	3,516	9.6		
Walworth	27	12,597	34.5		
Washington	14	2.634	7.2		
Waukesha	33	13,998	38.3		
Region	101	36,517	100.0		

^aA major lake is defined as one having 50 acres or more of surface water.

^bThere are 101 major lakes in the Region. Four of these lakes lie in more than one county in the Region, including Benedict Lake and Powers Lake, which lie in Kenosha and Walworth Counties; Lake Denoon, which lies in Racine and Waukesha Counties; and Lake Five, which lies in Washington and Waukesha Counties. The number of lakes as reported by county in this table, therefore, adds up to more than 101.

Source: Wisconsin Department of Natural Resources and SEWRPC.

Surface Water Resources

Lakes and streams constitute an extremely valuable part of the natural resource base of southeastern Wisconsin. Inasmuch as they are focal points for water-related recreational activities popular with the inhabitants of the Region. they provide extremely attractive sites for properly planned residential development, and when viewed in the context of open space areas, they greatly enhance the aesthetic aspects of the environment. While highly valued by the urban and rural populations of the Region, lakes and streams are extremely susceptible to deterioration through the activities of those very populations. Water quality can degenerate as a result of excessive nutrient loads from malfunctioning or improperly placed septic tank systems, inadequate operation of sewage treatment facilities, careless agricultural practices, and inadequate soil conservation practices, including failure to control construction site erosion. Lakes and streams are also adversely affected by the excessive development of lacustrine and riverine areas in combination with the filling of peripheral wetlands, which removes valuable nutrient and sediment traps while adding nutrient and sediment sources. The regional surface water resources must be properly managed and land uses carefully adjusted to achieve a reasonable balance between public and private use and enjoyment of those surface water resources.

Lakes: Major inland lakes are defined herein as those having 50 acres or more of surface water area, a size capable of supporting reasonable recreational use with relatively little degradation of the resource. There are 101 such major inland lakes within the Region, the location and relative sizes of which are shown on Map 21.⁶ A tabular summary, by county, of the major lakes of southeastern Wisconsin is presented in Table 46. The table indicates that major lakes in the Region have a combined surface water area of about 36,500 acres, or about 2 percent of the area of the Region. The number of major inland lakes per county ranges from none in Milwaukee County to 33 in Waukesha County; the combined surface water areas of the major lakes per county ranges from none in Milwaukee County to about 14,000 acres in Waukesha County. Lake Geneva is by far the largest inland lake in southeastern Wisconsin, with a surface area of 5.262 acres, more than twice as large as Pewaukee Lake, which, with an area of 2,493 acres, is the second largest inland lake in the Region.

⁶It should be noted that SEWRPC Planning Report No. 25 reported the existence of 100 major lakes in the Region. Since the previous inventory, East Lake Flowage has been created as a major lake through an impoundment effort in the Bong State Recreation Area in the Town of Brighton, and an unnamed major lake has been created from an abandoned quarry in the Village of Pleasant Prairie. West Bend Pond in Washington County, classified as a major lake in the previous inventory, is no longer a major lake due to the removal in 1987 of the dam which formed the pond. In addition, the classification of two other lakes has been changed on the basis of revised inventory data. Previously classified as a minor lake, Lac du Cours in Ozaukee County is now classified as a major lake on the basis of a revised area measurement of 56 acres. Previously classified as a major lake, Saylesville Mill Pond in Waukesha County is no longer classified as a major lake, on the basis of a revised area measurement of 45 acres.

Map 26

SUITABILITY OF SOILS FOR MOUND SEWAGE DISPOSAL SYSTEMS UNDER CURRENT ADMINISTRATIVE RULES: FEBRUARY 1991



ILLINOIS

About 911 square miles, or about 34 percent of the total area of the Region, are covered by soils unsuitable for the most common type of alternative onsite sewage disposal system, the mound system; about 1,014 square miles, or about 37 percent, are covered by soils suitable for this type of system; and about 561 square miles, or about 21 percent, are covered by soils requiring more detailed field investigation for suitability determination. The emergence of the mound sewage disposal system and other alternative onsite sewage disposal systems has opened substantial additional areas of the Region to urban development without centralized sanitary sewerage service, substantially diminishing the importance of soil limitations as a constraint on scattered urban development. Source: U. S. Soil Conservation Service and SEWRPC.

Map 27

SUITABILITY OF SOILS FOR MOUND SEWAGE DISPOSAL SYSTEMS UNDER PROPOSED ADMINISTRATIVE RULES (FINAL DRAFT RULES): FEBRUARY 1991



Based upon state administrative rules under consideration in 1991, even larger areas of the Region would be able to be developed utilizing mound systems and other types of alternative onsite sewage disposal systems, thus encouraging further proliferation of urban development in rural areas of the Region. Under the proposed rules, the area of the Region covered by soils unsuitable for mound systems would decrease from 911 to 881 square miles; the area covered by soils suitable would increase from 1,014 to 1,145 square miles; and the area covered by soils requiring more detailed field investigation for suitability determination would decrease from 561 to 460 square miles. *Source: U. S. Soil Conservation Service and SEWRPC.*

In addition to the major lakes, there are numerous "minor" lakes and ponds in the Region encompassing less than 50 acres of surface water area. These smaller lakes generally have few riparian owners and only marginal fisheries. In most cases, the primary values of the minor lakes are aesthetic. Minor lakes are fragile, and their ecological and aesthetic values may be lost with any degree of improper shoreland development.

The inland lakes of southeastern Wisconsin are almost exclusively of glacial origin, formed by depressions in outwash deposits, terminal and interlobate moraines, and ground moraines. Some lakes, such as Green Lake in northeastern Washington County or Browns Lake in southwestern Racine County, owe their origins to kettles, that is, depressions formed in the glacial drift as a result of the melting of ice blocks that became separated from the melting continental ice sheet, and of the subsequent subsidence of sand and gravel contained on and within those blocks. By virtue of their origin, glacially formed lakes are fairly regular in shape, with their deepest points located predictably near the center of the basin, or near the center of each of several connected basins. The beaches are characteristically gravel or sand on the windswept north, east, and south shores, while fine sediments and encroaching vegetation are common on the protected west shores and in the bays.

The value of lakes for recreational purposes, as desirable locations for lake-oriented development, and as aesthetic assets is dependent, in part, upon the water quality and upon the biological communities which reside in the lakes. Historically, lake areas in the Region have attracted urban development, providing a desirable setting for residential development in particular. Because of human activities, however, many lakes in southeastern Wisconsin face water quality-related problems which limit the use of the lakes by humans and which prevent the establishment of certain desirable fish and other forms of aquatic life. Essentially all major lakes in southeastern Wisconsin show some signs of accelerated eutrophication, or nutrient enrichment. The new regional land use plan should emphasize sound urban and rural development in lake areas to avoid further water quality degradation and to enhance the recreational and aesthetic values of the areas and of the lakes concerned.

A lake classification index which may be used to characterize the overall water quality of a lake was developed at the University of Wisconsin, and applied to 65 major lakes in southeastern Wisconsin in 1975.⁷ To determine the index rating, points were assigned to each lake based upon the known severity of dissolved oxygen problems, reduced water clarity, fish kills, and excessive aquatic rooted weed and algae growths. Table 47 summarizes the lake classification index ratings assigned to the lakes in southeastern Wisconsin. Of the 65 lakes, 48 lakes, or 74 percent, had low dissolved oxygen levels; 10, or 15 percent, had low water clarity; 18, or 28 percent, experienced at least occasional fish kills; and 23, or 35 percent, supported excessive weed or algae growths which impaired recreational uses. Eight, or 12 percent of the lakes, were classified as oligotrophic, having little nutrient enrichment. Thirty-seven lakes, or 57 percent, were classified as mesotrophic, or moderately nutrient enriched; eight lakes, or 12 percent, as eutrophic, or highly nutrient enriched; and 12 lakes, or 19 percent, as very eutrophic, or very highly nutrient enriched.

Water chemistry data can be compared to established water quality standards to determine the ability of a lake to support desired recreational uses and aquatic life. Of the 49 major lakes for which water chemistry data were available in 1979, water quality standards were violated in 39 lakes, or 80 percent.⁸ The dissolved oxygen and phosphorus standards were most frequently violated. Since the completion of the regional water quality management plan in 1979, the water quality of some lakes has declined further, usually due to the effects of urban development. The water quality of other lakes has improved, however, due to the implementation of nonpoint source water pollution control measures in some areas and to the elimination of malfunctioning septic tank systems, through the provision of sanitary sewer service.

⁸SEWRPC Planning Report No. 30, <u>A Regional</u> Water Quality Management Plan for Southeastern Wisconsin: 2000, Volume Two, <u>Alternative</u> <u>Plans</u>, 1979.

⁷P. D. Uttormark and J. P. Wall, <u>Lake Classification—A Trophic Characterization of Wiscon-</u> sin Lakes, EPA-660/3-75-033, June 1975.

LAKE CLASSIFICATION INDEX RATINGS OF SELECTED LAKES IN SOUTHEASTERN WISCONSIN

		N	loderate or So Relate	evere Wat d Problem	er Quali s	ty		
Watershed	Major Lake Name	County	Low Dissolved Oxygen	Low Water Clarity	Fish Kills	Excessive Weed/Algal Growth	Lake Classification Index ^a	Category
Des Plaines	Benet-Shangrila	Kenosha	Yes	No	Yes	Yes	13	Very eutrophic
Des Plaines	Paddock	Kenosha	Yes	No	No	No	9	Mesotrophic
Fox	Beulah	Walworth	Yes	No	No	No	7	Mesotrophic
Fox	Big Muskego	Waukesha	Yes	No	No	No	12	Eutrophic
Fox	Bohner	Racine	Yes	No	No	No	6	Mesotrophic
Fox	Booth	Walworth	Yes	No	No	No	6	Mesotrophic
Fox	Browns	Racine	Yes	No	No	Yes	8	Mesotrophic
Fox	Buena	Racine	No	No	No	Yes	6	Mesotrophic
Fox	Camp	Kenosha	Yes	NO	Yes	Yes	14	Very eutrophic
Fox	Como	Walworth	Ves	No	Vec	Vec	13	Very eutrophic
Fox	Denoon	Waukesha	Yes	No	No	No	8	Mesotrophic
Fox	Eagle	Racine	Yes	Yes	Yes	Yes	20	Very eutrophic
Fox	Eagle Spring	Waukesha	No	No	No	Yes	5	Mesotrophic
Fox	Echo	Racine	No	Yes	No	No	× 6	Mesotrophic
Fox	Elizabeth	Kenosha	Yes	No	No	No	6	Mesotrophic
Fox	Geneva	Walworth	No	No	No	No	5	Mesotrophic
Fox	Green	Walworth	Yes	No	No	Yes	9	Mesotrophic
Fox	Little Muskego	Waukesha	Yes	No	No	Yes	12	Eutrophic
Fox	Long	Racine	Yes	Yes	Yes	Yes	17	Very eutrophic
Fox	Lower Phantom	Waukesha	Yes	No	No	Yes	9	Mesotrophic
Fox	Mary	Kenosha	Yes	No	No	No	8	Mesotrophic
Fox	Middle	Walworth	Yes	No	No	No		Mesotrophic
FOX	North	Walworth	Yes	NO	NO	Yes	8 12	Mesotrophic
Fox	Pell	Walworth	Ves	No -	Vec	No	12	Futrophic
Fox	Pewaukee	Waukesha	Ves	No	No	Vee	15	Very eutrophic
Fox	Pleasant	Walworth	Yes	No	No	No	4	Oligotrophic
Fox	Potters	Walworth	Yes	No	No	Yes	12	Eutrophic
Fox	Powers	Kenosha	No	Yes	Yes	Yes	8	Mesotrophic
Fox	Silver	Kenosha	No	Yes	Yes	Yes	8	Mesotrophic
Fox	Spring	Waukesha	Yes	No	No	No	4	Oligotrophic
Fox	Tichigan	Racine	Yes	No	Yes	Yes	21	Very eutrophic
Fox	Upper Phantom	Waukesha	Yes	No	No	No	6	Mesotrophic
Fox	Wandawega	Walworth	Yes	No	No	No	13	Very eutrophic
Fox	Waubeesee	Racine	Yes	No	No	No	7	Mesotrophic
Fox	Wind	Racine	Yes	No	No	No		Mesotrophic
Milwaukee	Big Cedar	Washington	NO	NO	NO	NO	5	Mesotrophic
Mihwaukee		Vashington	Yes	NO No	Voc	NO	10	Futrenhie
Milwaukee	Silver	Washington	No	No	No	No	10	Oligotrophic
Bock	Beaver	Waukesha	Ves	No	No	No	7	Mesotrophic
Rock	Comus	Walworth	Yes	Yes	Yes	Yes	15	Very eutrophic
Rock	Delavan	Walworth	Yes	No	Yes	Yes	14	Very eutrophic
Rock	Druid	Washington	No	No	No	No	6	Mesotrophic
Rock	Five	Washington	Yes	No	Yes	Yes	12	Eutrophic
Rock	Friess	Washington	No	No	No	No	3	Oligotrophic
Rock	Golden	Waukesha	No	Yes	Yes	No	8	Mesotrophic
Rock	Keesus	Waukesha	No	Yes	Yes	No	8	Mesotrophic
Rock	Lac La Belle	Waukesha	No	Yes	Yes	No	10	Eutrophic
Rock	Loraine	Walworth	Yes	No	Yes	No	12	Eutrophic
HOCK	Lower Nemahbin	Waukesha	Yes	No	No	No	5	Mesotrophic

Table 47 (continued)

		M	oderate or Se Relate	ty				
Watershed	Major Watershed Lake Name		Low Dissolved Oxygen	Low Water Fish Clarity Kills		Excessive Weed/Algal Growth	Lake Classification Index ^a	Category
Rock	Middle Genesee	Waukesha	No	No	No	No	3	Oligotrophic
Rock	Nagawicka	Waukesha	Yes	No	No	Yes	13	Very eutrophic
Rock	North	Waukesha	Yes	No	No	No	5	Mesotrophic
Rock	Oconomowoc	Waukesha	Yes	No	No	Yes	8	Mesotrophic
Rock	Okauchee	Waukesha	No	No	No	No	4	Oligotrophic
Rock	Pike	Washington	No	No	No	No	3	Oligotrophic
Rock	Pine	Waukesha	Yes	No	No	No	7	Mesotrophic
Rock	Silver	Waukesha	Yes	No	No	No	5	Mesotrophic
Rock	Tripp	Walworth	No	Yes	No	No	6	Mesotrophic
Rock	Turtle	Walworth	Yes	No	No	No	5	Mesotrophic
Rock	Upper Nashotah	Waukesha	Yes	No	No	No	4	Oligotrophic
Rock	Upper Nemahbin	Waukesha	Yes	No	No	No	7	Mesotrophic
Rock	Whitewater	Walworth	Yes	No	No	No	7	Mesotrophic

^aLCI Trophic Classification:

0-1 Very oligotrophic 2-4 Oligotrophic 4-9 Mesotrophic 10-12 Eutrophic 13-21 Very eutrophic

Source: P. D. Uttormark and J. P. Wall, Lake Classification—A Trophic Characterization of Wisconsin Lakes, EPA-660/3-75-033, June 1975.

Streams: As already noted and as shown on Map 21, the surface drainage system of southeastern Wisconsin may be viewed as existing within 11 individual watersheds. Five of these, the Root River, Menomonee River, Kinnickinnic River, Oak Creek, and Pike River watersheds, are contained entirely within the Region. In addition to the 11 watersheds, numerous small catchment areas immediately adjacent to the Lake Michigan shoreline drain directly to the Lake via local natural streams and artificial drainageways; these tributary areas together may be considered to comprise a twelfth watershed. The Region contains only a very small part of the Wisconsin portion of the large Rock River watershed; the streams of that watershed within the Region are limited to the headwater portions of such tributaries to the Rock as the Bark and Oconomowoc Rivers and Turtle Creek.

Three of the 12 watersheds contained wholly or partly in southeastern Wisconsin, the Fox, Rock, and Des Plaines River watersheds, with a

combined area of 1,680 square miles, or 62 percent of the area of the Region, lie west of the subcontinental divide. As a result, the rivers and streams within these catchment areas flow in a generally southerly and southwesterly direction and are a part of the Mississippi River drainage system. The rivers and streams in the nine watersheds comprising the remainder of southeastern Wisconsin, with a combined area of 1,009 square miles, or 38 percent of the area of the Region, flow in a generally southerly and easterly direction and discharge into Lake Michigan and are a part of the Great Lakes-St. Lawrence River drainage system. A summary of certain characteristics of the watersheds within southeastern Wisconsin is presented in Table 48, and a graphical representation of the range of watershed sizes is shown in Figure 28.

One of the most interesting, variable, and occasionally unpredictable features of each watershed is the ever changing, sometimes widely fluctuating, discharges and stages of its

WATERSHEDS IN THE REGION BY COUNTY

							С	ounty								
	Ke	nosha	Mils	waukee	Oz	aukee	R	acine	Wa	lworth	Was	hington	Wa	ukesha	Total	
Watershed ^{a,b}	Area (square miles)	Percent of Watershed	Area Within Region (square miles)	Percent of Region												
Fox River ^{d,f}	96.06	10.28	0.26	0.03			164.78	17.63	337.06	36.06	0.25	0.02	336.30	35.98	934 71	34 76
Rock River ^d					2.2	2.2			239.43	39.21	177.65	29.10	193.51	31.69	610.59	22.71
Milwaukee River ^{0,f}			57.90	13.31	151.25	34.78					225.80	51.91		(= (= (434.95	16.17
Root River ^{C, e, f}	1.99	1.02	57.75	29.47	24	- 24 ⁻ 1	123.16	62.85		2.21			13.06	6.66	195.96	7.29
Menomonee River, c,e,f			56.34	40.92	11.63	8.45					31.98	23.22	37.74	27.41	137.69	5.12
Des Plaines River ^d	123.53	91.82	14121	•••			11.00	8.18	100		22	212	02	144	134.53	5.00
Lake Michigan ^{C, e}	27.23	29.42	18.32	19.79	27.28	29.48	19.72	21.31		(4.40)					92.55	3.44
Pike River ^{C, e, f}	29.59	57.55					21.83	42.45	1.10				·		51.42	1.91
Sauk Creek ^e ,		1.20			34.09	100.00						**			34.09	1.27
Oak Creek ^{C, 0,1}	1232	100	27.74	100.00		22	1.00	1.1.1	122	443	121231	55	- 21	10210	27.74	1.03
Kinnickinnic River ^{C, e,1}			24.17	100.00											24.17	0.90
Sheboygan River ^e			0.000		10.84	100.00				••	•••				10.84	0.40
Total	278.40	10.35	242.48	9.02	235.09	8.74	340.49	12.66	576.49	21.44	435.68	16.20	580.61	21.59	2,689.24	100.00

NOTE: Watershed areas are approximations based upon aggregations of U.S. Public Land Survey quarter sections.

^aIncludes only that area of each watershed that lies within the Southeastern Wisconsin Region.

^bWatersheds are listed in order of decreasing size within the Region.

^cIndicates watershed wholly contained within the Region.

d Indicates watershed west of the subcontinental divide that is tributary to the Mississippi River basin. Three watersheds having a combined area of about 1,680 square miles, or about 62 percent of the Region, are in this category.

^eIndicates watershed east of the subcontinental divide that is tributary to the Great Lakes-St. Lawrence River basin. Nine watersheds having a combined area of about 1,009 square miles, or about 38 percent of the Region are in this category.

findicates watershed for which comprehensive watershed plan has been prepared and adopted by the Regional Planning Commission.

Source: SEWRPC.

stream system. The stream systems of the Region generally receive a relatively uniform flow of groundwater from the shallow aquifer underlying the Region. This groundwater discharge constitutes the base flow of the streams. The streams also periodically intercept surface water runoff from rainfall and snowmelt, which is superimposed on the base flow and sometimes causes the streams to leave their channels and occupy the adjacent floodlands. The volume of water drained annually from southeastern Wisconsin by the stream system is equivalent to seven to eight inches of water spread over the seven-county Region, and amounts to about onefourth of the average annual precipitation.

Major streams are defined herein as perennial streams which maintain, at a minimum, a small, continuous flow throughout the year except under unusual drought conditions. Within the Region, there are approximately 1,148 miles of such major streams, as summarized by county in Table 49. The length of major streams per county ranges from a low of 101 lineal miles in Racine County to a high of 333 lineal miles in Waukesha County. The latter county also has the largest number of major lakes, and is therefore particularly well endowed with surface water resources.

Figure 28

SIZE AND DISTRIBUTION OF WATERSHEDS IN THE REGION BY COUNTY



MAJOR STREAMS IN THE REGION BY COUNTY

	Major Streams ^a						
County	Total Length (miles)	Percent of Region					
Kenosha	106.40	9.3					
Milwaukee	102.99	9.0					
Ozaukee	112.20	9.8					
Racine	100.55	8.7					
Walworth	173.00	15.1					
Washington	219.80	19.1					
Waukesha	333.30	29.0					
Region	1,148.24	100.0					

^aA major stream is defined as one which maintains, at a minimum, a small, continuous flow throughout the year except for unusual drought conditions.

Source: SEWRPC.

Riverine areas of southeastern Wisconsin, like the lacustrine areas, have historically attracted intensive urban development. Such intensive development along with certain unsound urban and rural land management practices have resulted in deteriorated water quality, limiting the use of many stream reaches by humans and constraining further development activity. A number of important steps have been taken to address existing water quality problems, including the preparation of a regional water quality management plan, the preparation of management plan for the Milwaukee harbor estuary, and the preparation of nonpoint source pollution abatement plans for the Milwaukee River watershed and certain other watersheds in the Region. Implementation of these plans may be expected to result in a gradual improvement of water quality in many stream reaches. Improvements in water quality may, in turn, be expected to enhance aesthetic values and increase the recreational use of streams in both urban and rural areas of the Region. Importantly, the improvement of water quality may stimulate economic development, including, potentially, the renewal of older urban riverfront areas.

<u>Water Quality Trends</u>: The water quality conditions of streams and the long-term trends in such conditions were analyzed by the Regional Planning Commission from data obtained at 87 sampling stations located at strategic points on the stream networks of the 12 major watersheds of the Region and available for the period from 1964 through 1975.⁹ A benchmark stream water quality study was conducted by the Commission in 1964 and 1965, and a continued monitoring effort took place over the 1964 to 1975 decade. The majority of the water samples were collected under summer, low-flow, conditions. These data were analyzed to determine the extent to which past pollution abatement programs have been successful in improving water quality conditions.

The 459 miles of perennial streams in the Region for which water quality data were available, which represent 40 percent of the total of 1,148 perennial stream miles in the Region, showed a decline in the achievement of water quality standards under summer low-flow conditions during the period of 1964 to 1975. About 35 percent of the total stream miles sampled in 1964 met adopted Wisconsin Department of Natural Resources standards. By 1975, only 19 percent of the stream miles met the standards. The results of the water quality trends analysis are summarized below for each watershed.

Des Plaines River Watershed: In the Des Plaines River watershed, surface water quality conditions were found to be essentially unchanged over the 1964 to 1975 decade. In 1975, the water quality of the Des Plaines River and Brighton Creek did not meet the water quality standards set by the Wisconsin Department of Natural Resources for dissolved oxygen and fecal coliform bacteria. In addition, total phosphorus concentrations were found to be higher than the recommended level adopted by the Commission.

Fox River Watershed: In the Fox River (Illinois) watershed, surface water quality conditions were found to improve slightly over the 1964 to 1975 decade. However, established standards for dissolved oxygen, ammonia-nitrogen, and fecal coliform, and the recommended level for total phosphorus, were generally not met.

Kinnickinnic River Watershed: In the Kinnickinnic River watershed, surface water quality was found to be essentially unchanged over the decade. The applicable water quality standards as estab-

⁹SEWRPC Technical Report No. 17, <u>Water Quality of Lakes and Streams in Southeastern Wis-</u> consin: 1964-1975, 1978. lished by the Department for dissolved oxygen and fecal coliform counts were generally met.

Menomonee River Watershed: Although remaining generally constant over the decade, the water quality of the Menomonee River upstream from the confluence with Honey Creek, intended for recreational use and the maintenance of warmwater fish and other aquatic life, did not meet the established water quality standards for fecal coliform, dissolved oxygen, and ammonianitrogen, nor the recommended level for total phosphorus in 1975. The water quality of Honey Creek and Underwood Creek tributaries also showed no significant change over the decade. Both streams exhibited violations of fecal coliform standard.

<u>Milwaukee River Watershed</u>: The water quality of the Milwaukee River and its major tributaries between 1964 and 1975 indicated a slightly degraded water quality condition. The 1975 water quality data indicated frequent violations of the dissolved oxygen and fecal coliform standards. In addition, total phosphorus levels were generally found to be significantly higher than the level recommended by the Commission.

Minor Streams Directly Tributary to Lake Michigan: The largest of the minor streams draining directly to Lake Michigan include Barnes Creek, Pike Creek, and Sucker Creek. In the Barnes Creek subwatershed, water quality conditions were found to be essentially unchanged over the decade. The 1975 water quality conditions in the Creek met the applicable water quality standards.

In the Pike Creek subwatershed, the observed dissolved oxygen levels indicated essentially unchanged water quality conditions over the past decade; however, fecal coliform counts and chloride levels showed slight decreases. Standards were not met with respect to fecal coliform and dissolved oxygen in 1975. In addition, total phosphorus concentrations were in violation of the Commission's recommended standard.

Improvements were noted at the sampling station in the Sucker Creek subwatershed for dissolved oxygen and chloride levels. Fecal coliform levels, however, were found to have increased, and phosphorus levels remained in excess of the recommended level. Sucker Creek exhibited standard violations in 1975 with respect to fecal coliform, dissolved oxygen, and total phosphorus. <u>Oak Creek Watershed</u>: In the Oak Creek watershed, surface water quality conditions were found to have slightly degraded over the decade for all parameters except fecal coliform levels, which were somewhat improved. The total phosphorus levels observed during the 1975 sampling period were found to be in excess of the recommended level; the dissolved oxygen, ammonia-nitrogen, and fecal coliform levels did not meet the applicable water quality standards.

<u>Pike River Watershed</u>: Dissolved oxygen, fecal coliform, and chloride levels in the Pike River improved slightly over the decade. The main stem of the Pike River, however, continued to exceed the standards for dissolved oxygen, ammonia-nitrogen, and fecal coliform, as well as the recommended level for total phosphorus in 1975.

Rock River Watershed: The Bark and Ashippun Rivers showed no significant change in water quality conditions over the decade. No significant change was observed in the water quality of the Rubicon River except at the sampling station located downstream from the City of Hartford sewage treatment plant, where sewage treatment plant improvements completed in the summer of 1973 were reflected in improved dissolved oxygen levels in 1975. Water quality conditions in the Oconomowoc River showed no change except at the sampling station located downstream from the City of Oconomowoc's sewage treatment plant, where increased loadings from the plant were reflected in decreased water quality conditions. Whitewater Creek showed a slight improvement in fecal coliform levels over the decade. The water quality of Jackson Creek and Turtle Creek exhibited some degradation over the decade as measured at the sampling stations located downstream from the City of Elkhorn and the City of Delavan sewage treatment plants. In general, the water quality of the Rock River tributaries lying within the Region did not meet the water quality standards for dissolved oxygen and fecal coliform, or the recommended level for total phosphorus.

Root River Watershed: Fecal coliform levels within the middle reaches of the Root River watershed exhibited improvement in 1975 as the result of abandonment of four sewage treatment facilities previously discharging to the streams of the watershed. In the upper reaches of the Root River, however, chloride levels increased and dissolved oxygen levels decreased, presumably due to increased urbanization of the tributary drainage area. The improved wastewater management practices instituted at the Cooper-Dixon Duck Farms were reflected in improved water quality conditions in the Root River Canal in 1975. Despite these improvements, the water quality conditions of the streams of the Root River watershed did not meet the applicable water quality standards for dissolved oxygen, ammonia-nitrogen, and fecal coliform, while the total phosphorus levels in all the streams were also found to be higher than the recommended level.

<u>Sauk Creek Watershed</u>: A slight decline in dissolved oxygen levels in Sauk Creek over the decade, and generally stable levels of chloride, phosphorus, and fecal coliform indicated relatively stable overall water quality conditions within the watershed. However, the water quality standards for dissolved oxygen, ammonia-nitrogen, and fecal coliform, and the recommended level for total phosphorus, were not met within the watershed in 1975.

Sheboygan River Watershed: Water quality conditions in Belgium Creek in the Sheboygan River watershed remained essentially unchanged over the decade. The fecal coliform standard was frequently violated in Belgium Creek.

Index Site Sampling Program: A mathematical water quality simulation model was used in the regional water quality management planning program to help assess existing water quality conditions during all seasons of the year, rather than only during summer, and under both dryweather and wet-weather flow conditions. The model was also used to evaluate anticipated water quality conditions under alternative water pollution abatement programs. Because the model included mathematical approximations of complex natural phenomena, before it could be used to reliably simulate water quality conditions it was necessary to calibrate the model by comparing simulation results to measured data and by making the necessary adjustments in the model parameters. The model was calibrated using data collected during the Commission's water quality index site sampling program undertaken by the Wisconsin Department of Natural Resources under contract to the Commission.

Under the program, approximately 30 samples were collected at each of 36 stations and analyzed for 15 water quality indicators. The sampling was conducted during both dryweather and wet-weather periods. The samples were collected over the period of September 1976 through April 1977.

The water quality simulation modeling conducted under existing conditions and calibrated against the index site sampling data indicated that water quality standard violations may be expected to be widespread in the Region during all seasons, and under both dry-weather and wetweather conditions. As summarized in Table 50, most watersheds may be expected to violate applicable dissolved oxygen, fecal coliform, and phosphorus standards. Three watersheds, the Menomonee and Rock Rivers and Oak Creek, and may occasionally experience violations of the un-ionized ammonia-nitrogen standard, and portions of the Menomonee River may occasionally violate the temperature standard.

<u>Milwaukee Harbor Estuary Study</u>: In 1982, the Commission, in cooperation with the Wisconsin Department of Natural Resources, the Milwaukee Metropolitan Sewerage District, and the U. S. Geological Survey, undertook a major effort to develop a sound and workable plan for the abatement of water pollution within the Milwaukee Harbor estuary.¹⁰ The estuary consists of the estuarine portions of the Milwaukee, Menomonee, and Kinnickinnic Rivers, and the Milwaukee outer harbor within Lake Michigan.

An intensive monitoring program was carried out from 1981 through 1983 to provide the data needed to develop and evaluate the means of abating the complex water quality problems within the estuary. The surface water quality monitoring program for the estuary consisted of a weekly and monthly baseline sampling program throughout the year, intensive sampling of stormwater runoff events, continuous automatic water quality monitoring, sampling of runoff from estuary direct drainage areas, and reconnaissance sampling of toxic metals and organic substances. In all, a total of 10,310 baseline and storm event runoff samples were collected and

¹⁰SEWRPC Planning Report No. 37, <u>A Water</u> <u>Resources Management Plan for the Milwaukee</u> <u>Harbor Estuary</u>, Volume One, <u>Inventory Findings</u>, March 1987; and Volume Two, <u>Alternative</u> and Recommended Plans, December 1987.

ESTIMATED VIOLATION OF WATER QUALITY STANDARDS UNDER EXISTING CONDITIONS: 1976^a

		Water Qu	uality Standard	s Violated	
Watershed	Temperature	Dissolved Oxygen	Fecal Coliform	Un-ionized Ammonia Nitrogen	Phosphorus
Des Plaines River		x	×		x
Fox River	. -	x	×		x
Kinnickinnic River			×		NAb
Menomonee River	x	×	×	×	NA ^b
Milwaukee River		x	×		x
Minor Streams Tributary to Lake Michigan		x	x	_ *	
Oak Creek			×	x	x
Pike River	,	x	×		x
Rock River		X	×	x	x
Root River		x	×		X
Sauk Creek			x		
Sheboygan River					x

^aBased on mathematical water quality modeling conducted under the regional water quality management planning program.

^bNot Applicable. The Menomonee and Kinnickinnic Rivers were not required to meet the phosphorus standard, which supports full recreational use, because these streams were recommended for only limited recreational uses.

Source: SEWRPC.

analyzed over a three-year period at 34 sampling stations. Biological and sediment data were also collected. This sampling program was by far the most intensive water quality sampling program ever undertaken in southeastern Wisconsin.

Analysis of the water quality data collected indicated that the recommended water use objectives and supporting water quality standards were not fully met in any portion of the estuary. The standards violated and the severity of those violations in each reach of the estuary are shown graphically on Map 28. Critical low dissolved oxygen levels were most often associated with summer low-flow and hightemperature conditions while other water quality standard violations were most severe during storm events. The primary sources of pollution to the estuary are combined sewer overflows, nonpoint sources of pollution, and discharges to the Milwaukee outer harbor from the Milwaukee Metropolitan Sewerage District Jones Island wastewater treatment plant.

<u>Floodlands</u>: The floodlands of a river or stream are the wide, gently sloping areas contiguous with, and usually lying on both sides of, a river or stream channel. Rivers and streams occupy Map 28





An intensive monitoring program was carried out from 1981 through 1983 in support of the preparation of a water resources management plan addressing the complex water quality problems in the Milwaukee Harbor estuary. Over 10,300 water quality samples were collected at 34 sampling stations. As shown on this map, the recommended water use objectives were not fully met in any portion of the estuary during the survey period. The primary sources of pollution to the estuary are combined sewer overflows, nonpoint sources of pollution, and discharges to the Milwaukee outer harbor from the Milwaukee Metropolitan Sewerage District Jones Island wastewater treatment plant.

Source: SEWRPC.

their channels most of the time. However, during even minor flood events, stream discharges increase so markedly that the channel is not able to convey all the flow. As a result, stages increase and the river or stream spreads laterally over the floodlands. The periodic flow of a river onto its floodlands is a normal phenomenon, and in the absence of major, costly structural flood control works, will occur regardless of whether or not urban development occurs on the floodlands. The frequency and extent of such flooding is, however, increased when urban development is permitted to intrude into the natural floodplains. Such development and the attendant filling eliminates floodwater storage and conveyance capacity and thereby increases downstream flood flows and stages and increases upstream flood stages. This creates serious and costly problems of flood damage and may endanger the public health and safety.

For planning and regulatory purposes, floodlands are normally defined as the areas, excluding stream channels and lake beds, subject to inundation by the 100-year recurrence interval flood event. This is the event that would be reached or exceeded in severity once on the average of every 100 years. Stated another way, there is a 1 percent chance that this event will be reached or exceeded in severity in any given year. Commission studies indicate that about 6 to 10 percent of the total land area of any given watershed will be within the 100-year floodlands of the Region's rivers and streams. Obviously, the 100-year recurrence interval floodland contains within its boundaries the areas inundated by floods of less severe but more frequent occurrence, such as the 50-, 10-, and five-year recurrence interval events.

Flood hazard data for the numerous streams of the Southeastern Wisconsin Region, and particularly data on the limits of the natural floodlands of the streams for a flood of a specified recurrence interval, are important inputs to the regional planning process. Due to the importance of floodland data, the Commission, as an integral part of its comprehensive watershed studies, provides definitive data, including a delineation of the limits of the floodplains on the 10- and 100-year recurrence interval floods for most of the perennial streams in each watershed.

In addition to data developed by the Commission, flood hazard data have also been developed within the Region by the Federal Emergency Management Agency (FEMA). Under the National Flood Insurance Act of 1968, the Agency was given authority to conduct studies to determine the location and extent of floodlands and the monetary damage risks related to the insurance of urban development in floodland areas. FEMA is proceeding with the conduct of such studies on a community-by-community basis throughout the United States. In areas where detailed flood hazard data already exist, such as the data developed by the Commission, the federal studies utilize the existing data. The federal studies may also include the development of flood hazard data for small, previously unstudied tributaries. In areas where no flood hazard data exist, the federal studies develop the data necessary for the delineation of flood hazard areas. The Commission supports these studies through the sharing of basic floodland data already developed by the Commission under its comprehensive watershed studies.

The Commission has completed comprehensive watershed studies for the Fox, Kinnickinnic, Menomonee, Milwaukee, Pike, and Root River and Oak Creek watersheds, resulting in the delineation of floodlands for about 699 miles of major stream channel, not including stream channels in the Milwaukee River watershed lying outside of the Region in Sheboygan and Fond du Lac Counties. In addition, special Commission floodland management studies have resulted in the development of flood hazard data for about 44 additional miles of stream channel. The stream segments for which floodlands have been delineated by the Commission or by the Federal Emergency Management Agency are shown on Map 29. The 100-year recurrence interval floodlands thus identified by the Commission or by FEMA encompass a total area of nearly 250 square miles, representing about 9 percent of the total area of the Region.

Groundwater Resources

Groundwater resources constitute an extremely valuable element of the natural resource base of southeastern Wisconsin. The groundwater reservoir not only sustains lake levels and provides the base flow of the streams in the Region, but comprises a major source of water supply for domestic, municipal, and industrial water users. Like surface water, groundwater is susceptible to depletion in quantity and to deterioration in quality. An important consideration in land use and public facility development, therefore, is the protection of the quantity and quality of this valuable resource. The rock units within the Region differ widely in the yield of stored water. Rock units that supply water in useable amounts to pumping wells and important amounts to lakes and streams are called aquifers. The aquifers of southeastern Wisconsin extend to great depths. attaining a thickness in excess of 1,500 feet in the eastern portions of the Region. An enormous reservoir of groundwater, therefore, lies beneath the Region. Three major aquifers exist within the seven-county Region. From land's surface downward, they are: 1) the sand and gravel deposits in the glacial drift; 2) the shallow dolomite strata in the underlying bedrock; and 3) the deeper sandstone, dolomite, siltstone, and shale strata.

Because of their relative proximity to the land's surface, and because of the hydraulic interconnection, the first two aquifers are commonly referred to collectively as the "shallow aquifer," while the latter is referred to as the "deep aquifer." Wells tapping these aquifers are referred to as shallow or deep wells, respectively. The shallow and deep aquifers are separated by the Maguoketa shale, which forms a relatively impermeable barrier between the two aquifers. The spatial distribution of the unconsolidated surficial material and the thickness and orientation of the bedrock strata are depicted on Map 22 and Figure 27; lithologic descriptions of the surficial deposits and the bedrock are provided in Table 43.

Some water is recharged to the deep sandstone aquifer underlying the Region by vertical movement through wells open to both the shallow and deep aquifers and by slight vertical movement downward through the Maquoketa shale. The principal source of recharge to the deep aquifer, however, is precipitation percolating downward through glacial deposits into the deep aquifer which, as shown in Figure 27, is exposed beneath the glacial deposits within the Region only in the western one-half of Walworth County and the western one-quarter of Waukesha County. The deep aquifer recharge area within southeastern Wisconsin is a long narrow zone oriented in a generally north-south direction. It is bounded on the east by the Maquoketa shale and on the west by a groundwater divide, the separation between eastward and westward groundwater movements, located along the western edge of Waukesha and Walworth Counties. Groundwater in the deep aquifer beneath the Region moves in a generally easterly direction from the primary

western recharge areas toward Lake Michigan. Thus, most of the water withdrawn from the deep sandstone aquifer by communities and industries in the seven-county Region originally entered the aquifer via the Waukesha and Walworth County recharge areas.

Pumping from the confined sandstone aquifer has altered the potentiometric surface¹¹ of that aquifer over the past century. Prior to intensive pumpage from the aquifer, the movement of groundwater in the aquifer was generally from west to east, with the potentiometric surface being located just below the ground surface and in some instances actually above the ground surface as evidenced by reports of flowing or artesian wells. Since 1880, the original potentiometric surface of the sandstone aquifer has been markedly altered, primarily as a result of pumpage in the Cities of Milwaukee and Waukesha in the Region, as well as heavy groundwater use south of the Region in northeastern Illinois. Drawdowns of up to 350 feet have occurred in the Milwaukee-Waukesha area, while drawdowns in excess of 275 feet have occurred at the Wisconsin-Illinois line.

Whereas the primary source of recharge for the deep sandstone aquifer is located partly outside of southeastern Wisconsin, the shallow aguifer. composed of the glacial drift and interconnected dolomitic bedrock, is recharged locally by downward percolation of precipitation and surface water. In contrast to the deep aquifer, the direction of water movement in the shallow aquifer is much more variable and complex. Movement occurs from local recharge areas toward multiple points of discharge such as streams, lakes, marshes, and wells. Compared to the deep aquifer, the shallow aquifer is more susceptible to pollution by wastewater because it is nearer, both in terms of distance and time, to potential pollution sources, thus minimizing the potential for dilution, filtration, and other natural processes that tend to reduce the potential detrimental effects of pollutants.

The current quality of groundwater in both the shallow and deep aquifers throughout the Region is generally good, although localized

¹¹The potentiometric surface represents the static head of water in an aquifer as defined by the levels to which water will rise in wells penetrating the aquifer.

Map 29

FLOODLANDS IN THE REGION



Delineation of the floodlands of southeastern Wisconsin is extremely important for sound local, as well as regional, planning and development. The above map summarizes the status of floodland data in the Region as of the end of 1989. The 100-year recurrence interval floodlands shown on this map encompass a total of nearly 250 square miles, or about 9 percent of the total area of the Region. The Commission itself, as an integral part of its comprehensive watershed studies, provides definitive data on the 10- and 100-year recurrence interval floods for most of the perennial streams in each watershed studies. Flood hazard data have also been developed within the Region by the Federal Emergency Management Agency. Under the National Flood Insurance Act of 1988, the Agency is charged with the responsibility of conducting studies to determine the location and extent of floodlands and the monetary risks related to the insurance of urban development in floodland areas. In addition to identifying the stream reaches for which detailed, large-scale flood hazard maps are available from the Commission. These maps are available at scales of 1 inch equals 100 feet with 2 foot contour intervals, or 1 inch equals 200 feet with 2 foot contour intervals, and enable precise delineations of the floodplains.

water quality problems affect some areas. Groundwater throughout the Region may be characterized as hard, containing high concentrations of calcium, magnesium, sulfates, and other dissolved solids; therefore, softening is required for almost all water uses. Localized water quality problems include hardness, expressed as calcium carbonate, in excess of 500 mg/l in the deep sandstone aquifer along much of the eastern edge of the Region. Some wells in the Village of River Hills in Milwaukee County, for example, have measured hardnesses exceeding 1,500 mg/l and total dissolved solids concentrations in excess of 6,000 mg/l.

Groundwater quality conditions can be impacted by sources of pollution such as landfills, agricultural fertilizer or manure storage and application sites, pesticide application sites, chemical spills, leaking surface or underground storage tanks, and nonpoint sources of pollution, including onsite sewage disposal systems. In addition, concerns exist in isolated cases in southeastern Wisconsin with regard to naturally occurring substances. Within southeastern Wisconsin, isolated groundwater problems have been encountered relating to several types of groundwater quality problems and issues.

The first groundwater quality concern relates to radium concentrations. Certain formations within the Cambrian sandstones in southeastern Wisconsin are known to produce relatively high concentrations of naturally occurring radium. This naturally occurring radium has been found to exceed the state standard for radium in a number of municipal wells using the sandstone aquifer as a source. Evaluations are being undertaken to consider alternative means of reducing the radium level in these wells. In addition, the U.S. Environmental Protection Agency and the Wisconsin Department of Natural Resources are continuing to evaluate the standard for radium in order to assess the suitability of the current standards.

Another groundwater quality problem found in southeastern Wisconsin is the presence at certain locations of volatile organic materials. These volatile organic materials enter the groundwater system primarily through commercial, industrial, and municipal waste disposal systems or spills. Most of these organic materials are industrial solvents or household products, such as spot and stain removers, paints and thinners, drain cleaners, and air fresheners. Other sources of volatile organics are leaking underground storage tanks for gasoline and other petroleum products. The Wisconsin Department of Natural Resources has tested all municipal water supplies in the State and a large number of private wells for volatile organic materials. An isolated number of municipal wells in southeastern Wisconsin have been found to contain detectable levels of volatile organic materials. The areas where these materials have been encountered are relatively limited; in most cases remedial actions are underway to resolve the problems. In addition, the increased awareness and monitoring activity is expected to resolve these isolated problems over time.

Isolated cases of bacterial and nitrogen contamination have also been identified in southeastern Wisconsin. Such cases have occurred most often in areas where the limestone formations are near the surfaces, including portions of northeastern Waukesha County. These problems can often be traced to nonpoint pollution sources and septic system discharges. Public awareness of these problems is increasing and improved monitoring is underway. The continued installation of public centralized sewerage systems will help to resolve many of these isolated problems over time.

VEGETATION

Presettlement Vegetation

Historically, vegetational patterns in the Region were influenced by such factors as climate, soils, fire, topography, and natural drainage patterns. Historical records, particularly the records of the original U.S. Public Land Survey carried out within the Region in 1835 and 1836, indicate that large portions of southeastern Wisconsin consisted of open, level plains containing orchard-like stands of oak or prairies dominated by big bluestem grass and colorful prairie forbs. Other portions of the Region were covered by mixed hardwood forests. The upland timber for the most part consisted of such deciduous hardwood species as sugar maple, oak, elm, ash, hickory, beech, linden, walnut, and ironwood; and one coniferous species, white pine. The lowland timber consisted of such species as black ash, elm, willow, cedar, tamarack, aspen, and soft maple.

<u>Prairies</u>

Prairies are treeless or generally treeless areas dominated by perennial native grasses. Prairies, which have important ecological and scientific value, consist of four basic types: low prairie, mesic or moderately moist prairie, dry prairie, and savannah. Prairies, which once covered extensive areas of southeastern Wisconsin, have been reduced to scattered remnants, primarily in the southern and western portions of the Region. The chief causes of the loss of prairies is their conversion to urban and agricultural use and the suppression of wildfires which had served to constrain the advancing shrubs and trees which shade out the prairie plants.

Woodlands

Woodlands in the Region have much value beyond monetary return for forest products. Under good management woodlands can serve a variety of uses and provide multiple benefits. The quality of life within an area is influenced by the overall quality of the environment, as measured in terms of clean air, clean water, scenic beauty, and diversity. In addition to contributing to clean air and water, the maintenance of woodlands within the Region can contribute to the maintenance of a diversity of plant and animal life in association with human life. The existing woodlands of the Region, which required a century or more to develop, can, however, be destroyed through mismanagement within a comparatively short time. The deforestation of hillsides contributes to the siltation of lakes and streams and the destruction of wildlife habitat. Woodlands can and should be maintained within the Region for their total values: scenic, wildlife, open space, educational, recreational, and watershed protection, as well as for their forest products. Under balanced use and sustained yield management, woodlands can serve many of these benefits at the same time.

Located primarily on ridges and slopes, along lakes and streams, and in wetlands, woodlands provide an attractive natural resource of immeasurable value. Not only is the beauty of lakes, streams, and glacial land forms of the Region accentuated by woodlands, but they are essential to the maintenance of the overall environmental quality of southeastern Wisconsin.

Six woodland types are recognized within the Region: northern upland hardwoods, southern upland hardwoods, northern lowland hardwoods, southern lowland hardwoods, northern lowland conifers, and northern upland conifers. The northern and southern upland hardwood types are the most common in the Region. The two upland hardwood types are most utilized for production of commercial forest products.

The remaining natural stands of trees within the Region consist largely of even-aged mature, or nearly mature, specimens with insufficient reproduction and saplings to maintain the stands when the old trees are harvested or die of disease or age. This lack of young growth is an unnatural condition brought about by mismanagement, and is most often associated with many years of excessive grazing by livestock.

Upland woodlands encompassed a total of about 116,200 acres, or about 7 percent of the total area of the Region, in 1985.¹² This distribution of upland woodlands in the Region is shown on Map 30. Concentrations of woodlands are evident in the Kettle Moraine area and in certain major stream valleys in outlying areas of the Region.

<u>Wetlands</u>

Wetlands are areas in which the water table is at, near, or above the land surface and which are characterized by both hydric soils and by the growth of sedges, cattails, and other wetland vegetation. 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; stabilization of lake levels and streamflows; entrapment and storage of plant nutrients in runoff, thus reducing the rate of enrichment of surface waters and noxious weed and algae growth; contribution to the atmospheric oxygen and water supplies; reduction in stormwater runoff by providing areas for floodwater impoundment and storage; protection of shorelines from erosion; entrapment of soil particles suspended in runoff and

¹²Lowland wood areas, such as tamarack swamps, are classified as wetlands in the regional land use inventory.

reduction in stream sedimentation; provision of groundwater recharge and discharge areas; and provision of the population with opportunities for certain scientific, educational, and recreational pursuits.

Wetlands have severe limitations for residential. commercial, and industrial development. Generally, these limitations are due to the erosive character, high compressibility and instability, low bearing capacity, and high shrink-swell potential of wetland soils, as well as the associated high water table. In addition, the use of metal conduits in some wetland soil types is constrained because of high corrosion potential. If ignored in land use planning and development, those limitations may result in flooding, wet basements, unstable foundations, failing pavements, excessive infiltration of clear water into sanitary sewers, and broken sewer and water lines. In addition, there are significant onsite preparation and maintenance costs associated with the development of wetland soils. particularly as they relate to roads, foundations, and public utilities.

Wetlands encompassed a total of about 169,000 acres, representing about 10 percent of the total area of the Region, in 1985. Concentrations of wetlands occur in the Cedarburg Bog in Ozaukee County, the Jackson and Theresa Marshes in Washington County, and the Tamarack Swamp and Vernon Marsh in Waukesha County (see Map 31).

The Commission wetland inventory as shown on Map 31 is maintained as part of the Commission regional land use inventory, which is updated every five years. The Commission wetland inventory is based upon the Wisconsin Wetlands Inventory, responsibility for which rests with the Wisconsin Department of Natural Resources. In southeastern Wisconsin, the basic inventory work for the Wisconsin Wetlands Inventory was completed by the Commission within the guidelines set forth by the Department. The inventory has been relied on in the administration of key state and federal wetland regulatory programs. It should be noted that the U.S. Soil Conservation Service in 1991 completed an inventory of wetlands for purposes of implementing the wetland regulatory provisions of the Federal Food Security Act. The areal extent of wetlands identified under the Soil Conservation Service inventory is somewhat greater than that identified above. The difference is largely due to the inclusion in the Soil Conservation Service wetland inventory of all noncropland areas covered by hydric soils and certain cropland areas which perennially exhibit signs of wetness, whereas the Commission wetland inventory is limited to areas of hydric soils that are covered by hydrophytic vegetation.

It should also be noted that wetlands are constantly changing in response to changes in drainage patterns and climatic conditions and that, while wetland inventory maps provide a sound basis for areawide planning, they should be viewed as a providing point of departure for regulatory purposes. In view of the dynamic nature of wetlands, detailed field investigations are often necessary to precisely identify wetland boundaries for individual tracts of land at a given point in time.

FISH AND WILDLIFE RESOURCES

Lake and Stream Fisheries

Sport fishing is one of the most popular uses of surface water resources in southeastern Wisconsin. The Wisconsin Department of Natural Resources attempts to sustain fish populations in waters where environmental deterioration has reduced the numbers of desirable fish and where fish have been over harvested. Commonly used fish management techniques include stocking of desirable fish species, fishing restrictions, the use of fish toxicants to remove undesirable fish, and habitat manipulation. Southeastern Wisconsin, because of its population base, has a long history of fish management activities, dating back over 100 years. For example, in 1875 about 10,000 salmon fry were stocked in Oconomowoc Lake in Waukesha County, and in 1876, Lake Geneva in Walworth County was stocked with 250,000 lake trout, 100,000 whitefish, 50,000 brook trout, 35,000 salmon, and 1,000,000 walleye. In 1877, lake trout were stocked in 11 lakes in Racine, Waukesha, and Walworth Counties. Currently, the Department of Natural Resources distributes fish from its own hatcheries, as well as from cooperative ponds, federal hatcheries, and private hatcheries.

Many lakes and streams in the Region contain degraded fish populations. Sedimentation, eutrophication, low dissolved oxygen levels, increased water temperature fluctuations, toxic pollutants, and habitat destruction can limit the diversity and health of fish communities. Common fishery

WETLANDS IN THE REGION: 1985



In 1985, woodlands occupied about 182 square miles, or about 7 percent of the Region. Woodlands have much value beyond monetary return for forest products. The maintenance of woodlands contributes to clean air and water and to the maintenance of a diversity of plant and animal life. Woodlands provide an attractive natural resource of immeasurable value. As shown on this map, significant concentrations of woodlands are located in the Kettle Moraine area and in major stream valleys in outlying areas of the Region. *Source: SEWRPC.*



Wetlands encompassed a total of about 264 square miles, or about 10 percent of the total area of the Region, in 1985. Wetlands perform a set of important natural functions, including support of a wide variety of desirable, and sometimes unique, forms of plant and animal life; stabilization of lake levels and streamflows; entrapment and storage of plant nutrients in runoff; contribution to atmospheric oxygen and water supplies; reduction in stormwater runoff; and protection of shorelines from erosion. Wetlands are inherently unsuitable for virtually all forms of urban development. Although they are scattered throughout the Region, concentrations of wetlands are particularly evident in the Cedarburg Bog in Ozaukee County, the Jackson and Theresa Marshes in Washington County, and the Tamarack Swamp and the Vernon Marsh in Waukesha County. *Source: SEWRPC*.

resource problems include fish kills, stunted panfish, and excessive rough fish populations. On some water bodies, fish kills occur annually, but in most cases, they are an occasional problem. While some fish kills are traceable to fish diseases or to contributions of toxic pollutants, most are caused in late winter and late summer by dissolved oxygen depletion in shallow, heavily vegetated waters. As presented in Table 47, at least 18 major lakes in southeastern Wisconsin experience at least occasional fish kills. Fish kills are sometimes prevented by using artificial aeration techniques to maintain a critical dissolved oxygen level. The stunting of panfish is caused primarily by inadequate predation and short food supplies. The treatment for stunting, usually involving chemical treatments to remove some of the stunted fish or the addition of predators, is seldom successful. Most rough fish problems are caused by carp. The first carp were introduced to Wisconsin in 1880, and the fish was well-established in the State by 1895. These bottom-dwelling fish stir bottom sediments, reducing water clarity and covering valuable fish habitat and fish eggs with sediment. This exotic species is particularly suited for warm, silty, eutrophic waters. Carp control is generally through removal by netting or the use of fish toxicants. Fish barriers are sometimes installed to prevent the migration of rough fish to an adjoining waterway.

Despite these problems, many water bodies in southeastern Wisconsin, especially lakes, still support excellent sport fish populations. Table 51 lists the primary sport fish species present in the major lakes in the Region. Fish species were not listed for two major lakes, East Lake Flowage in the Town of Brighton and an unnamed lake recently created from an abandoned quarry in the Village of Pleasant Prairie. As indicated in Table 51, bass and panfish were present in almost all of the major lakes, while northern pike and walleye were present in 86 and 46 lakes, respectively. Cisco, trout, and muskellunge were less common, being present in seven lakes, six lakes, and three lakes, respectively.

While all major lakes in the Region support populations of warmwater fish, the fish communities of many streams are severely limited by hydraulic and physical constraints, such as flow, water depth, substrate, and water temperature; by channelization impacts; and by water quality conditions. Most small intermittent streams are capable of supporting only forage fish, such as shiners and minnows, along with aquatic invertebrates such as insects, clams, and crayfish. These small streams, however, may constitute important spawning sites during spring and early summer for warmwater fish species which reside in connected perennial streams.

The Wisconsin Administrative Code lists those streams which have been determined to be unable to support full warmwater fish communities. These streams are designated for special variance use, for intermediate aquatic life, or for marginal use. The variance designations for streams in the Region are presented in Table 52. Special variance classifications have been assigned to 11 stream reaches in the Region, as listed in the table. These streams have undergone extreme cultural alterations or have severe physical limitations. This category also includes the Milwaukee inner harbor. Sixteen stream reaches have been classified for intermediate aquatic life. These streams are capable of supporting only forage fish and aquatic invertebrates which are tolerant of pollution. Twentyfive stream reaches have been classified for marginal use. Marginal-use streams are capable of supporting only aquatic invertebrates, or an occasional fish species, which are very tolerant of pollution. Some marginal use streams support almost no aquatic life.

About 31.1 miles of stream, or less than 3 percent of the total perennial stream miles in the Region, contain water quality and habitat conditions which are suitable to support brown, brook, and rainbow trout and other salmonid fish species which are intolerant of pollution. Designated trout streams in the Region are listed in Table 53. Class I trout streams, which include four stream reaches and 5.1 miles of stream. support a trout fishery sustained by natural reproduction. Class II trout streams, which include seven stream reaches and 12.3 miles of stream, support a trout fishery sustained by both natural reproduction and periodic stocking. Class III trout streams, which include five stream reaches and 13.7 miles of stream, support a trout fishery sustained entirely by stocking.

Those stream reaches which have not been designated for special variance use, for intermediate aquatic life, or for marginal use are considered capable of supporting warmwater sport fish or forage fish intolerant of pollution.

PRIMARY SPORT FISH SPECIES PRESENT IN SOUTHEASTERN WISCONSIN LAKES

			Pi	rimary Fish	Species Preser	nt		
County	Lake	Muskellunge	Northern Pike	Walleye	Largemouth Bass	Panfish	Trout	Cisco
Kenosha	Benedict		x	x		Y		
Kenosha	Benet-Shangrila		Â		Î Â	x		••
Kenosha	Camp		x	x	x x	x		
Kenosha	Center		x		x X	X		
Kenosha	Cross		x		x	Х		
Kenosha	Dyer		X		X	X		
Kenosha	Elizabeth		X	X	X	Х		• •
Kenosha	George		X		X	X		
Kenosna	Hooker		X	X	X	X		
Kenosna	Lilly		X	 V	X	X		
Kenosha) iviary Deddaela			× 1		X		
Kenosha	Paudock			×	l 🗘	Ŷ		
Kenosha	Silver		l 🗘	Ŷ	l 🗘	v ·		
Kenosha	Voltz		Ŷ	Ŷ	Ŷ	Ŷ	•••	
	V0112		^					
Ozaukee	Lac Du Cours				X	X	· 	
Ozaukee	Mud							
	Spring		×		<u>×</u>	×		
Racine	Bohner		х		х	X		
Racine	Browns			X	X	X		
Racine	Buena		X	X	X	Х		
Racine	Eagle	x	X	X	X	Х		
Racine	Echo		X		X	Х		·
Racine	Kee Nong Go Mong		X		X	Х		
Racine	Long		X		X	X		
Racine	Tichigan		X	X	X	X		
Racine	Waubeesee		X		X			
			X	X	X	X		
Walworth	Army				x	X		
Walworth	Beulah		x		X	Х	X	Х
Walworth	Booth		L X	X	X	X		
Walworth	Como		X		X	Х		
Walworth	Comus		X	·	X	X		
Walworth	Cravath				X	X		
	Delavan			X		X		
Walworth	Geneva			X		X		Х
Walworth	Green		Ň	X	X	X		
Walworth	Latinge					 v		
Walworth		••	y	••	ĺ			
Walworth	Middle		Ŷ	Y	Ŷ ·	Ŷ		
Walworth	Mill		Ŷ	x	x i	Ŷ		
Walworth	North				x	x		
Walworth	Pell		x		x	x		
Walworth	Peters				X I	X		
Walworth	Pleasant		X		X	X		
Walworth	Potters	X	X		X	X		
Walworth	Rice		X		X	X		
Walworth	Silver					X		
Walwerth	Tripp		X		X	Х		
Walworth	Turtle		X		X	X		
Walworth	Wandawega		X		X	X		
vvalworth	Whitewater		X		X	Х		

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Table 51 (continued)

			Pr	imary Fish	Species Preser	nt		
County	Lake	Muskellunge	Northern Pike	Walleye	Largemouth Bass	Panfish	Trout	Cisco
Washington	Bark		x		x	x		
Washington	Barton		Ŷ		X	Î Â		
Washington	Big Cedar		x	x	x	x		x x
Washington	Druid		x ·	x	x	x		
Washington	Five	· · ·	x		x	x		
Washington	Friess		x	x	x	Î	l x	
Washington	Green		x	x	x	x		
Washington	Little Cedar		x	x	x	x		
Washington	Lucas		x ·		x	x ·		
Washington	Pike		x x	х	x	x		
Washington	Silver		x x	x	x	x		
Washington	Smith		x x		x	x		
Washington	Twelve		Ŷ		x	x		
Washington	Wallace	• -	x x		x	x		
 Waukesha	Ashippun		x		×	x		
Waukesha	Beaver		Î x		X	x		
Waukesha	Bia Muskeao		x	x	x	x x		
Waukesha	Crooked		x	x	x	x		
Waukesha	Denoon		Î		x	x		
Waukesha	Eagle Spring		x x		x	x x	·	
Waukesha	Fowler		x	х	x	x	· · ·	
Waukesha	Golden		x	x	x	x	-	
Waukesha	Hunters		x		X	x		
Waukesha	Keesus		x	х	X	x		
Waukesha	Lac La Belle	 .	x	х	x	x		
Waukesha	Little Muskego		x	x	x	x		• -
Waukesha	Lower Genesee		x	х	x	í x	x	
Waukesha	Lower Nashotah		x	х	X	x	X	
Waukesha	Lower Nemahbin	• -	x	X	X	x		
Waukesha	Lower Phantom		x	Х	x	l x		
Waukesha	Middle Genesee				X	x		
Waukesha	Moose		x		X	x	x	
Waukesha	Nagawicka		x	Х	x	x		
Waukesha	North		x	х	x	X		x
Waukesha	Oconomowoc	• -	X		X	x		X
Waukesha	Okauchee		x	х	x	x		X
Waukesha	Pewaukee	X	X	х	x	x		
Waukesha	Pine		X	X	X	Х		X
Waukesha	Pretty		X		x	X		
Waukesha	School Section		x	X	x	X		
Waukesha	Silver		X		X	х		
Waukesha	Spring				X	Х		
Waukesha	Upper Nashotah		X	X	x	X		
Waukesha	Upper Nemahbin		x	Х	x	X .		
Waukesha	Upper Phantom		X	Х	X	Х	'	- - '
Waukesha	Waterville				X	х		

NOTE: Data were not available for two major lakes—East Lake Flowage in the Town of Brighton and an unnamed lake recently created from an abandoned quarry in the Village of Pleasant Prairie.

Source: Wisconsin Department of Natural Resources, Wisconsin Lakes, 1978.

STREAMS CLASSIFIED FOR LIMITED FISH AND AQUATIC LIFE IN SOUTHEASTERN WISCONSIN

Type of		
Variance	Stream	Reach
Special Variance	Underwood Creek	In Milwaukee and Waukesha Counties below
ļ.		Juneau Boulevard
	Barnes Creek	In Kenosha County
	Pike Creek (tributary of Pike River)	In Kenosha County
	Pike River	In Racine County
	Indian Creek	In Milwaukee County
	Honey Creek	In Milwaukee County
	Menomonee River	In Milwaukee County below the confluence with
		Honey Creek
	Kinnickinnic River	In Milwaukee County
	Lincoln Creek	In Milwaukee County
	Milwaukee River	Downstream of North Avenue dam in Milwaukee County
	South Menomonee Canal and	
	Burnham Canal	In Milwaukee County
Intermediate	Darien Creek	From its origin to Little Turtle Creek
Aquatic Life	Little Turtle Creek	From its origin to Turtle Creek
	Eagle Creek	From CTH J to the Fox River
	East Branch Root River Canal	From STH 20 to the West Branch Root River Canal
	Union Grove Tributary to the	
	Des Plaines River	Downstream of Fonk's Tributary
	Hales Corners Tributary	From the Hales Corners sewage treatment plant to
		Whitnall Park Pond
	Tess Corners Creek	From its origin to Whitnall Park Pond
	Poplar Creek	From the C&NW railroad bridge downstream to confluence with Fox River
	North Park Tributary to Lake	
	Michigan	From its origin to Lake Michigan
	Hoods Creek	From STH 20 to confluence with Root River
	Salem Branch	From Salem Utility District No. 1 sewage treatment plant to 216th Avenue
	Rubicon River	From confluence with tributary in NW 1/4, NE 1/4,
}		Section 13, T10N, R18E, to confluence with Slinger Tributary
	Wayne Creek	From its origin to the Kohlsville River
	South Branch of Pike River	From Somers tributary to Pike River
	Tributary to Pike River	Tributary from first railroad crossing at S. C. Johnson & Son to confluence with Pike River
	West Branch Root River Canal	From CTH C to STH 20
Marginal Use	Belgium Creek	From Belgium sewage treatment plant to the Onion River
	Tributary to Des Plaines River	From Bristol sewage treatment plant to the Des Plaines River
	Tributary to Darien Creek	From its origin to Darien Creek
	Eagle Creek	From Eagle Lake to CTH J
	East Branch Root River Canal	Upstream from STH 20
	Tributary to Des Plaines River	From Fonk's Tributary downstream to the Union Grove industrial tributary
	Hales Corners Tributary	Upstream from the abandoned Hales Corners sewage treatment plant

Table 52 (continued)

Type of Variance	Stream	Reach
Marginal Use	Dover Ditch	Upstream of Dover Line Road
(continued)	Poplar Creek	From the abandoned Cleveland Heights treatment plant to the C&NW Railway bridge
	Deer Creek	From its origin to Poplar Creek
	Tributary to Brighton Creek	From Paddock Lake sewage treatment plant to Brighton Creek
	Drainage to Mud Lake	From the Mobile Home sewage treatment plant to Mud Lake
	Tributary to Lake Michigan	From the Pleasant Park sewage treatment plant to the Illinois state line
	Pleasant Prairie Tributary	From its origin to the Des Plaines River
	Tributary to Des Plaines River	From its origin to the Illinois state line
	Tributary to Hoods Creek	From its origin to confluence with Hoods Creek
	Tributary to Root River	From the Rawson Homes sewage treatment plant to the Root River
	Little Turtle River	From Sharon sewage treatment plant downstream to Rock-Walworth county line
	Unnamed Intermittent Stream	Stream in Sections 13, 14, and 23, T1N, R22E, Kenosha County
	Rubicon River	From origin downstream to confluence with tributary in NW 1/4, NE 1/4, Section 13, T10N, R18E
	Tributary to Rubicon River	Easterly tributary which flows into the Rubicon River at above location
	Tributary to South Branch	
	Pike River	From its origin to South Branch Pike River
	Tributary to Pike River	From St. Bonaventure School sewage treatment plant to Sturtevant Tributary
	West Branch Root River Canal	From 67th Drive to CTH C
	Tributary to Des Plaines River	From the Wisconsin DOT Information Center sewage treatment plant to the Des Plaines River

Source: Wisconsin Administrative Code NR 104 (1989).

In many of these streams, however, the fish communities are threatened by high pollutant loadings such as toxic chemical spills or eroded sediment from cropland or construction sites, by habitat destruction, by channel modifications, and by changes in the streamflow regime often caused by urbanization. Stream habitat restoration projects can complement water pollution abatement efforts to help maintain or enhance desired fish communities. Channelization projects, which often involve straightening, deepening, widening, or lining a natural or previously modified channel to help control flooding and drainage problems, may incorporate rehabilitation structures or procedures to maintain a viable fishery within the improved channel.

Wildlife Habitat

Within southeastern Wisconsin, wildlife is composed primarily of small upland game, such as rabbit and squirrel; some predators, such as fox and raccoon; game birds, including waterfowl; and game and nongame fish species, as described above. Deer are also found, but the herds are small when compared to other regions of the State.

Inventories of wildlife habitat areas in the Region were carried out cooperatively by the Wisconsin Department of Natural Resources and the Commission in 1963, 1970, and 1985. As part of the 1985 inventory, three classes of wildlife habitat areas were identified and delineated:

			1	rout Spe	cies	Class I	Class I			Class III	
County	Stream	Reach	Brook	Brown	Rainbow	Reach	Mile	Reach	Mile	Reach	Mile
Kenosha	Palmer Creek	All		x	x						2.5
Racine	Tichigan Creek	All	x	x	x						1.4
Walworth	Bluff Creek Harris Creek Potawatomi Creek Steel Brook Spring Creek Van Slyke Creek	Aii Aii Aii Aii Aii Aii	X X X X X X	X X X X X X	× × × ×	Above CTH P 	0.5 1.4 1.2	Below CTH P Above Bluff Road Above Hargraves Road 	1.0 1.1 1.0 2.7	 Below Bluff Road Below Hargraves Road 	 3.3 1.5
Washington	Alienton Creek	Upstream of confluence with Limestone Creek		x					3.5	,	
Waukesha	Genesee Creek Scuppernong River	All Above CTH N to Scuppernong Springs Pond	X X	x x		Above STH 59	2.0	Below STH 59 Upper	2.5 0.5	 Lower	5.0

TROUT STREAMS IN SOUTHEASTERN WISCONSIN

Source: Wisconsin Department of Natural Resources, Trout Streams, 1980.

Class I, defined as areas containing a good diversity of wildlife, of such size to meet all of the habitat requirements for each species, and generally located in close proximity to other wildlife habitat areas; Class II, defined as those wildlife habitat areas generally lacking one of the three criteria necessary for a Class I designation; and Class III, defined as those wildlife habitat areas that are generally remnant in nature and lack two of the three criteria for placement in Class I. Most of the remaining wildlife habitat areas identified through these inventory efforts are located within the primary and secondary environmental corridors and isolated natural areas shown on Map 35, presented later in this chapter. Lands in agricultural use, open fields, and fencerows also provide important wildlife habitat.

It should be noted that the populations of certain animals, including, among others, deer and geese, have been increasing in certain urban areas of the Region, and, in some cases, the increased animal populations have become nuisances to area residents. "Urban" wildlife management programs are needed in such areas to balance human concerns and wildlife population levels and needs.

EXISTING PARK AND OPEN SPACE SITES

Park and related outdoor recreation sites and historic sites, while not strictly defined as part of the natural resource base, are closely linked to the underlying natural resource base. Park and related outdoor recreation sites and historic sites may be enhanced by the presence of natural resource features: conversely, the commitment of land to park and open space use contributes to the preservation of existing resource features. The park and related outdoor recreation sites and historic sites existing within the Region in 1985 are described in this section. Also described are open space sites which have been specifically identified as having particular scientific or cultural value in recognition of the importance of the plant and animal communities present.

Park and Related Outdoor Recreation Sites

There was a total of 2,608 publicly and privately owned park and related outdoor recreation sites in the Region in 1985. In combination, these sites encompassed a total of about 114,200 acres, or about 7 percent of the total area of the Region. Summary information regarding the number and area of park and related outdoor recreation sites in the Region is presented in Tables 54 and 55.

PARK AND RELATED OUTDOOR RECREATION SITES IN THE REGION BY COUNTY: 1985

	Park and Related Outdoor Recreation Sites											
	Publicly Owned											
	S	tate	Co	unty	Other	Public	Sul	ototal	Owned		Total	
County	Sites	Acres	Sites	Acres	Sites	Acres	Sites	Acres	Sites	Acres	Sites	Acres
Kenosha	11	6,428	8	1,375	181	2,006	200	9,809	117	3,385	317	13,194
Milwaukee	2	451	143	15,008	418	2,577	563	18,036	160	2,336	723	20,372
Ozaukee	4	2,167	7	652	99	1,193	110	4,012	54	1,913	164	5,92!
Racine	12	3,023	24	2,320	155	2,104	191	7,447	101	2,139	292	9,586
Walworth	31	10,054	2	148	109	856	142	11,058	148	8,751	290	19,809
Washington	9	8,785	7	885	108	1,373	124	11,043	101	4,561	225	15,604
Waukesha	24	14,227	26	3,791	316	4,869	366	22,887	231	6,856	597	29,743
Region	93	45,135	217	24,179	1,386	14,978	1,696	84,292	912	29,941	2,608	114,23

Source: SEWRPC.

Table 55

PERCENTAGE DISTRIBUTION OF PARK AND RELATED OUTDOOR RECREATION SITES AND ACREAGE IN THE REGION BY COUNTY: 1985

	Publicly Owned											
	State (percent of Region)		County (percent of Region)		Other Public (percent of Region)		Subtotal (percent of Region)		Owned (percent of Region)		Total (percent of Region)	
County	Sites	Acreage	Sites	Acreage	Sites	Acreage	Sites	Acreage	Sites	Acreage	Sites	Acreage
Kenosha	11.8	14.2	3.7	5.7	13.1	13.4	11.8	11.6	12.8	11.3	12.2	11.6
Milwaukee	2.2	1.0	65.9	62.1	30.1	17.2	33.2	21.4	17.6	7.8	27.7	17.8
Ozaukee	4.3	4.8	3.2	2.7	7.1	8.0	6.5	4.8	5.9	6.4	6.3	5.2
Racine	12.9	6.7	11.1	9.6	11.2	14.0	11.2	8.8	11.1	7.2	11.2	8.4
Walworth	33.3	22.3	0.9	0.6	7.9	5.7	8.4	13.1	16.2	29.2	11.1	17.3
Washington	9.7	19.5	3.2	3.6	7.8	9.2	7.3	13.1	11.1	15.2	8.6	13.7
Waukesha	25.8	31.5	12.0	15.7	22.8	32.5	21.6	27.2	25.3	22. 9	22. 9	26.0
Region	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: SEWRPC.

Publicly owned sites accounted for about 1,696 sites, or about 65 percent of all park and related outdoor recreation sites, and encompassed about 84,300 acres, or about 74 percent of the total recreation site acreage. Publicly owned sites include, among others, large state-owned parks, recreation areas, and hunting grounds; county, city, village, and town parks; public school outdoor recreation areas; special-use sites such as zoos, fairgrounds, and botanical gardens; and urban green spaces. Of the total public park and related outdoor recreation site acreage, about 45,100 acres, or about 53 percent, was in state ownership; 24,200 acres, or 29 percent, was in county ownership; and 15,000 acres, or 18 percent, was in other public, that is, city, village, town, or public school district, ownership. The largest publicly owned sites—sites at least 100 acres in area—are shown on Map 32.

State-owned outdoor recreation lands were, to a large extent, concentrated in Kenosha, Walworth, Washington, and Waukesha Counties. Together, these four counties accounted for



There were about 1,700 publicly owned park and open space sites in the Region in 1985. Shown above are the largest of these publicly owned sites, those which are 100 acres or greater in area. Most of the park sites shown above provide opportunities for a variety of resource oriented outdoor recreational activities. Also shown as park sites are large special use outdoor recreation sites, such as the Milwaukee County Zoo and Wisconsin State Fair Park. The open space sites shown above include large tracts of land which have been publicly acquired for resource preservation purposes, with facility development generally limited to that necessary to allow public access to, and enjoyment of, those areas. 147 Source: SEWRPC.

about 39,500 acres, or almost 88 percent, of the state recreation site area in southeastern Wisconsin, reflecting the extensive state landholdings in the Kettle Moraine and Bong recreational areas. At the other extreme, Milwaukee County accounted for only 1 percent of the state recreation site area in the Region.

Conversely, among the seven counties in the Region, Milwaukee County had the most extensive county park system. In 1985 Milwaukee County accounted for 66 percent of all countyowned recreation sites in the Region and 62 percent of the county-owned acreage. Milwaukee County is generally acknowledged to have one of the finest park and parkway systems in the United States. The major parks in Milwaukee are generally located along rivers and streams and the Lake Michigan shoreline. Many smaller recreation areas, however, are distributed throughout the various communities in the county in the form of neighborhood and community parks.

Privately owned sites accounted for 912 sites, or about 35 percent of all park and related outdoor recreation sites in the Region, and encompassed about 29,900 acres, or about 26 percent of the total outdoor recreation site acreage. These sites include a wide range of outdoor recreation areas, including sites providing opportunities for camping, golf, picnicking, and swimming; hunting grounds; nature preserves; and recreation areas associated with private schools. Many of the privately owned outdoor recreation areas in the Region are water oriented sites clustered along the shores of inland lakes and rivers.

Historic Sites

A variety of inventories and surveys of historic sites have been conducted by various units and agencies of government in the Region. The results of these inventories and surveys, on file at such agencies as the Wisconsin State Historical Society, indicate that there are more than 14,000 historic sites in southeastern Wisconsin. Particularly significant historic sites are listed on the National Register of Historic Places. As of 1985, a total of 254 sites and 20 districts in southeastern Wisconsin were listed on the National Register (see Table 56 and Map 33). The 20 historic districts in combination encompassed a total of just under 800 acres. Properties listed on the National Register receive limited protection from encroachment by federally

Table 56

SITES AND DISTRICTS IN THE REGION LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES: 1985

Υ.		Historic Districts			
County	Sites	Number	Area		
Kenosha	10	••			
Milwaukee	95	12	487		
Ozaukee	15	1	53		
Racine	36	1	164		
Walworth	20				
Washington	9	· • • ·			
Waukesha	69	6	79		
Region	254	20	783		

Source: The State Historical Society of Wisconsin and SEWRPC.

licensed or assisted projects and state facilities. Moreover, listed properties may receive federal matching grants for restoration or rehabilitation as well as certain tax benefits. Careful consideration should be given in any land use planning and development efforts to preserve and protect the historic heritage of the Region.

Scientific and Natural Areas

Natural areas, as defined by the Wisconsin Natural Areas Preservation Council, are tracts of land or water so little modified by man's 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 pre-European settlement landscape. Natural areas are classified into one of the following four categories: Designated State Natural Areas; Natural Areas of Statewide or Greater Significance; Natural Areas of Countywide or Regional Significance; and Natural Areas of Local Significance. Classification of an area into one of these four categories is based upon consideration of the diversity of plant and animal species and community types present; the structure and integrity of the native plant or animal community; and the extent of disturbance by human activity, such as logging, grazing, water level changes, and pollution.

While a comprehensive inventory of natural area sites in southeastern Wisconsin has not yet been undertaken, several studies have been conducted



ILLINOIS

The history and cultural heritage of southeastern Wisconsin is reflected in an abundance of historic sites. Various units and agencies of government have identified more than 14,000 historic sites in the Region. The most significant of these sites are listed on the National Register of Historic Places. The locations of the 254 sites and 20 districts in the Region listed on the National Register of Historic Places are shown on this map.

Source: The State Historical Society of Wisconsin and SEWRPC.

in various parts of the Region by public agencies and by area naturalists. To date, approximately 312 natural areas haven been identified in southeastern Wisconsin through these ad hoc studies (see Map 34). Forty-seven sites, or 15 percent of this total, are Natural Areas of Statewide or Greater Significance; the remaining 265 sites, or 85 percent of the total, are Natural Areas of Countywide or Regional Significance or Natural Areas of Local Significance. About onehalf of the identified natural areas are in public or other protective ownership and properly managed. It should be noted that the Commission in 1989 prepared a prospectus recommending the conduct of a natural area protection and management planning program for southeastern Wisconsin. The proposed regional natural area protection and management planning program would systematically identify all remaining high quality natural areas and critical species habitats, as well as significant archeological and geological sites, and would develop a plan for the protection and management of those areas and habitats.

ENVIRONMENTAL CORRIDORS

The Corridor Concept

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 the Region in which concentrations of natural resource elements occur. It was recognized that preservation of the natural resource elements, especially where these elements are concentrated in identifiable geographic areas, was essential both to the maintenance of the overall environmental quality of the Region and to the continued provision of the amenities required to maintain the quality of life for the resident population.

Under the regional planning program, seven elements of the natural resource base have been considered essential to the maintenance of both the ecological balance as well as the overall quality of life in the Region: 1) lakes, rivers, and streams and the associated shorelands and floodlands; 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 per se, are closely related to or centered on that base and are a determining factor in identifying and delineating areas with recreational, aesthetic, ecological, and cultural value. These features include 1) existing park and open space sites; 2) potential park and open space sites; 3) historic sites; 4) scenic areas and vistas; and 5) natural and scientific sites.

The delineation of these 12 natural resource and natural resource-related elements on maps results in a concentration of such elements in an essentially linear pattern of relatively narrow, elongated areas which have been termed "environmental corridors" by the Regional Planning Commission. "Primary" and "secondary" environmental corridors have been identified. Primary environmental corridors include a wide variety of the most important natural resource and resource-related elements and are at least 400 acres in size, two miles long, and 200 feet wide. Secondary environmental corridors generally connect with the primary environmental corridors and are at least 100 acres in size and one mile long. In addition, smaller concentrations of natural resource features that have been separated physically from the environmental corridors by intensive urban or agricultural land uses have also been identified. These areas, which are at least five acres in size, are referred to as isolated natural areas.

The preservation of these environmental corridors in essentially natural, open uses can assist in flood-flow attenuation, water pollution abatement, noise pollution abatement, glare reduction, and favorable climate modification. Such preservation is also essential to facilitate the movement of wildlife, especially in times of stress, and for the movement and dispersal of seeds for a variety of plant species. In addition, because of the many interacting relationships which exist between living organisms and their environment, the destruction or deterioration of one important element of the total environment may lead to a chain reaction of deterioration and destruction of other elements. The drainage of wetlands, for example, may destroy fish spawning areas, wildlife habitat, groundwater recharge areas, and natural filtration and floodwater storage areas of interconnecting stream systems. The resulting deterioration of surface water quality may, in turn, lead to a deterioration of the quality of the groundwater which serves as a source of domestic, municipal, and industrial water supply, and upon which low flows of rivers and streams may depend. In



This map identifies the location of more than 300 natural areas which have been identified in the Region. Such areas consist of tracts of land and water so little modified by man's 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 pre-European settlement landscape. The sites shown on this map were identified on the basis of studies conducted for various parts of the Region by public agencies and area naturalists. The Commission has recommended the conduct of an areawide natural area protection and management planning program to identify systematically all remaining high quality natural areas and to develop a plan for their protection and management.

		Primary Environmental Corridors											
	Surface Water		Wetlands		Woodlands		Other Open Lands		Urban Lands		Tot	al	
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	
Kenosha	4,574	16.0	11,787	41.2	5,151	18.0	6,080	21.3	1,005	3.5	28,597	100.0	
Milwaukee	994	10.1	2,774	28.4	2,091	21.4	2,773	28.4	1,148	11.7	9,780	100.0	
Ozaukee	1,592	8.0	11,457	57.7	3,850	19.4	2,103	10.6	857	4.3	19,859	100.0	
Racine	4,633	19.6	9,600	40.7	5,552	23.5	2,801	11.9	1,002	4.3	23,588	100.0	
Walworth	13,659	20.9	21,308	32.7	22,922	35.1	5,906	9.1	1,433	2.2	65,228	100.0	
Washington	3,942	6.5	33,527	55.6	14,841	24.6	7,319	12.2	655	1.1	60,284	100.0	
Waukesha	16,233	17.6	43,936	47.7	21,108	22.9	8,791	9.5	2,155	2.3	92,223	100.0	
Region	45,627	15.2	134,389	44.9	75,515	25.2	35,773	11.9	8,255	2.8	299,559	100.0	

PRIMARY ENVIRONMENTAL CORRIDOR LANDS IN THE REGION BY COUNTY: 1985

Source: SEWRPC.

addition, the intrusion of intensive urban land uses into such areas may result in the creation of serious and costly problems, such as failing foundations for pavements and structures, wet basements, excessive operation of sump pumps, excessive clear water infiltration into sanitary sewerage systems, and poor drainage. Similarly, destruction of ground cover may result in soil erosion, stream siltation, more rapid run-off, and increased flooding, as well as the destruction of wildlife habitat. Although the effects of any one of these environmental changes may not in and of itself be overwhelming, the combined effects must eventually lead to a serious deterioration of the underlying and sustaining natural resource base and of the overall quality of the environment for life. The need to maintain the integrity of the remaining environmental corridors and isolated natural areas in southeastern Wisconsin should, thus, be apparent.

Primary Environmental Corridors

As shown on Map 35, the primary environmental corridors of southeastern Wisconsin generally lie along major stream valleys, surround major lakes, or are found in the Kettle Moraine area, and contain almost all of the best remaining wetlands, woodlands, and wildlife habitat areas in the Region, as well as most of the major lakes and streams and associated floodlands. These corridors also contain many of the best remaining potential park sites. The primary environmental corridors are, in effect, a composite of the best remaining elements of the natural resource base of southeastern Wisconsin and have immeasurable environmental and recreational value.¹³

In 1985, primary environmental corridors encompassed about 299,600 acres, or about 17 percent of the total area of the Region (see Table 57). Surface water comprised about 45,600

¹³It should be noted that the delineation of environmental corridors as set forth in SEWRPC Planning Reports Nos. 7 and 25 documenting the first and second-generation regional land use plans was a generalized delineation, the result of systems level planning. Subsequent to the adoption of the second-generation year 2000 regional land use plan, as the need for a more detailed delineation of these corridors became increasingly apparent, the Commission embarked on an environmental corridor refinement process which resulted in the detailed delineation of environmental corridors throughout the Region. The refined primary environmental corridors, like the generalized corridors identified under the first and second-generation plans, lie along the major stream valleys, around major lakes, and in the Kettle Moraine area of southeastern Wisconsin. The boundaries of the corridors have, however, been adjusted to coincide more precisely with natural resource features, based upon the more detailed inventory data now available. The areal extent of the revised primary environmental corridor configuration is slightly lower, by 8 percent, than that of the original configuration.



The most important elements of the natural resource base of the Region are found in the environmental corridors and isolated natural areas shown on this map. Primary environmental corridors are a composite of the best remaining elements of the natural resource base. Such corridors, which encompass about 468 square miles, or 17 percent of the total area of the Region, contain all of the best remaining wetlands, woodlands, and wildlife habitat areas in the Region as well as most of the major lakes and streams and associated floodlands. The preservation of the identified primary environmental corridors to the maintenance of a high level of environmental quality in the Region and the protection of its natural beauty. Secondary environmental corridors, often remnants of primary environmental corridors that have been partially converted to intensive urban or agricultural use, also contain a variety of resource elements. Secondary environmental corridors encompass about 74 square miles, or 3 percent of the Region natural areas are smaller pockets of natural resource base elements which, although separated from the environmental corridor retwork, still retain important natural values. Such areas, which encompass about 63 square miles, or 2 percent of the Region.

	Primary Environmental Corridors												
	1963		1970 ^a		19	985	Change 1963-1970		Cha 1970	inge -1985			
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent	Acres	Percent			
Kenosha	30,050	9.8	29,617	9.7	28,597	9.5	-433	-1.4	-1,020	-3.4			
Milwaukee	9,805	3.2	9,752	3.2	9,780	3.3	-53	-0.5	28	0.3			
Ozaukee	19,940	6.5	19,817	6.5	19,859	6.6	-123	-0.6	42	0.2			
Racine	24,739	8.1	24,174	8.0	23,588	7.9	-565	-2.3	-586	-2.4			
Walworth	67,693	22.2	67,260	22.1	65,228	21.8	-433	-0.6	-2,032	-3.0			
Washington	59,945	19.6	59,985	19.7	60,284	20.1	40	0.1	299	0.5			
Waukesha	93,655	30.6	93,809	30.8	92,223	30.8	154	0.2	-1,586	-1.7			
Region	305,827	100.0	304,414	100.0	299,559	100.0	-1,413	-0.5	-4,855	-1.6			

PRIMARY ENVIRONMENTAL CORRIDORS IN THE REGION BY COUNTY: 1963, 1970, AND 1985

^aEstimated.

Source: SEWRPC.

acres, or 15 percent of the total environmental corridor area; wetlands comprised about 134,400 acres, or 45 percent; woodlands comprised about 75,500 acres, or 25 percent; and other open lands comprised about 35,800 acres, or 12 percent. About 8,300 acres, or about 3 percent of the total primary environmental area consisted of small enclaves of urban land within the overall corridor configuration.

Between the 1963 base year of the firstgeneration regional land use plan and 1970, there was a decrease of about 1,400 acres, or 0.5 percent in the area of primary environmental corridors in the Region (see Table 58). Between the 1970 base year of the second-generation regional land use plan and 1985, there was a further decrease of about 4,900 acres, or 1.6 percent. These changes are the net effects of decreases in primary environmental corridor lands in certain areas of the Region and increases in other areas. Decreases in primary environmental corridor lands occur, for the most part, as a result of the conversion of natural areas to intensive urban or agricultural use. Increases may occur as a result of reforestation, water impoundment, or the reversion of agricultural lands to wetlands.

When the Commission first proposed the preservation of primary environmental corridors in the Region, it was recognized that a number of

coordinated measures would be required, including public acquisition of certain corridor lands, public regulation of other privately owned corridor lands, and reformulation of public utility extension policies to avoid utility service extensions that would support inappropriate urban development in the corridors. Over the years, many important actions have been taken by implementing agencies toward protection of the primary environmental corridors in accordance with the recommendations of the adopted regional land use plan. A summary of the status of the preservation of primary environmental corridors in the Region is presented in Chapter VII of this report.

Secondary Environmental Corridors

Secondary environmental corridors are typically located along small perennial and intermittent streams within the Region. Secondary corridors also contain a variety of resource elements, often being remnants of primary environmental corridors that have been partially converted to intensive urban or agricultural use. Secondary environmental corridors facilitate surface water drainage and maintain pockets of natural resource features. Such corridors, while not as significant as the primary environmental corridors in terms of overall resource values, should also be considered for preservation as the process of development proceeds within the Region,
SECONDARY ENVIRONMENTAL CORRIDOR LANDS IN THE REGION BY COUNTY: 1985

		Secondary Environmental Corridors												
	Surfac	Surface Water Wetlands		Woodlands		Other Open Lands		Urban Lands		Total				
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total		
Kenosha	115	1.9	2,153	35.3	1,987	32.6	1,824	29.9	20	0.3	6,099	100.0		
Ozaukee	111	2.2	2,799	22.8 59.1	1,301	36.2 16.0	1,211	33.7 21.4	184 55	5.1 1.2	3,591 4,733	100.0		
Racine	190	2.9	2,121	32.1	2,327	35.2	1,938	29.4	27	0.4	6,603	100.0		
Washington	186	2.1	3,196 5,558	35.1 57.8	2,898	31.8 20.1	2,784 1,889	30.6 19.7	40 42	0.4 0.4	9,104 9,610	100.0		
Waukesha	103	1.4	3,712	49.0	1,856	24.5	1,528	20.1	382	5.0	7,581	100.0		
Region	969	2.0	20,357	43.0	13,059	27.6	12,186	25.8	750	1.6	47,321	100.0		

Source: SEWRPC.

Table 60

SECONDARY ENVIRONMENTAL CORRIDORS IN THE REGION BY COUNTY: 1963, 1970, AND 1985

				Secondary	Environ	mental Corr	idors			
	1	963	19	1970 ^a 1985		Change 1963-1970		Cha 1970	-1985	
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent	Acres	Percent
Kenosha	5,965	12.2	5,902	12.2	6,099	12.9	-63	-1.1	197	3.3
Milwaukee	3,580	7.4	3,442	7.1	3,591	7.6	-138	-3.9	149	4.3
Ozaukee	4,790	9.8	4,823	9.9	4,733	10.0	33	0.7	-90	-1.9
Racine	6,337	13.0	6,642	13.7	6,603	14.0	305	4.8	-39	-0.6
Walworth	9,451	19.4	9,668	19.9	9,104	19.2	217	2.3	-564	-5.8
Washington	10,154	20.8	10,072	20.7	9,610	20.3	-82	-0.8	-462	-4.6
Waukesha	8,489	17.4	8,018	16.5	7,581	16.0	-471	-5.5	-437	-5.5
Region	48,766	100.0	48,567	100.0	47,321	100.0	-199	-0.4	-1,246	-2.6

^aEstimated.

Source: SEWRPC.

particularly when the opportunity is presented to incorporate such secondary corridors into urban stormwater retention basins, associated drainageways, and neighborhood parks.

As indicated in Table 59, secondary environmental corridors encompassed about 47,300 acres, or 3 percent of the total area of the Region, in 1985. This included just over 900 acres of surface water, about 20,400 acres of wetlands, about 13,100 acres of woodlands, about 12,200 acres of other open lands, and just over 700 acres of urban lands. As indicated in Table 60, the area encompassed by secondary environmental corridors did not change significantly between 1963 and 1985.

Isolated Natural Areas

In addition to the primary and secondary environmental corridors, other, smaller pockets of natural resource base elements exist within the Region. These pockets are isolated from the environmental corridors by urban development or agricultural uses. Even though they are

· · · · · · · · · · · · · · · · · · ·		Isolated Natural Areas											
	Surface Water		Wetlands		Woodlands		Other Open Lands		Urban Lands		Total		
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	
Kenosha	126	3.5	1,141	32.1	1,904	53.5	381	10.7	8	0.2	3,560	100.0	
Milwaukee	125	5.5	458	20.0	1,330	58.2	343	15.0	29	1.3	2,285	100.0	
Ozaukee	80	2.3	1,598	46.2	1,452	42.0	320	9.3	8	0.2	3,458	100.0	
Racine	162	2.1	2,625	34.8	3,846	50.9	913	12.1	7	0.1	7,553	100.0	
Walworth	170	2.1	1,939	23.8	5,275	64.6	768	9.4	5	0.1	8,157	100.0	
Washington	120	1.8	1,819	27.0	4,273	63.4	522	7.7	6	0.1	6,740	100.0	
Waukesha	283	3.2	2,638	30.4	5,070	58.5	588	6.8	93	1.1	8,672	100.0	
Region	1,066	2.6	12,218	30.2	23,150	57.3	3,835	9.5	156	0.4	40,425	100.0	

ISOLATED NATURAL AREAS IN THE REGION BY COUNTY: 1985

Source: SEWRPC.

separated from the environmental corridor network, these areas have important natural value. Since isolated natural areas may represent the only wildlife habitat in an area, provide good locations for local parks and nature study areas, and lend unique aesthetic character and natural diversity to an area, these uses should be protected and preserved to the extent practicable as the process of urban development proceeds within the Region.

The isolated natural areas shown on Map 35 encompassed about 40,400 acres, or about 2 percent of the total areas of the Region in 1985. This included about 1,100 acres of surface water, 12,200 acres of wetlands, 23,200 acres of woodlands, 3,800 acres of other open lands, and just over 100 acres of urban lands (see Table 61). Between 1963 and 1970 the isolated natural area acreage decreased by about 1,100 acres, or by about 2.6 percent, and by an additional 1,300 acres, or 3.1 percent, between 1970 and 1985 (see Table 62).

NATURAL HAZARD AREAS

Previous sections of this chapter have identified and described key elements of the natural resource base and emphasized the importance of protecting those elements from urban encroachment in order to maintain the overall quality of the environment. In addition to natural resource preservation, however, comprehensive planning efforts must seek to avoid urban development in areas which may be hazardous to human life or property. Of primary importance in this regard in the Region are areas subject to flooding and areas subject to shoreline erosion.

Flooding is a natural and normal occurrence. Before the advent of areawide urban development, flooding was usually accepted as a natural course of events and it was recognized that the streams would in time revert to their normal channels, leaving the adjacent floodlands dry and suitable for certain agricultural or other compatible uses. As urbanization proceeded within the Region, man began to encroach increasingly upon the floodlands with incompatible urban land use development. While many of the original settlements within the Region were located on high ground near rivers and streams, settlements soon spread to nearby areas, including low-lying floodlands; homes, stores, and factories were erected either to take advantage of level lands or to capitalize on closein sites. Continued urbanization resulted in man's preempting of natural floodways and floodplains of the streams, often without regard for the periodic flood hazards and dangers to property, health, and life.

				lso	lated Nat	ural Areas				
	1	1963		1970 ^a 1985		Cha 1963	nge 1970	Cha 1970	inge -1985	
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent	Acres	Percent
Kenosha	3,834	9.0	3,864	9.2	3,560	8.8	30	0.8	-304	-7.9
Milwaukee	2,877	6.7	2,494	6.0	2,285	5.6	-383	-13.3	-209	-8.4
Ozaukee	3,661	8.5	3,432	8.2	3,458	8.6	-229	-6.3	26	0.8
Racine	7,544	17.6	7,590	18.2	7,553	18.7	46	0.6	-37	-0.5
Walworth	8,227	19.2	8,132	19.5	8,157	20.2	-95	-1.2	25	0.3
Washington	6,933	16.2	6,848	16.4	6,740	16.7	-85	-1.2	-108	-1.6
Waukesha	9,757	22.8	9,377	22.5	8,672	21.4	-380	-3.9	[°] -705	-7.5
Region	42,833	100.0	41,737	100.0	40,425	100.0	-1,096	-2.6	-1,312	-3.1

ISOLATED AREAS IN THE REGION BY COUNTY: 1963, 1970, AND 1985

^aEstimated.

Source: SEWRPC.

The amount of damage caused by floodwaters varies with the velocity and depth of the floodwaters and with the length of time the floodwaters remain near the crest, or peak, stage. A flood which recedes rapidly after reaching its peak may do relatively little damage to properly protected structures, whereas a flood of long duration or high velocity may cause heavy damage despite any attempts at protection. In addition to the inconvenience, hardship, danger, and economic loss for occupants of floodlands during floods, floodwaters may also cause disruption of utility and transportation service; health and safety hazards; damage to industries, businesses, residences, and agricultural operations; and other economic losses. These problems can be caused indirectly by seepage, sanitary sewer or septic tank system backup, erosion, and siltation, as well as by direct inundation and by the force of the moving waters.

As previously noted, for planning and regulatory purposes, flood hazard areas are usually defined as those areas, excluding the stream channels and lake beds, subject to inundation by the 100-year recurrence interval flood. The location and extent of the 100-year recurrence interval floodlands in the Region are shown on Map 29. These areas encompass a total of nearly 250 square miles, or 9 percent of the total area of the Region. Every effort should be made to discourage intensive urban development in these floodland areas while encouraging compatible open space uses.

Like flooding, Lake Michigan shoreline erosion and bluff recession are naturally occurring phenomena. Shoreline erosion and bluff recession are among the most difficult and costly problems facing private property owners and local units of government along the Lake Michigan shoreline. Of foremost concern is the danger to the life of residents of homes located in proximity to eroding shorelines and bluff faces. Shoreline erosion and bluff failure threaten such private property as private residences, commercial buildings, and yards and such public property as streets, utilities, and parkland along numerous coastal reaches. About 55 miles of shoreline, or 68 percent of the total Lake Michigan shoreline along the Southeastern Wisconsin Region, is considered threatened by shoreline erosion or bluff recession.

Shoreline erosion and bluff recession problems may be mitigated or prevented through structural shore protection measures and through regulatory approaches. Structural measures, including the installation of revetments, seawalls, groins, and breakwaters and measures to stabilize coastal bluffs, are particularly important where erosion threatens existing public and private development. Conversely, land use regulations can be use to protect proposed development from shoreline erosion and bluff recession by establishing setback provisions restricting the location of buildings and other improvements vulnerable to damage or destruction from erosion.

It is essential that the design and construction of required shore protection structures take into account the coastal processes and hydrogeologic features affecting the site concerned and the interaction of that site with adjacent shoreline reaches. Recommended analytical procedures and design criteria for various shore protection measures are set forth in SEWRPC Community Assistance Planning Report No. 163, A Lake Michigan Shoreline Erosion Management Plan for Milwaukee County, Wisconsin. These procedures and criteria provide a means for sizing and thereby ensuring the performance of shore protection measures, thus providing a uniform and consistent base of reference for use in project development and design. Of particular importance are criteria pertaining to design water levels. In this regard, it is recommended that major shore protection structures be designed to prevent severe damage and operate well under the 100-year recurrence interval instantaneous maximum Lake Michigan level of 584.3 feet National Geodetic Vertical Datum (NGVD). Structures should also be designed to perform well under a wide range of water levels rather than under only one single design level. The design of structures should consider performance under various lake levels, ranging from a low of the 100-year recurrence interval instantaneous minimum water level of 574.9 feet NGVD to the upper 95 percent confidence limit of the 500-year recurrence interval maximum instantaneous water level of 585.9 feet NGVD. Higher water levels may be used to design offshore structures and structures which protect major public facilities where storm damage would have catastrophic impacts. Structures protecting single-family residential property should be designed to prevent severe damage and operate well under at least the 10-year recurrence interval instantaneous maximum water level of 582.8 feet NGVD.

PUBLIC UTILITY BASE

Public utility systems are among the most important and permanent elements of urban growth and development. Urban development today is highly dependent upon these utility systems, which provide the individual land uses with power, light, communication, heat, water, and sewerage. Water supply and sanitary sewerage utilities have a particularly important interrelationship. Water supply facilities bring potable water from its sources to the user, while sanitary sewerage facilities collect the used water, convey it to a treatment plant, and after treatment return it to the natural environment from which it came.

The majority of water and sewerage utilities in the Region are organized as water and sewer departments of incorporated municipalities, and serve only those areas within the political boundaries of that municipality. Where sanitary districts have been organized, sewer and water service area limits may not be coterminous, although the individual service areas will often tend to approximate one another. Therefore, a general pattern of water and sewer service areas following political boundaries rather than natural topographic boundaries, such as watershed boundaries, exists within the Region.

Sanitary Sewer Service

Areas served by public sanitary sewers encompassed about 377 square miles, or about 14 percent of the total area of the Region, in 1985 (see Map 36). About 1,507,800 persons, or about 87 percent of the total resident population of the Region, were served by sanitary sewers. The area and population served by public sanitary sewerage systems in each county in the Region are summarized in Table 63. The percent of the total area of a county served by sewers ranged from a high of 77 percent in Milwaukee County to a low of just under 3 percent in Walworth and Washington Counties. The percent of the total county population served ranged from a high 99 percent in Milwaukee County to a low of 52 percent in Washington County.

Comparable data relating to sanitary sewer service area and population served by sanitary sewers for 1970 are also presented in Table 63. As indicated in that table, the area served by sanitary sewers increased by about 68 square miles, or 22 percent, between 1970 and 1985. Increases occurred around the periphery of the Kenosha, Milwaukee, and Racine metropolitan areas and around smaller outlying urban centers. Sanitary sewer service was also extended to existing urban development around a number of



Centralized public sanitary sewer service in the Region was provided to an area of about 377 square miles, or about 14 percent of the total area of the Region, in 1985. About 1,507,800 persons, or about 87 percent of the total resident population of the Region, were served by sanitary sewers. The remaining 13 percent of the resident population, or almost 235,000 persons, relied on private onsite sewage disposal. A relatively small portion of these, about 12,200 persons, lived on farms. The remaining 222,800 persons consisted of urban dwellers generally living in scattered fashion throughout the rural and rural-fringe areas of the Region. Of these 222,800 persons, about 110,200 resided in significant concentrations of urban development shown on this map.

		Sanitar Servic	y Sewer e Area		Population Served					
	1	970	1	985	19	70	1985			
County	Square Miles	Percent of County	Square Miles	Percent of County	Number	Percent of County	Number	Percent of County		
Kenosha	23.8	8.6	31.6	11.4	94,000	79.7	101,800	84.1		
Milwaukee	179.0	73.9	185.7	76,6	1,034,700	98.2	933,100	99.3		
Ozaukee	17.3	7.4	19.7	8.4	36,300	66.7	50,700	75.1		
Racine	29.5	8.7	46.0	13.5	135,900	79 .6	144,300	85.3		
Walworth	11.9	2.1	16.6	2.9	35,500	56.0	41,200	57.1		
Washington	9.4	2.2	12.4	2.8	30,200	47.3	45,400	52.1		
Waukesha	38.5	6.6	64.9	11.2	122,100	52.8	191,300	66.9		
Region	309.4	11.5	376.9	14.0	1,488,700	84.8	1,507,800	86.5		

EXISTING AREA AND POPULATION SERVED BY CENTRALIZED PUBLIC SANITARY SEWERS IN THE REGION BY COUNTY: 1970 AND 1985

Source: SEWRPC.

major lakes in the Region, including Camp Lake, Center Lake, Cross Lake, Voltz Lake, and Benet-Shangrila Lake in Kenosha County; Brown's Lake, Eagle Lake, and Wind Lake in Racine County; Delavan Lake and Potter Lake in Walworth County; and Nagawicka Lake and Pewaukee Lake in Waukesha County.

The resident population served by sanitary sewers increased by about 19,100, or by about 1 percent between 1970 and 1985. The relatively modest increase in population served is the net result of significant increases in the number of persons served by sanitary sewers in Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties, and a significant decrease in the number of persons served in Milwaukee County. In Milwaukee County the number of persons served by sanitary sewers decreased by about 101,600 between 1970 and 1985, while the overall county population decreased by an estimated 114,700 persons. As indicated in Table 63, between 1970 and 1985, the percentage of the total population served by sanitary sewers increased in each county of the Region, including Milwaukee County.

As noted earlier, in 1985 centralized sanitary sewerage systems in the Region served a total area of about 377 square miles, or about 14 percent of the total area of the Region, and a total resident population of about 1,507,800 persons, nearly 87 percent of the total population of the Region. The remaining 13 percent of the total Region population, or almost 235,000 persons, relied onsite septic tank sewage disposal systems for domestic sewage disposal. An estimated 12,200 of these persons lived on farms. The remaining 222,800 persons constituted urban dwellers generally living scattered throughout the rural and rural-fringe areas of the Region. Of this total, about 110,200 persons, or about 6 percent of the total regional population, resided in significant concentrations of urban development (see Table 64). These scattered urban concentrations totaled about 69 square miles of urban land use, just under 3 percent of the total area of the Region (see Map 36).

It should be noted that much has been accomplished in terms of future sanitary sewer service area planning in the Region, particularly since the adoption of the regional water quality management plan in 1979. When the regional water quality management plan was adopted, that plan included preliminary recommended sanitary sewer service areas tributary to each recommended public sewage treatment facility in the Region. Those preliminary delineations were

1.1

EXISTING POPULATION NOT SERVED BY CENTRALIZED PUBLIC SANITARY SEWERS IN THE REGION BY COUNTY: 1970 AND 1985

	Unsewered Population: 1985										
			Rural ^a								
	Ur	ban ^b	F	arm	Noi	nfarm					
County	Number	Percent of Total Population	Number	Percent of Total Population	Number	Percent of Total Population					
Kenosha	8,100	6.7	1,357	1.1	9,931	8.2					
	4,900	7.3	1.313	1.9	10.510	15.6					
Racine	5,900	3.5	2,105	1.2	16,921	10.0					
Walworth	12,600	17.5	3,237	4.5	15,185	21.0					
Washington	15,100	17.3	2,268	2.6	24,476	28.1					
Waukesha	61,500	21.5	1,920	0.7	31,145	10.9					
Region	110,200	6.3	12,200	0.7	112,577	6.5					

		Unsewered Population: 1970										
			Rural ^a									
	Ur	ban ^b	F	arm	No	nfarm						
County	Number	Percent of Total Population	Number	Percent of Total Population	Number	Percent of Total Population						
Kenosha	11,800	10.0	3,297	2.8	9,220	7.8						
Milwaukee	12,700	1.2			7,349	0.7						
Ozaukee	4,900	9.0	3,124	5.7	10,137	18.0						
Racine	11,800	7.0	4,613	2.6	18,525	10.8						
Walworth	13,500	21.0	5,779	9.1	8,765	13.6						
Washington	9,600	15.0	6,677	10.5	17,262	27.0						
Waukesha	74,800	31.6	3,930	1.5	30,508	13.0						
Region	139,100	7.5	27,420	1.6	101,766	5.8						

^aFor the purposes of this study, the rural population has been divided into "farm" and "nonfarm." The rural farm population includes those persons living on actively operating farms. The rural nonfarm population shown in this table is a residual number derived by subtracting from the total population the population served by sanitary sewers, the population attributed to unsewered urban development, and the rural farm population.

^bUnsewered urban areas are defined in this context as U. S. Public Land Survey quarter sections that have at least 32 housing units, or an average of one housing unit per five gross acres, and that are not served by public sanitary sewers.

Source: SEWRPC.

necessarily generalized in nature and did not reflect detailed local planning considerations. A process of refining and detailing the generalized areas set forth in the plan through local sewer service area refinement studies was initiated. By the end of 1989, sewer service area refinement plans had been completed for 53 areas in the Region. The regional water quality management plan, as refined through the refinement plans, envisions the extension of sanitary sewer service to an additional 391 square miles of land, or an additional 15 percent of the total area of the Region (see Map 37 and Table 65), to bring the total service area to about 768 square miles, or about 29 percent of the total area of the Region. It is estimated that the proposed additional sewer service area would be able to accommodate about 287,000 housing units at medium densities of development, with an average of four housing units per net residential acre.¹⁴ or a resident population of 688,000 persons.

Water Supply Service

In 1985, public water supply service was provided to areas encompassing a total of 293

¹⁴It is estimated that of the 391 square miles of proposed additional sewer service area, 77 percent, or 301 square miles, are suitable for development, and about 90 square miles, or 23 percent, are not developable, since the land consists of environmental corridors, floodplains, and areas covered by soils poorly suited for urban development. In calculating the number of housing units which could be accommodated, it was assumed that only 80 percent, or 241 square miles, of the developable land would actually be developed for urban purposes, in order to reflect amounts required to provide flexibility to communities in determining the spatial distribution of new urban development and to facilitate the free operation of the urban land market. It was further assumed that 60 percent of the land to be developed, or 145 square miles, would be allocated to "gross" residential uses, the remaining 40 percent being allocated to other urban uses. Of the 145 square miles allocated to "gross" residential uses, it was assumed that streets would occupy 23 percent of the area, leaving the remaining 77 percent, or 112 square miles, for new "net" residential development. Assuming a density of four housing units per net residential acre, this area would be able to accommodate about 287,000 housing units.

Table 65

LOCALLY PROPOSED ADDITIONAL SANITARY SEWER SERVICE AREAS IN THE REGION BY COUNTY

	Proposed Sewer Service Area						
County	Square Miles	Percent of County					
Kenosha	57.1	20.5					
Milwaukee	43.8	18.1					
Ozaukee	32.8	14.0					
Racine	44.6	13.1					
Walworth	43.3	7.5					
Washington	40.3	9.2					
Waukesha	129.1	22.2					
Region	391.0	14.5					

Source: SEWRPC.

square miles, or about 11 percent of the total area of the Region. A total of 1,389,700 persons, representing nearly 80 percent of the resident population of the Region, was served by public water supply systems (see Table 66 and Map 38). About one-half of the resident populations of Ozaukee, Walworth, Washington, and Waukesha Counties were served by public water supply systems in 1985. About 72 percent of the resident population of Kenosha County, 75 percent of the resident population of Racine County, and 97 percent of the resident population of Milwaukee County were served by public water supply.

Between 1970 and 1985, the area of the Region served by public water supply increased by almost 34 square miles, or about 13 percent. The total number of persons in the Region served by public water supply did not change significantly, however, since increases in outlying counties were offset by a substantial decrease in Milwaukee County.

All water supplied by public utilities is drawn either from Lake Michigan or from wells. Lake Michigan was the source of water for about 1,110,000 persons, or 80 percent of the total population served by public water supply in 1985. The remaining 20 percent of the population served by public water utilities, or 279,700 persons, was provided with water from wells. Map 37

PROPOSED SANITARY SEWER AREAS IN THE REGION: 1989



The regional water quality management plan, as amended through local sanitary sewer service area refinement studies, envisions the extension of sanitary sewer service to an additional 391 square miles of land, bringing the total sanitary sewer service area to 768 square miles. The proposed additional service area would be able to accommodate about 287,000 housing units at medium densities of development, thereby serving an additional 688,000 persons.

Source: SEWRPC.

		Public Wa Servic	ter Supply e Area	,	Population Served					
	1	970	1	985	19	70	1985			
County	Square Miles	Percent of County	Square Miles	Percent of County	Number	Percent of County	Number	Percent of County		
Kenosha	16.4	5.9	20.5	7.4	81,000	68.7	86,700	71.6		
Milwaukee	165.2	68.1	171.3	70.6	1,013,900	96.2	915,000	97.4		
Ozaukee	7.2	3.1	9.0	3.8	25,700	47.2	33,800	50.1		
Racine	25.2	7.4	28.0	8.2	120,900	70.8	126,500	74.8		
Walworth	12.7	2.2	13.7	2.4	36,300	57.2	37,100	51.4		
Washington	8.1	1.9	11.7	2.7	28,300	44.4	43,900	50.3		
Waukesha	24.6	4.2	38.8	6.7	84,400	36.5	146,700	51.3		
Region	259.4	9.6	293.0	10.9	1,390,500	79.2	1,389,700	79.7		

EXISTING AREA AND POPULATION SERVED BY PUBLIC WATER UTILITIES IN THE REGION BY COUNTY: 1970 AND 1985

Source: SEWRPC.

In addition to the publicly owned water utilities. there were in 1985 numerous private or cooperatively owned water supply systems in operation within southeastern Wisconsin. In this regard, the Wisconsin Department of Natural Resources has identified 246 privately owned "community" water supply systems in the Region. "Community" water supply systems are defined as those systems which have at least 15 service connections used by year-round residents or which regularly serve at least 25 year-round residents. Typical community water supply systems include residential subdivisions, apartment and condominium developments, mobile home parks, and institutions. The locations of the known private community water supply systems in the Region are shown on Map 38. It is estimated that these 246 systems served a total population of 32,600 persons, or about 2 percent of the total population of the Region, in 1985.

It should be recognized that the subcontinental divide, which traverses the Region in a northwesterly-southeasterly direction, has important implications on the use of Lake Michigan as a source of potable water. In general, water from Lake Michigan may be piped to areas west of the divide if provision is made for the return of the spent water to Lake Michigan. The diversion of water from Lake Michigan without provision for the return of the spent water is subject to numerous legal restrictions.

Long-standing litigation between Wisconsin and Illinois in the Supreme Court of the United States concerning the "Chicago Diversion" and developments arising therefrom indicates that interbasin diversions that reduce or alter the level or flow of waters in one state or nation in favor of another state or nation are illegal. The situation concerning interbasin diversions involving waters of the Great Lakes is further complicated by Section 11.09 of the federal Water Resources Development Act of 1986. This section reads in part: "No water shall be diverted from any portion of the Great Lakes within the United States, or from any tributary within the United States of any of the Great Lakes, for use outside the Great Lakes basin unless such diversion is approved by the Governor of each of the Great Lakes States." There are legal uncertainties concerning the efficacy of this new federal act relating to the scale or amount of the diversions involved and to the constitutionally of the act itself.

This legal issue is still further complicated by the provisions of Section 144.026 of the Wisconsin Statutes, which expressly addresses the issue



Public water supply service was provided to an area of about 293 square miles, or about 11 percent of the total area of the Region in 1985. About 1,389,700 persons, or nearly 80 percent of the resident population of the Region, was served by public water supply systems. Lake Michigan was the source of water for about 80 percent of the population served by public water supply in 1985, with the remaining 20 percent provided by water from wells. In addition to publicly owned water utilities, there were 246 privately owned "community" water supply systems in the Region, which typically serve residential subdivisions, apartment and condominium developments, mobile home parks, and institutions. These private systems served an estimated 32,600 persons, or about 2 percent of the total regional population, in 1985. Source: SEWRPC.

of water loss, withdrawals, diversions, and consumptive uses of Great Lakes basin waters, and which was adopted in response to Wisconsin's entry into the Great Lakes Charter. a nonbinding agreement among the governments of the Great Lakes states and provinces that establishes principles for the cooperative management of Great Lakes water resources. Both Section 144.026 and the Great Lakes Charter require regional consultation for any diversion for consumptive use of Great Lakes waters exceeding five million gallons per day. Section 144.026 also makes Wisconsin Department of Natural Resources approval a prerequisite to any withdrawal exceeding two million gallons per day.

In view of the complex legal structure governing the diversion of water from the Great Lakes basin, it is not surprising that such diversion are in fact quite rare. One such diversion occurred in 1990 when water supply systems serving portions of the Village of Pleasant Prairie lying west of the subcontinental divide were connected to the City of Kenosha water supply system, which utilizes Lake Michigan as its source of water. The diversion became necessary when water from wells that served those portions of Pleasant Prairie was found to contain radium levels in excess of state and federal standards.

In the design of the year 2010 regional land use plan, it may be assumed that Lake Michigan will continue to serve as the source of water supply for much of the area of the Region located east of the subcontinental divide. Generally, areas west of the divide will continue to be served by groundwater, with use of Lake Michigan water limited to those situations where provisions are made for the treatment and return of spent water to the Lake.

Stormwater Drainage

Inventories of stormwater drainage facilities conducted as part of ongoing areawide planning programs indicate that virtually all developed urban areas in the Region are provided with some form of engineered stormwater management system. The characteristics of such systems typically vary, however, by urban density. Thus, roadside ditches, culverts, and swales characterize the stormwater drainage system in low-density urban areas, while curbs, gutters, and piped drainage facilities characterize the stormwater drainage system in high-density urban areas. A key aspect of sound stormwater management is the maintenance of natural drainageways and streams and their associated floodlands and wetland areas, thereby preserving their inherent natural storage and conveyance capacities. The adopted regional land use plan recommends that all new urban development should occur in areas suitable for such uses and that urban development not be allowed to intrude into natural drainageways, floodlands, and wetlands. If urban encroachment into natural drainageways, floodlands, and wetlands is avoided and if newly developed areas continue to be provided with basic drainage facilities as in the past, it would appear that stormwater drainage does not pose a major constraint to development within the Region.

Gas Utilities

Three gas utilities are authorized to operate within the Region and to provide all public gas service therein. The Wisconsin Gas Company is authorized to operate in parts of Milwaukee, Ozaukee, Washington, and Waukesha Counties. The Wisconsin Natural Gas Company is authorized to operate in parts of Kenosha, Milwaukee, Racine, Walworth, and Waukesha Counties. The Southern Gas Company is authorized to operate in parts of Kenosha, Racine, and Walworth Counties. Only in the Town of Wayne in Washington County is there no gas utility presently authorized to operate. Natural gas is supplied to the three gas utilities by the ANR Pipeline Company, the Northern Natural Gas Company, the Moraine Pipeline Company, and the Natural Gas Pipeline Company of America. Gas service may be considered to be virtually ubiquitous, and the lack of such service cannot be considered to be a major constraint on the location and intensity of urban development in the Region.

Electric Utilities

Two major privately owned electric utilities are authorized within the Region which, together with five small municipal utilities, provide service to the entire Region. The Wisconsin Electric Power Company is authorized to operate throughout nearly the entire Region. The Wisconsin Power and Light Company is authorized to operate in parts of Kenosha and Walworth Counties. Municipal electric power utilities are operated by the Cities of Cedarburg, Elkhorn, Hartford, and Oconomowoc, and the Village of Slinger. Generally, an adequate supply of electric power is available throughout the Region. Residential service is available on demand anywhere within the Region. Therefore, electric power service may be considered to be virtually ubiquitous and not a major constraint on the location and intensity of urban development in the Region.

SUMMARY

This chapter has described the natural resource base and the related public utility base of the Region. The natural resources and related public utilities of an area are vital to its economic development and to its ability to provide a pleasant and habitable environment. The following findings have particular significance for regional land use and related public facility planning:

- 1. There has been a general improvement in air quality conditions in southeastern Wisconsin; a reduction in most major pollutants occurred over the past decade. Ozone remains the most serious air pollution problem, since the entire Southeastern Wisconsin Region has been designated an ozone nonattainment area. The ozone problem in the Region is believed to be attributable in large measure to precursor emissions from the large urban areas located to the south and southeast of the Region. The ozone problem remains largely beyond the control of the Region and State and can be effectively addressed only through a multi-state effort.
- 2. The Southeastern Wisconsin Region contains a wide variety of soil types, ranging from poorly drained organic soils to excessively drained mineral soils, with significantly different soil types frequently intermingled in very small areas. It is essential that new urban development be properly located with respect to the soils of the Region since many soils have characteristics questionable for urban development. Analysis of the detailed soil survey data indicate that 901 square miles, or 34 percent of the total area of the Region, are covered by soils having severe limitations for residential development served by public sanitary sewers, or stated differently, are poorly suited for residential development of any kind. Based upon current administrative rules and regulatory practice, about 1,420 square miles, or

about 53 percent of the total area of the Region, are covered by soils classified as unsuitable for conventional onsite sewage disposal systems; about 458 square miles, or 17 percent, are covered by soils classified as suitable; and about 608 square miles, or just over 22 percent, are covered by soils of undetermined suitability. The remaining 203 square miles, or about 8 percent of the Region, consist of disturbed land for which no soil survey data are available and surface water. In comparison, about 911 square miles, or about 34 percent of the total area of the Region, are covered by soils classified as unsuitable for mound sewage disposal systems; about 1,014 square miles, or just over 37 percent, are covered by soils classified as suitable for such systems; and about 561 square miles, or 21 percent, are covered by soils of undetermined suitability.

- 3. There are 101 major lakes of 50 acres or more in the Region having a combined surface water area of about 36,500 acres, or about 2 percent of the total area of the Region. Because of human activities, many lakes in the Region face water quality problems which limit the use of lakes by humans and which threaten aquatic life. Of the 49 major lakes for which water chemistry data were available in 1979, water quality standards were violated in 39 lakes, or 80 percent. The dissolved oxygen and phosphorus standards were most frequently violated. Since the completion of the regional water quality management plan in 1979, the water quality of some lakes has declined, usually due to the effects of urban development. The water quality of other lakes has improved, however, due to the implementation of nonpoint source water pollution control measures in some areas and to the elimination of malfunctioning septic tank systems, usually through the provision of sanitary sewer service.
- 4. There are about 1,148 miles of perennial streams in the Region, or streams which minimally maintain a small, continuous flow throughout the year except under unusual drought conditions. Monitoring of water quality over the period 1964 to 1975 showed a general decline in the achieve-

ment of water quality standards under summer low-flow conditions. About 35 percent of the total stream miles sampled in 1964 met adopted Wisconsin Department of Natural Resources standards. In 1975, only about 19 percent of the stream miles sampled met these standards.

- The Region is richly endowed with ground-5. water resources. Continuous, relatively uniform discharge from groundwater storage helps maintain the base flow of major streams within the Region. The three groundwater aquifers underlying the Region are a major source of water supply for domestic, municipal, and industrial water users. Groundwater quality can be adversely affected by human activity and by naturally occurring phenomena. Relatively high levels of naturally occurring radium have been found in a number of municipal wells using the sandstone aquifer as a source. In certain areas, volatile organic materials have entered the groundwater system through commercial, industrial, and municipal waste disposal systems or chemical spills. Isolated cases of bacterial and nitrogen contamination have also been identified in the Region. Efforts are underway to address many of the identified problems, and despite such localized problems, the quality of groundwater in the Region overall may be generally characterized as good.
- 6. There was a total of 2,608 park and related outdoor recreation sites in the Region in 1985. Together, these sites encompassed about 114,200 acres, or 7 percent of the total area of the Region. Publicly owned sites accounted for 1,696 sites, or about 65 percent of all park and related outdoor recreation sites, and encompassed about 84,300 acres, or 74 percent of the total recreation site acreage. Of the total public park and related outdoor recreation site area, about 45,100 acres, or 53 percent, was in state ownership; 24,200 acres, or 29 percent, was in county ownership; and 15,000 acres, or 18 percent, was in city, village, town, or school district ownership. The 912 privately owned recreation sites encompassed 29,900 acres or 26 percent of the total outdoor recreation site acreage. Many

of these privately owned sites are water oriented, clustered around the shores of inland lakes and rivers.

- 7. The history and cultural heritage of the Region is reflected in an abundance of historic sites. Surveys of historic sites conducted by various units and agencies of government indicate that more than 14,000 historic sites have been identified. Particularly significant historic sites are listed on the National Register of Historic Places. As of 1985, a total of 254 sites and 20 historic districts in southeastern Wisconsin were listed on the National Register.
- 8. The most important elements of the natural resource base and features closely related to that base, including wetlands, woodlands, prairies, wildlife habitat, major lakes and streams and associated shorelands and floodlands, and historic, scenic, and recreational sites, when combined, result in essentially lineal elongated patterns referred to by the Commission as environmental corridors. "Primary" environmental corridors include a wide variety of important natural resource and resource related elements and are, by definition, at least 400 acres in size, two miles long, and 200 feet wide. In 1985, primary environmental corridors encompassed 299,600 acres, or 17 percent of the total area of the Region. Between 1963 and 1970, there was a slight decrease of 1,400 acres, or 0.5 percent, in the primary environmental corridor area. Between the 1970 base year of the second-generation regional land use plan and 1985, there was a further decrease of about 4,900 acres, or 1.6 percent. These changes are the net effects of decreases in environmental corridor lands in certain areas and increases in other areas. Decreases in environmental corridor lands occur, for the most part, as a result of the conversion of natural areas to intensive urban or agricultural use. Increases may occur as a result of reforestation, water impoundment, or the reversion of agricultural lands to wetlands.
- 9. Certain areas of the southeastern Wisconsin are subject to special hazards associated with naturally occurring phe-

nomena, including, most importantly, flooding and Lake Michigan shoreline erosion. Flood hazard areas, defined as areas subject to inundation by the 100-year recurrence interval flood, encompass nearly 250 square miles, or 9 percent of the total area of the Region. Shoreline erosion and bluff recession threaten public and private land and improvements along numerous Lake Michigan coastal reaches in southeastern Wisconsin, with about 55 linear miles of shoreline, or 68 percent of the total Lake Michigan shoreline in the Region, considered to be threatened by shoreline erosion or bluff recession.

- 10. Public sanitary sewer service was provided to areas encompassing about 377 square miles, or about 14 percent of the total area of the Region, in 1985. About 1,507,800 persons, representing nearly 87 percent of the total regional population, were served. Between 1970 and 1985, the area served by sanitary sewers increased by 68 square miles, or 22 percent. The population served increased by about 19,100 persons, or about 1 percent. The modest increase in population served by sanitary sewers is the net result of increases in the number of persons served in Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties and a significant decrease in the number served in Milwaukee County. In Milwaukee County, the population served by sanitary sewers decreased by 101,600 persons between 1970 and 1985, while the overall county population decreased by an estimated 114,700 persons. The percentage of the population served by sanitary sewers increased at least slightly in each county in the Region. including Milwaukee County, between 1970 and 1985.
- 11. About 293 square miles, or 11 percent of the total area of the Region, was served by public water supply systems in 1985. About 80 percent of the regional population, about 1,389,700 persons, was served. Between 1970 and 1985, the area of the Region served by public water supply increased by almost 34 square miles, or about 13 percent. The total number of persons in the Region served by public

water supply did not change significantly, however, as increases in outlying counties were offset by a substantial decrease in Milwaukee County. In addition to the publicly owned water utilities, there are numerous private or cooperatively owned water supply systems in the Region. A total of 246 privately owned water supply systems, serving a total of about 32,600 persons, or about 2 percent of the total population of the Region, were known to exist in 1985.

A sound comprehensive regional planning effort must recognize the existence of a limited natural resource base to which urban and rural development must be adjusted if serious environmental problems are to be avoided. Review of the existing natural resource base and related public utility base as described in this chapter suggests the following for consideration in the preparation of the year 2010 regional land use plan. First, the regional land use plan should continue to emphasize the preservation of the identified primary environmental corridors, secondary environmental corridors, and isolated natural areas in basically natural, open uses. The regional primary environmental corridors remain an essentially intact composite of the best remaining elements of the natural resource base of the Southeastern Wisconsin Region. The resource features encompassed by the identified primary environmental corridors, which include the best remaining wetlands, woodlands, wildlife habitat areas, surface waters and associated shorelands and floodlands, and cultural and recreational features, warrant that these corridors be considered inviolate. Secondary environmental corridors facilitate surface water drainage and maintain pockets of natural resource features. While not as significant as the primary environmental corridors in terms of overall resource values, such corridors should be considered for preservation as the process of development proceeds within the Region, particularly insofar as they can be incorporated into urban stormwater retention basins, associated drainageways, and neighborhood parks. Isolated natural areas may represent the only wildlife habitat in an area, provide good locations for local parks and nature study areas, and lend natural diversity to an area, and, accordingly, these areas should also be protected and preserved to the extent practicable as urban development proceeds.

Second, the emergence of the mound sewage disposal system and other alternative onsite sewage disposal systems and changing regulatory practices have reduced the importance of soil limitations as a constraint on the use of onsite sewage disposal systems, opening substantial additional areas of the Region to urban development without centralized sanitary sewerage service. This has important implications for regional settlement patterns insofar as it enables the proliferation of scattered urban development in rural areas. The regional land use plan should continue to promote urban and rural development only in areas of the Region covered by soils suitable for such development. In particular, development served by onsite sewage disposal systems should be limited, for the most part, to rural estate development in areas covered by soils which can properly accommodate such systems.

Third, surface water remains a key feature of the natural resource base of Region. Historically, lacustrine and riverine areas have attracted urban development, providing a desirable setting for residential development in particular. Human activities, however, have created water quality problems which limit the recreational use of certain lakes and streams and threaten aquatic life, in some areas providing an impediment to further development. A number of important steps have been, and are being, taken to address water quality problems in the Region. including the preparation of a regional water quality management plan, the preparation of a management plan for the Milwaukee harbor estuary, and the preparation of nonpoint source pollution abatement plans for the Milwaukee River watershed and certain other watersheds in the Region. Improvements in water quality through the implementation of these plans would not only enhance the aesthetic values and expand recreational opportunities, but may also stimulate economic development, such as the renewal of older urban riverside and lakefront areas. The new regional land use plan should emphasize sound development in lake and river areas to avoid further water quality degradation and to enhance social, economic, recreational, and aesthetic values of such areas.

Fourth, wetlands remain one of the most important elements of the natural resource base of the Region, comprising about 10 percent of the total area of the Region in 1985. Wetlands perform an important set of natural functions including, among others, supporting a wide variety of plant and animal life; stabilizing lake levels and streamflows; contributing to the atmospheric oxygen and water supplies; reducing stormwater runoff; protecting shorelines from erosion; and reducing stream sedimentation. Wetlands have severe limitations for residential, commercial, industrial, and other forms of urban development. If ignored in land use planning and development, those limitations may result in flooding, wet basements, unstable foundations, failing pavements, excessive infiltration of clear water into sanitary sewers, and broken sewer and water lines. Wetlands should be protected from urban encroachment because of both their natural values and their development limitations. The vast majority of all wetlands in the Region are located within the identified environmental corridors and isolated natural areas, further underscoring the need for the preservation of those areas.

Fifth, monitoring of air quality in the Region indicates that there has been a reduction in most of the major air pollutants over the past decade. Ozone remains the primary air quality problem, one which can be effectively addressed only through a multi-state abatement effort. In general, air quality conditions do not constitute a constraint on the design of the new regional land use plan.

Sixth, the new regional land use plan should continue to ensure that all new urban development is located outside areas subject to special natural hazards, including areas subject to flooding and to Lake Michigan shoreline erosion. New intensive urban development should generally not be accommodated within the identified 100-year recurrence interval flood hazard areas. New development along the Lake Michigan shoreline should be properly set back in accordance with anticipated shoreline erosion and bluff recession rates, or should be protected by adequate erosion and bluff recession control measures.

Seventh, the new regional land use plan should continue to promote new urban development in urban service areas with access to public sanitary sewerage, water supply systems, and stormwater management systems. In general, it may be assumed that sanitary sewer and water supply service will be made available within planned sanitary sewer service areas as such areas are delineated in the adopted regional water quality management plan and as necessary to meet the needs associated with increases in, and the redistribution of, population and economic activity in the Region through the plan design year 2010. The availability of sewer and water supply service, therefore, is not considered an impediment in the design of the year 2010 regional land use plan. With respect to water supply, it may be assumed that Lake Michigan will continue to serve as the source of water supply for much of that area of the Region located east of the subcontinental divide, which traverses the Region in a generally northwesterly-southeasterly direction. Areas west of that divide will generally continue to be served by groundwater, with use of Lake Michigan water limited to those situations where provisions are made for the treatment and return of spent water to the Lake. In some areas where groundwater is relied upon, certain local groundwater quality problems, such as unacceptable levels of radium, will have to be resolved. With regard to energy utilities, natural gas and electric power service are generally ubiquitous throughout the Region. The availability of natural gas and electric power service is not considered a constraint on the regional land use plan design process. (This page intentionally left blank)

EXISTING LAND USE

INTRODUCTION

Information regarding historic and existing land use and land use development patterns is essential to any sound land use planning effort. An inventory of land use in the Region was first conducted in 1963 in order to facilitate the preparation of the first-generation regional land use plan formally adopted by the Commission in 1966. The original 1963 land use inventory was updated in 1970, providing the basis for the preparation of the second-generation regional land use plan adopted by the Commission in 1977. The land use inventory was subsequently updated in 1975, 1980, and 1985 under the continuing regional planning program. These inventories of land use provide important benchmark information concerning existing land development in southeastern Wisconsin, providing a basis for quantitative description of the changes in the regional land use pattern which have taken place over the past approximately two decades and facilitating an evaluation of the conformance to, or departure of recent development trends from, the adopted regional land use plan.

In 1963, definitive existing land use information was not available on a uniform, areawide basis for the Region. Consequently, an extensive survey of existing land use was undertaken. A land use classification system was developed for use in the inventory. The classification system was designed to be suitable for both land use and transportation planning; adaptable to storm water drainage, public utility, and community facility planning; and compatible with existing land use classification systems in use in the Region at that time. With the exception of the most intensively developed urban areas, where field surveys were utilized, the existing land uses were delineated by photo interpretation on ratioed and rectified aerial photographs at a scale of 1 inch equals 400 feet. The U.S. Public Land Survey quarter section was chosen as the basic geographic data collection unit, and the land uses were identified in terms of the actual activities taking place on the land without regard to ownership characteristics. In this respect it should be noted that quantitative land use data are available within each quarter section by individual subareas devoted to common land uses. Each subsequent land use inventory, that is, the inventories for 1970, 1975, 1980, and 1985, was accomplished by visually comparing aerial photographs for the year concerned with aerial photographs for the previous inventory and delineating changes. For each inventory period, existing land use as delineated on aerial photographs has been "digitized," or encoded for computer application, allowing for automated map reproduction and automated calculation of areas and related data analysis functions.

This chapter describes and analyzes the land use information most relevant to the regional land use plan reevaluation. It includes a discussion of the type, intensity, and spatial distribution of 1985 land use in the Region, as well as a summary of changes in the amount and location of the major land uses over time.¹ In addition. for each of the major land use categories, the amount of land actually devoted to a given land use in 1985 is compared to the amount of land proposed for that use under the 1985 stage of the adopted regional land use plan. Such a comparison is helpful in identifying major progress, or lack thereof, in plan implementation, and can contribute to the refinement and revision of the adopted regional land use plan and of the objectives, principles, and standards on which the plan is based.

Because the current trends in land use development are most meaningfully evaluated in the context of historical land use development in the Region, a brief review of historical development patterns in southeastern Wisconsin since the first permanent European settlement is incorporated into the first section of this chapter.

¹New Commission aerial photographs for the Region taken in the spring of 1990 were not available for use in the current planning program. The regional land use inventory update based on that photography is scheduled to be completed early in 1992.

HISTORIC GROWTH

The first permanent European settlement in the Region was a trading post established in 1795 on the east side of the Milwaukee River, just north of what is now E. Wisconsin Avenue. The movement of European settlers into the Region was well underway by 1830, and most of the cities and villages in the Region can trace their origins to trading posts established in the early nineteenth century. Completion of the U. S. Public Land Survey in the Region by 1836 and subsequent sale of public lands brought many settlers from New England, Germany, Austria, and Scandinavia.

By 1850 there were more than 113,000 people in the Region, and the accompanying historic development map (see Map 39) shows the many scattered developments existing in the Region at that time. In addition to the larger urban centers of Burlington, Kenosha, Milwaukee, Racine, Waukesha, and West Bend, traces of early development are evident in many of the smaller communities that exist in the Region today. These include the still unincorporated community of Wilmot in southwestern Kenosha County; the Cities of Cudahy, South Milwaukee, and Wauwatosa in Milwaukee County: the Cities and Villages of Cedarburg, Port Washington, Saukville, and Thiensville and the unincorporated community of Freistadt, now a part of the City of Mequon, in Ozaukee County; the Villages of Rochester, Sturtevant, Union Grove, and Waterford in Racine County; the still unincorporated community of Springfield and the Cities and Villages of Delavan, East Troy, Elkhorn, Genoa City, and Whitewater in Walworth County; the still unincorporated community of Boltonville and the City of Hartford and Villages of Germantown, Slinger, and Newburg in Washington County; and the Cities and Villages of Delafield, Eagle, Elm Grove, Hartland, Menomonee Falls, Merton, Mukwonago, North Prairie, Oconomowoc, and Pewaukee in Waukesha County. Many of these communities did not incorporate until after 1900 and did not show signs of widespread development until after 1920.

Historic Growth Patterns

As shown on Map 39, over the 100-year period from 1850 to 1950, urban development in southeastern Wisconsin occurred in more or less concentric rings around existing urban centers, resulting in a relatively compact regional settle-

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174

ment pattern.² After 1950, there was a significant change in the pattern of urban development in the Region. While substantial amounts of development continued to occur adjacent to established urban centers, considerable development occurred in isolated enclaves in outlying areas of the Region. This pattern of scattered development, descriptively referred to as "urban sprawl," resulted in a dramatic increase in the amount of urban development in the Region since 1950. From 1850 to 1950, the conversion of land from rural to urban use in the Region occurred at a rate of about 1.4 square miles per year. The conversion of land from rural to urban use in the Region occurred at a rate of 10.5 square miles per year between 1950 and 1963 and a rate of 8.0 square miles per year between 1963 and 1970. From 1970, the base year of the adopted year 2000 regional land use plan. to 1985, the conversion of land to urban uses occurred at the rate of about 9.3 square miles per year. Between 1950 and 1985, the urban population of the Region increased by 47 percent but land devoted to urban development increased by about 227 percent.

From analysis of Map 39, it is apparent that the diffused pattern of urban development which began to manifest itself in the Region in the 1950s continued to 1985. Urban development has continued to increase in once rural communities far removed from the older cores of urban settlement, including the Cedarburg, Grafton, Mequon, Port Washington, Saukville, and Thiensville areas in Ozaukee County; the Germantown, Hartford, and West Bend areas in Washington County; the Brookfield, Delafield, Hartland, Menomonee Falls, Mukwonago, Muskego, New Berlin, Oconomowoc, and Waukesha areas in Waukesha County; the Franklin and

²Urban development as defined for the purposes of this analysis includes those areas of the Region wherein houses or other buildings have been constructed in relatively compact groups, thereby indicating a concentration of residential, commercial, industrial, governmental, or institutional land uses. The continuity of such development was considered interrupted if a quarter mile or more of nonurban type land uses such as agriculture, woodlands, or wetlands prevailed in which the above conditions were generally absent.







Until about 1950, urban development within the Region occurred in a fairly regular pattern, marked by concentric rings of relatively high-density urban development contiguous to, and outward from, the existing urban areas and long-established mass transit, utility, and community facility systems. Soon after World War II, however, the character of urban growth in the Region began to change to a much more diffused pattern of development, with relatively low densities and a proliferation of clusters of noncontiguous urban development. Between 1950 and 1985, the urban population of the Region increased by about 47 percent, while land devoted to urban use increased by about 227 percent. The continuation of this sprawl pattern of development threatens further destruction of prime agricultural lands and of the underlying and sustaining natural resource base and the creation of urban enclaves in essentially rural areas which will be difficult to serve economically, if at all, with necessary public utilities and services. 175 Source: SEWRPC.

Oak Creek areas in Milwaukee County; the Burlington, Caledonia, and Mount Pleasant areas in Racine County; the Bristol, Pleasant Prairie, Somers, and outlying lake areas in Kenosha County; and the Delavan, Elkhorn, Geneva Lake, and Whitewater areas in Walworth County. Close to Lake Michigan, the considerable urban development which occurred both north and south of the Kenosha, Milwaukee, and Racine metropolitan areas between 1970 and 1985 lends further support to the thesis that the Chicago-Kenosha-Racine-Milwaukee complex will eventually become part of a continuous band of urban development extending along the southern and western shores of Lake Michigan from South Bend, Indiana, to Port Washington, Wisconsin.

The historic urban development map for the Region does not reveal the same marked influence of transportation routes on urban development patterns that have been identified by transportation studies in other large metropolitan areas. Although the influence of certain major highway routes, such as STH 15, 24, and 36, and USH 18, 41, and 141, on the spatial location of urban development is clearly evident in more recent years, the historical influence of the steam and electric interurban railway networks is much less evident than in other large metropolitan regions; urban growth appears to have occurred more by accretion than by axial expansion. Where the latter has occurred, it has apparently been centered on automotive transportation and been closely followed by interstitial development. The 1920 growth ring for the Milwaukee urban area, however, approximates the outer limits of the then existing local street railway network and still approximates the outer limits of the highest population densities and the highest level of mass transit service in the Region.

The historic development map supports the thesis that the spatial location of urban development in the Region has been as strongly influenced by resource amenities as by transportation. This is evidenced by the lineal development existing around the many inland lakes, along the Lake Michigan shore, and along the stream valleys of the Region. It appears that, although transportation routes did have some influences on historic urban development in the Region, that influence was modified by the location and quality of the resource amenities and by utility service availability. It also appears, however, that the influence of transportation routes on urban development has become more marked since the introduction of the highspeed, all-weather highway.

Historic Density Trends

The change in population density in the Region since 1850 is presented in Table 67. As indicated in that table, between 1850 and 1970, the regional population increased more than 15-fold, from about 113,400 to about 1,756,100 persons. As a result, the overall population density of the Region increased steadily from about 42 persons per square mile in 1850 to about 653 persons per square mile in 1970. Owing to the relative stability of the regional population since 1970, there was little change in the overall population density of the Region between 1970 and 1985.

Population densities in urban areas of the Region, however, have followed a different trend. The population density of the urban area of the Region increased from about 7,156 persons per square mile in 1850 to its highest level of 11,346 persons per square mile in 1920.³ After 1920, the population density of the urban area of the Region began a steady decline. In 1950, the urban population density in the Region was 8,076 persons per square mile. The urban population density subsequently declined to 5,795 persons per square mile in 1963 and to 5,115 persons per square mile in 1970. Since 1970, the urban population density has continued to decline, dropping to 3,628 persons per square mile in 1985 (see Figure 29).

³The urban population densities presented in this chapter are based on the areal extent of urban lands in the Region as identified under the Commission regional growth ring analysis as shown on Map 39. If, alternatively, the areal extent of lands classified as "urban" under the Commission regional land use inventory, which includes all streets and highways and all residential, commercial, industrial, and other intensive land uses, were used as the basis for calculating urban population densities, the resulting densities would be somewhat lower, by 20 to 35 percent, than the densities presented herein.

	Urban Population		Ru Popul	ral ation		Ar (square	ea e miles)	Persons per Square Mile	
Year	Number	Percent of Total	Number	Percent of Total	Total Population	Urban	Total	Urban	Total
1850	28,623	25.2	84,766	74.8	113,389	4	2,689	7,156	42.2
1880	139,509	50.3	137,610	49.7	277,119	18	2,689	7,751	103.1
1900	354,082	70.6	147,726	29.4	501,808	37	2,689	9,570	186.6
1920	635,376	81.1	148,305	18.9	783,681	56	2,689	11,346	291.4
1940	991,535	92.9	76,164	7.1	1,067,699	90	2,689	11,017	397.1
1950	1,179,084	95.0	61,534	5.0	1,240,618	146	2,689	8,076	461.4
1963	1,634,200	97.6	40,100	2.4	1,674,300	282	2,689	5,795	622.6
1970	1,728,946	98.5	27,137	1.5	1,756,083	338	2,689	5,115	653.1
1980	1,749,238	99.1	15,558	0.9	1,764,796	444	2,689	3,940	656.3
1985	1,730,500	99.3	12,200	0.7	1,742,700	477	2,689	3,628	648.1

POPULATION DENSITY TRENDS IN THE REGION: SELECTED YEARS 1850-1985

NOTE: Beginning in 1940, the "rural nonfarm" population is included in the urban total.

The data pertaining to urban land and urban population density for the years 1950, 1963, and 1970 are different from data presented in SEWRPC Planning Report No. 25, due to a refinement of the inventory data.

Source: U. S. Bureau of the Census and SEWRPC.

The adopted regional land use plan recommended a gradual stabilization of the urban population density of the Region. In this regard, the plan envisioned an urban population density of about 4,500 persons per square mile in 1985 and of about 3,800 persons per square mile by the year 2000. The actual 1985 urban population density of 3,628 persons per square mile is, thus, considerably lower than the 1985 planned density and slightly lower than the year 2000 planned density. The increases in population and urban area and decreases in urban population density have important implications for land use, transportation, and public facility planning.

Factors contributing to the diffusion of urban development and the associated decline in urban population densities include the widespread availability of electric power and telephone service; the practicality of onsite sewage disposal and water supply made possible by the septic tank and electrically powered well, respectively, and more recently, the mound sewage disposal system; the development of "all weather" highway facilities and the attendant use of the automobile for mass transportation; changing household characteristics, including

Figure 29



URBAN POPULATION DENSITY IN THE REGION: ACTUAL 1850-1985 AND PLANNED 2000

an increase in the number of automobiles per household; and the apparent desirability with which the American public regards low-density residential development and the premium which that public places on space in the vicinity of its residence. Before the widespread availability of the automobile, limited transportation facilities served to constrain, to some extent, the spread of residential development and other forms of urban land use. Increasingly quick and convenient automobile travel, however, has effectively made large amounts of land accessible for development, thereby reducing the need for the intensive urban land development patterns of the past. It must be recognized, however, that the rapid expansion of urban land development is not necessarily consistent with a judicious use of the limited fiscal and physical resources of the Region as recommended in the adopted regional land use plan.

EXISTING LAND USE

While the foregoing section of this chapter provides an overview of development trends in southeastern Wisconsin since 1850, this section provides a more detailed description and analysis of the existing 1985 land use base of the Region and of changes in that land use base over the past approximately two decades. Time series data developed under past regional land use inventories are presented for the major categories of land use for the years 1963, 1970, 1975, 1980, and 1985.⁴ Attention is focused, in particular, on the period from 1970, the base year of the second-generation adopted regional land use plan, to 1985, in order to assess the extent to which actual land use development in the Region has conformed with that recommended under that adopted plan.

Although southeastern Wisconsin is an urban region, less than one-quarter of its total area is presently devoted to urban land uses. These urban uses are so diffused throughout the Region, however, that they have not only created an impression of widespread urbanization, but have also created many serious areawide environmental and developmental problems. The area devoted to major land use categories in the Region is presented in Table 68. Similar data are presented for each of the seven counties in the Region in Appendix B. The spatial distribution of urban land uses in the Region in 1985 is shown in a generalized manner on Map 40. A more detailed 1985 existing land use map at a scale of 1 inch equals 8,000 feet is included in a pocket located at the back of this report.

For regional planning purposes, urban land is defined as land devoted to residential, commercial, industrial, governmental and institutional, transportation, and recreational uses, and adjacent unused lands. As indicated in Table 68, urban lands encompassed about 387,700 acres, or just under 23 percent of the Region, in 1985. The largest urban land use category, residential, accounted for 184,600 acres, or about 48 percent of all urban land and about 11 percent of the total area of the Region. A close second is the transportation, communication, and utility category, which accounted for 120,300 acres, or 31 percent of all urban land and 7 percent of the total area of the Region. The proportional importance of this category reflects the vast areas of land devoted to airports, parking lots, and rights-of-way for streets, highways, and railways.

As further indicated in Table 68, the commercial and industrial categories are the smallest areally of the urban land uses. The very small area and proportion of land presently devoted to urban economic activities, which are so important to the support of regional growth and development, are both surprising and significant. The total land area devoted to commercial and industrial functions in the Region, excluding the off-street parking associated with those uses, which is classified as a transportation use, amounts to only 20,800 acres, or about 1 percent of the Region, yet this small area provides the basis for about 73 percent of the approximately 871,900 jobs in southeastern Wisconsin.

⁴The land use data for the years 1963 and 1970 presented in this chapter differ somewhat from the data presented in SEWRPC Planning Report No. 25, <u>A Regional Land Use Plan and a</u> Regional Transportation Plan for Southeastern Wisconsin-2000, Volume I, Inventory Findings, due to a refinement of inventory data. The revisions consist, for the most part, of shifts among the various urban land use categories and of shifts among the various nonurban land use categories. The combined acreage of all urban land uses and the combined acreage of all nonurban land uses were not significantly changed. Thus, for 1970, the combined acreage of all urban land use categories as presented herein is 1.3 percent less than the acreage reported in Planning Report No. 25, while the combined acreage of all nonurban lands is 0.3 percent greater than the previously reported acreage.

		_			_	_				
					Actual La	nd Use		-		
	196	3	197	0	197	5	198	0	198	5
Land Use Category	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Urban										
Residential	122.539	7.1	142.691	8.3	163.732	9.5	179.831	10.4	184,603	10.7
Commercial	5.610	0.3	6.734	0.4	7.570	0.4	8,162	0.5	8.714	0.5
Industrial	7,319	0.4	9,161	0.5	10.274	0.6	11,171	0.6	12.080	0.7
Transportation, Communication,										1.1.1
and Utilities ^a	91,628	5.3	103,694	6.0	112.046	6.5	117,706	6.8	120,279	7.0
Governmental and Institutional	13,082	0.8	15,877	0.9	16,664	1.0	17.033	1.0	17,240	1.0
Recreational	16,796	1.0	21,270	1.2	23,636	1.4	24,309	1.4	25,564	1.5
Unused Urban	26,710	1.6	24,027	1.4	20,615	1.2	19,935	1.2	19,215	1.1
Subtotal	283,684	16.5	323,454	18.7	354,537	20.6	378,147	21.9	387,695	22.5
Nonurban							· · · · · · · · · · · · · · · · · · ·			
Agricultural	1,047,740	60.9	1.001.398	58.2	970.639	56.4	944,232	54.9	931,956	54.1
Water and Wetlands	221,358	12.9	220,335	12.8	221,198	12.8	219,394	12.7	217,804	12.7
Woodlands	119,583	6.9	117,978	6.9	118,592	6.9	116,395	6.8	116,228	6.8
Unused Rural and					ļ				J	
Other Open Land	48,817	2.8	57,886	3.4	56,117	3.3	62,948	3.7	67,430	3.9
Subtotal	1,437,498	83.5	1,397,597	81.3	1,366,546	79.4	1,342,969	78.1	1,333,418	77.5
Total	1,721,182	100.0	1,721,051	100.0	1,721,083	100.0	1,721,116	100.0	1,721,113	100.0

LAND USE IN THE REGION: 1963, 1970, 1975, 1980, AND 1985

	Change in Land Use										
	1963-	1970	1970-	1975	1975-	1980	1980-	1985	1970-		
			1070-				1000-				
Land Use Category	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	
Urban											
Residential	20,152	16.4	21,041	14.7	16,099	9.8	4,772	2.7	41,912	29.4	
Commercial	1,124	20.0	836	12.4	592	7.8	552	6.8	1,980	29.4	
Industrial	1,842	25.2	1,113	12.1	897	8.7	909	8.1	2,919	31.9	
Transportation, Communication,											
and Utilities	12,066	13.2	8,352	8.1	5,660	5.1	2,573	2.2	16,585	16.0	
Governmental and Institutional	2,795	21.4	787	5.0	369	2.2	207	1.2	1,363	8.6	
Recreational	4,474	26.6	2,366	11.1	673	2.8	1,255	5.2	4,294	20.2	
Unused Urban	-2,683	-10.0	-3,412	-14.2	-680	-3.3	-720	-3.6	-4,812	-20.0	
Subtotal	39,770	14.0	31,083	9.6	23,610	6.7	9,548	2.5	64,241	19.9	
Nonurban											
Agricultural	-46,342	-4.4	-30,759	-3.1	-26,407	-2.7	-12,276	-1.3	-69,442	-6.9	
Water and Wetlands	-1,023	-0.5	863	0.4	-1,804	-0.8	-1,590	-0.7	-2,531	-1.1	
Woodlands	-1,605	-1.3	614	0.5	-2,197	-1.9	-167	-0.1	-1,750	-1.5	
Unused Rural and								{		}	
Other Open Land	9,069	18.6	-1,769	-3.1	6.831	12.2	4,482	7.1	9,544	16.5	
Subtotal	-39,901	-2.8	-31,051	-2.2	-23,577	-1.7	-9,551	-0.7	-64,179	-4.6	
Total	-131		32		33		-3		62		

NOTE: The change in the total area of the Region is the net effect of Lake Michigan shoreline erosion and accretion and of landfill ativities.

^aIncludes off-street parking areas of more than 10 spaces.

Source: SEWRPC.

Map 40



ILLINOIS

This map summarizes the spatial distribution of the various land uses existing within the Region in 1985. Urban land uses, consisting of lands devoted to residential, commercial, industrial, governmental and institutional, transportation, and recreational uses, occupied a total area of about 606 square miles, or just under 23 percent of the area of the Region in 1985. Nonurban land uses, consisting of agricultural lands, wetlands, woodlands, surface water, and lands in extractive use, totaled 2,083 square miles, or about 77 percent of the Region. While less than one-quarter of the Region was devoted to urban land uses, those uses were so diffused throughout the Region as to create an impression of widespread urbanization; many serious areawide environmental and developmental problems have also been created.

Source: SEWRPC.

URBAN AND NONURBAN LAND USES IN THE REGION BY COUNTY: 1963, 1970, AND 1985

· · · · · · · · · · · · · · · · · · ·			 963				970			19	985	
	Url	ban	Nonu	rban	Ur	ban	Nonu	Nonurban Urban Nonurban		rban		
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region
Kenosha	23,919	8.4	154,310	10.7	26,536	8.2	151,635	10.8	31,971	8.3	146,203	11.0
Milwaukee	104,757	36.9	50,320	3.5	110,465	34.1	44,671	3.2	116,795	30.1	38,395	2.9
Ozaukee	16,579	5.9	133,963	9.3	20,987	6.5	129,468	9.3	27,292	7.0	123,164	9.2
Racine	29,578	10.4	188,376	13.1	34,945	10.8	182,964	13.1	40,340	10.4	177,573	13.3
Walworth	27,587	9.7	341,369	23.8	31,267	9.7	337,689	24.2	38,082	9.8	330,874	24.8
Washington	20,387	7.2	258,446	18.0	24,611	7.6	254,222	18.2	33,670	8.7	245,163	18.4
Waukesha	60,877	21.5	310,714	21.6	74,643	23.1	296,948	21.2	99,545	25.7	272,046	20.4
Region	283,684	100.0	1,437,498	100.0	323,454	100.0	1,397,597	100.0	387,695	100.0	1,333,418	100.0

		Change: 1	1963-1970			Change:	1970-1985	
	Uri	ban	Nonu	rban	Ur	ban	Nonur	ban
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Kenosha	2,617	10.9	-2,675	-1.7	5,435	20.5	-5,432	-3.6
Milwaukee	5,708	5.4	-5,649	-11.2	6,330	5.7	-6,276	-14.0
Ozaukee	4,408	26.6	-4,495	-3.4	6,305	30.0	-6,304	-4.9
Racine	5,367	18.1	-5,412	-2.9	5,395	15.4	-5,391	-2.9
Walworth	3,680	13.3	-3,680	-1.1	6,815	21.8	-6,815	-2.0
Washington	4,224	20.7	-4,224	-1.6	9,059	36.8	-9,059	-3.6
Waukesha	13,766	22.6	-13,766	-4.4	24,902	33.4	-24,902	-8.4
Region	39,770	14.0	-39,901	-2.8	64,241	19.9	-64,179	-4.6

NOTE: Urban lands include residential; commercial; industrial; transportation, communication, and utility; governmental and institutional; and recreational land uses and unused urban lands. Nonurban lands include agricultural, water and watlands, woodlands, and unused rural and other open lands.

Source: SEWRPC.

In 1985, nonurban areas, agricultural land, woodlands, surface water, wetlands, and unused rural and other open land, accounted for 1,333,400 acres, or 77 percent of the total area of the Region. Agricultural lands encompassed 932,000 acres, or 70 percent of all nonurban lands and 54 percent of the total area of the Region. Woodlands, wetlands, and surface water, in combination, encompassed 334,000 acres, or 25 percent of the nonurban lands and about 19 percent of the total area of the Region. Unused and other open land comprised the remaining 67,400 acres, or 5 percent of nonurban lands in the Region, accounting for about 4 percent of the total area of the Region in 1985.

The conversion of land from rural to urban uses in the Region since 1963 is summarized in Table 69 and in Figure 30. Between 1963 and

1970, urban lands in the Region increased by about 39,800 acres, or 14 percent, an average annual increase of 5,681 acres. Ozaukee, Washington, and Waukesha Counties experienced the largest relative increases in urban land uses, more than 20 percent, during this time. Between 1970, the base year of the second-generation adopted regional land use plan, and 1985, urban lands in the Region increased by an additional 64,200 acres, or 20 percent, an average annual increase of 4,283 acres. Ozaukee, Washington, and Waukesha Counties again experienced the largest relative increases in urban land uses, 30 percent or more, during this time. The varying rates of urban development indicated in Table 69 have resulted in a change in the relative distribution of urban land uses among the seven counties in the Region. As indicated in Table 69, Waukesha County's share of urban

Figure 30



LAND USE IN THE REGION: 1963, 1970, 1975, 1980, AND 1985

land uses in the Region increased from about 22 percent in 1963 to about 26 percent in 1985. Ozaukee and Washington County experienced a slight increase in their shares of the regional total. Conversely, Milwaukee County's share of urban land uses in the Region decreased from about 37 percent in 1963 to about 30 percent in 1985. The relative shares in Kenosha, Racine, and Walworth Counties have not changed significantly since 1963.

Although much new urban development in southeastern Wisconsin between 1970 and 1985 was located in close proximity to existing urban development, as recommended in the adopted regional land use plan, a substantial portion of all new urban development occurred in a dispersed pattern in outlying areas of the Region, continuing the trend which first became apparent in the Region after 1950. The diffused nature of urban land development in the Region is evident on Map 41, which depicts the urban development which occurred within each U.S. Public Land Survey quarter section between 1970 and 1985 in relation to the extent of existing 1985 public sanitary sewer service areas in the Region. As shown on Map 41, the dispersal of urban land development continued in the seven-county Region between 1970 and 1985. contrary to the recommendation of the adopted regional land use plan that urban growth be encouraged to occur contiguous to, and outward from, existing urban centers in areas which can readily be served by essential public utilities, particularly sanitary sewerage.

Of the 64,200 acre increase in urban land in the Region between 1970 and 1985, 26,800 acres, or 42 percent, were served by public sanitary sewerage facilities, as recommended in the adopted regional land use plan. In Milwaukee and Racine Counties, about 93 percent and 60 percent, respectively, of all new urban development was served by public sewerage facilities. Less than one half of all new urban development in Kenosha, Ozaukee, Walworth, Washington, and Waukesha Counties was served by sanitary sewerage facilities (see Table 70).

It should be noted that, between 1970 and 1985, public sanitary sewer service was extended to a substantial amount of urban land which had originally been developed without such service. In this respect, urban lands encompassing 32,900 acres, developed without public sanitary sewer service by 1970, were provided with public sanitary sewer service between 1970 and 1985. As a result, by 1985, about 237,800 acres of urban land, representing 61 percent of all urban lands in the Region, were served by public sanitary sewerage facilities, an increase from 55 percent in 1970.

A comparison of the actual amount of urban land in the Region in 1985 with the amount envisioned under the adopted regional land use plan is presented in Table 71. As presented in that table, "urban land" includes those urban land use categories for which incremental

Source: SEWRPC.



This map indicates the extent of urban development excluding arterial streets and freeways which occurred within the Region between 1970 and 1985 in relation to existing 1985 public sanitary sewer service areas. The dispersion of urban land use development which took place during this time was contrary to recommendations contained in the adopted regional land use plan. That plan recommended that urban growth within the Region be encouraged to occur in areas which can readily be served by essential public services and facilities, particularly public sanitary sewerage. The continued diffusion of urban land uses and of population and employment has important implications for the physical and fiscal well-being of the communities in the Region. The rapidly increasing cost of urban development, together with increased public and private expenditures required to sustain such development over time.

PROVISION OF PUBLIC SANITARY SEWER SERVICE TO URBAN LAND IN THE REGION BY COUNTY: 1970 AND 1985

	L	Jrban Land	I Use: 1970	þ	Urba	in Land	Urban Land Developed Without	u	irban Lanc	l Use: 198	5
	Sewered Unsewered			vered	1970 a	and 1985	by 1970-Provided	Sew	ered	Unsewered	
County	Acres	Percent of Total	Acres	Percent of Total	Sewered (acres)	Unsewered (acres)	Between 1970 and 1985 (acres)	Acres	Percent of Total	Acres	Percent of Total
Kenosha	12,093	45.6	14,443	54.4	2,456	2,979	3,433	17,982	56.2	13,989	43.8
Ozaukee	9,676	46.1	9,829	8.9 53.9	2,735	465 3,570	1,971	14,382	96.2 52.7	12,910	3.8 47.3
Racine	17,693	50.6	17,252	49.4	3,250	2,145	3,912	24,855	61.6	15,485	38.4
Walworth	7,385 5,384	23.6 21.9	23,882	76.4	1,712 2,117	5,103 6,942	2,608 936	8,437	30.7 25.1	26,377	69.3 74.9
Waukesha	25,152	33.7	49,491	66.3	8,691	16,211	14,189	48,032	48.3	51,513	51.7
Region	178,019	55.0	145,435	45.0	26,826	37,415	32,942	237,787	61.3	149,908	38.7

NOTE: Urban lands include residential; commercial; industrial; governmental and institutional; transportation, communication, and utility; and recreational land uses and unused urban land.

Source: SEWRPC.

Table 71

COMPARISON OF EXISTING AND PLANNED URBAN LAND USE IN THE REGION BY COUNTY: 1985

		Urban Land	Use: 1985 ⁸	
			Variance Existi Planned	Between ng and Land Use
County	Actual (acres)	Planned (acres)	Acres ^b	Percent ^C
Kenosha	29,348	29,679	-331	-1.1
Milwaukee	106,304	104,521	1,783	1.7
Ozaukee	25,147	25,847	-700	-2.7
Racine	37,849	36,811	1,038	2.8
Walworth	34,225	31,751	2,474	7.8
Washington	31,690	30,030	1,660	5.5
Waukesha	91,309	84,560	6,749	8.0
Region	355,872	343,199	12,673	3.7

^aIncludes those urban land use categories for which increments were identified under the adopted regional land use plan—namely, residential, commercial, industrial, governmental and institutional, public recreational, and transportation, communication, and utilities. Private recreation lands and unused urban lands are not reflected in this table.

^bActual 1985 land use minus planned 1985 land use.

^cAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

amounts were specifically identified under the land use plan: the residential, commercial, industrial, governmental and institutional, public recreational, and transportation, communication, and utility categories. The regional land use plan did not identify the change in private recreational lands or in unused urban lands; accordingly, those land use categories are not reflected in the comparison of actual and planned urban land in Table 71.

As indicated in Table 71, the overall increase in urban land in the Region between 1970 and 1985 was somewhat greater than anticipated under the adopted land use plan. The plan envisioned that the combined area of residential, commercial, industrial, governmental and institutional, public recreational, and transportation, communication, and utility land uses would approximate 343,200 acres in 1985. The actual area devoted to these uses was greater by 12,700 acres, or 4 percent, than the planned area. A category-by-category description of actual and planned levels of land use in the Region follows.

Urban Land Uses

<u>Residential Land Use</u>: The residential land use category includes both land actually occupied by a residence and vacant land which was either

RESIDENTIAL LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

		Residential Land Use										
	19	963	19	970 	19	975	19	980	1985			
County	Acres	Percent of Region										
Kenosha	10,712	8.8	12,266	8.6	13,936	8.5	15,128	8.4	15,320	8.3		
Milwaukee	41,566	33.9	43,964	30.8	45,927	28.0	47,196	26.2	47,995	26.0		
Ozaukee	7,564	6.2	9,983	7.0	12,090	7.4	13,209	7.4	13,694	7.4		
Racine	13,144	10.7	15,925	11.2	17,627	10.8	19,082	10.6	19,441	10.6		
Walworth	11,790	9.6	12,989	9.1	14,773	9.0	16,171	9.0	16,480	8.9		
Washington	7,342	6.0	9,959	7.0	12,701	7.8	15,508	8.6	16,076	8.7		
Waukesha	30,421	24.8	37,605	26.3	46,678	28.5	53,537	29.8	55,597	30.1		
Region	122,539	100.0	142,691	100.0	163,732	100.0	179,831	100.0	184,603	100.0		

				Chan	ge in Resi	dential Lan	d Use			
	1963	-1970	1970	-1975	1975	-1980	1980-1985		1970	-1985
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Kenosha	1,554	14.5	1,670	13.6	1,192	8.6	192	1.3	3,054	24.9
Milwaukee	2,398	5.8	1,963	4.5	1,269	2.8	799	1.7	4,031	9.2
Ozaukee	2,419	32.0	2,107	21.1	1,119	9.3	485	3.7	3,711	37.2
Racine	2,781	21.2	1,702	10.7	1,455	8.3	359	1.9	3,516	22.1
Walworth	1,199	10.2	1,784	13.7	1,398	9.5	309	1.9	3,491	26.9
Washington	2,617	35.6	2,742	27.5	2,807	22.1	568	3.7	6,117	61.4
Waukesha	7,184	23.6	9,073	24.1	6,859	14.7	2,060	3.8	17,992	47.8
Region	20,152	16.4	21,041	14.7	16,099	9.8	4,772	2.7	41,912	29.4

Source: SEWRPC.

under development for residential use or immediately available for such use. The latter category includes vacant building sites between existing residences, and improved but still vacant residential subdivisions.

Land devoted to residential use encompassed 184,600 acres, or about 11 percent of the total area of the Region, in 1985. The distribution of these lands in the Region is shown on Map 40. As shown on that map, the pattern of residential land in southeastern Wisconsin consists both of large contiguous tracts of residential land in the urbanized portions of the Region and scattered tracts of residential land in isolated rural areas. In 1985, Waukesha County accounted for about 30 percent of all residential land in the Region, Milwaukee County about 26 percent, and Racine County just over 10 percent. Kenosha, Ozaukee, Walworth, and Washington Counties each accounted for less than 10 percent of the regional total (see Table 72).

Between 1963 and 1970, residential land use in the Region increased by about 20,200 acres, or 16 percent, an average annual increase of 2,879 acres. Between 1970, the base year of the adopted regional land use plan, and 1985, residential land use increased by an additional 41,900 acres, or 29 percent, an average annual

COMPARISON OF EXISTING AND PLANNED RESIDENTIAL LAND USE IN THE REGION BY COUNTY: 1985

	Re	esidential La	nd Use: 19	85		
		Blanced	Variance Between Existing and Planned Land Use			
County	(acres)	(acres)	Acres ^a	Percent ^b		
Kenosha	15,320	15,880	-560	-3.5		
Milwaukee	47,995	48,731	-736	-1.5		
Ozaukee	13,694	14,873	-1,179	-7.9		
Racine	19,441	18,787	654	3.5		
Walworth	16,480	15,513	967	6.2		
Washington	16,076	14,827	1,249	8.4		
Waukesha	55,597	51,384	4,213	8.2		
Region	184,603	179,995	4,608	2.6		

^aActual 1985 land use minus planned 1985 land use.

^bAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

increase of 2,794 acres. The period from 1980 to 1985, the most recent period for which data are available, saw a relatively modest increase in residential land in comparison to previous inventory periods. Among the seven counties, Waukesha County experienced the largest increase in residential land, about 7,200 acres between 1963 and 1970 and about 18,000 acres between 1970 and 1985, accounting for about 40 percent of the increase in residential land in the Region since 1963.

Since 1970, the development of residential land in the Region has proceeded at a rate somewhat higher than envisioned under the adopted regional land use plan. The plan anticipated a total of about 180,000 acres of residential land in the Region by 1985. The actual residential land area of 184,600 is greater by about 4,600 acres, or 3 percent, than the planned area. Actual land use was slightly greater than planned in Racine, Walworth, Washington, and Waukesha Counties, and slightly less than planned in Kenosha, Milwaukee, and Ozaukee Counties. The variance between the actual and planned residential land area was less than 10 percent for each of the seven counties (see Table 73 and Figure 31).

COMPARISON OF EXISTING AND PLANNED RESIDENTIAL LAND USE IN THE REGION BY COUNTY: 1970 AND 1985



As previously noted, the adopted regional land use plan seeks to stabilize the long-term trend of declining urban density in southeastern Wisconsin. To this end, the plan recommended that new residential development should occur primarily at medium density, with an average of four housing units per net residential acre. The period from 1970 to 1985, however, saw the continued widespread development of lower density residential land. As indicated in Table 74, lands classified as low-density and suburban-density residential, which include residential areas with lot sizes of one half acre or larger, increased by 30,400 acres between 1970 and 1985, accounting for almost 73 percent of the total increase in residential land during that time.

Further insight into the recent residential development patterns' conformance to, or departure from, regional development objective may be gained from study of Map 40. The heavy concentrations of residential land use in the Kenosha, Milwaukee, and Racine metropolitan areas are obvious on Map 40, as are large concentrations of residential land in and around outlying urban centers including the Cities of Cedarburg and Port Washington and the Village of Grafton in Ozaukee County; the City of

RESIDENTIAL LAND USE BY DENSITY CLASSIFICATION IN THE REGION: ACTUAL 1970 AND 1985 AND PLANNED 1985

	and a second sec	Resi	dential Land	Use	· · · · · · · · · · · · · · · · · · ·	-	
		Actu	ual	میں میں میں میں میں		Varianc	e Between
Deficitiv	1070	1005	Change: 1	1970-1985	Planned	Planned	Land Use
Category ^a	(acres)	(acres)	Acres	Percent	(acres)	Acresb	Percent ^C
High	26,956	27,797	841	3.1	27,528	269	1.0
Medium	43,467	54,153	10,686	24.6	63,781	-9,628	-15.1
Low	68,131	94,618	26,487	38.9	75,519	19,099	25.3
Suburban	4,137	8,035	3,898	94.2	13,167	-5,132	-39.0
Total	142,691	184,603	41,912	29.4	179,995	4,608	2.6

^aResidential density categories are as follows: high—7.0 or more housing units per net residential acre; medium— 2.3 to 6.9 housing units per net residential acre; low—0.7 to 2.2 housing units per net residential acre; and suburban— 0.2 to 0.6 housing units per net residential acre.

^bActual 1985 land use minus planned 1985 land use.

^cAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

Burlington in Racine County; the Cities of Delavan, Elkhorn, Lake Geneva, and Whitewater in Walworth County; the Cities of Hartford and West Bend in Washington County; and the City of Waukesha in Waukesha County. Map 40 also indicates extensive residential land in areas which are substantially removed from such existing urban centers. Much of this dispersed development is situated around the Region's rivers and lakes. The diffused nature of existing residential land use in southeastern Wisconsin is indicated by the fact that of a total of 10,800 U.S. Public Land Survey guarter sections in the Region, only 969, or about 9 percent, contained no residential land uses in 1985.

The adopted regional land use plan recommended encouraging new urban growth in areas contiguous to existing urban centers which can be readily served by public sanitary sewerage facilities and other basic facilities and services. Of the 41,900 acres of residential land developed in the Region between 1970 and 1985, only about 38 percent, or 15,800 acres, was served by sanitary sewerage facilities (see Table 75). On the other hand, of the 107,300 additional occupied housing units, or households, in the Region, about 79 percent, or 84,800 units, were served by sanitary sewerage facilities (see Table 76). The difference in these proportions reflects the low density of unsewered residential development, which requires large lots to accommodate onsite soil absorption sewage disposal systems, compared to the much higher densities which may be accommodated in areas where public sanitary sewer service is provided.

Substantial progress has been achieved in the provision of public sanitary sewer service to residential areas originally developed with onsite sewage disposal systems. As indicated in Table 75, between 1970 and 1985, public sanitary sewer service was extended to 17,600 acres of residential land which had been developed with onsite sewage disposal systems prior to 1970. As a result, public sanitary sewer service was made available to about 22,700 additional housing units previously without such service.

PROVISION OF PUBLIC SANITARY SEWER SERVICE TO RESIDENTIAL LAND IN THE REGION: 1970 AND 1985

	Res	idential La	ind Use: 1	970	Reside Develope	ntial Land ad Between	Residential Land Developed Without Sewer Service	Resi	dential La	Land Use: 1985	
	Sew	red	Unse	wered	1970 a	and 1985	by 1970—Provided	Sew	ered	Unse	wered
County	Acres	Percent of Total	Acres	Percent of Total	Sewered (acres)	Unsewered (acres)	Between 1970 and 1985 (acres)	Acres	Percent of Total	Acres	Percent of Total
Kenosha	5,772	47.1	6,494	52.9	1,318	1,736	1,955	9,045	59.0	6,275	41.0
Milwaukee	39,928	90.8	4,036	9.2	3,845	186	2,506	46,279	96.4	1,716	3.6
Ozaukee	4,943	49.5	5,040	50.5	1,629	2,082	1,211	7,783	56.8	5,911	43.2
Racine	8,295	52.1	7,630	47.9	1,847	1,669	1,947	12,089	62.2	7,352	37.8
Waiworth	3,512	27.0	9,477	73.0	823	2,668	1,401	5,736	34.8	10,744	65.2
Washington	2,278	22.9	7,681	77.1	1,084	5,033	426	3,788	23.6	12,288	76.4
Waukesha	11,988	31.9	25,617	68.1	5,271	12,721	8,179	25,438	45.8	30,159	54.2
Region	76,716	53.8	65,975	46.2	15,817	26,095	17,625	110,158	59.7	74,445	40.3

Source: SEWRPC.

As a result of the changes described above, there have been slight increases in the overall proportions of residential land and housing units in the Region served by public sanitary sewerage facilities. By 1985, about 60 percent of all residential land in the Region was served by public sanitary sewerage facilities, compared to about 54 percent in 1970. Public sanitary sewerage service was available to almost 89 percent of all occupied housing units in the Region in 1985, compared to just over 86 percent in 1970. While these trends suggest gradual progress toward implementation of the residential land development recommendations of the regional land use plan, the effects of the continued development of low-density residential land in scattered locations in outlying areas of the Region, beyond existing urban service areas. must not be overlooked. While only about 21 percent of the additional housing units in the Region were accommodated in such areas, the attendant development accounted for a disproportionate share, 62 percent, of the overall increase in residential land between 1970 and 1985. Continued residential development in areas of the Region not presently served by public water supply and sanitary sewerage facilities may be expected to intensify problems of ground and surface water pollution and may ultimately require the construction of new utility systems. Scattered, low-density residential development leaves in its wake incomplete neighborhoods requiring extensive urban services which can be provided only in a costly and inefficient manner. Police and fire protection, schools, and refuse collection, as well as sewerage and water supply, are affected, and the area may be left with serious financial and environmental problems. This kind of development also breaks up economical farm units and reduces the quality and productivity of wildlife habitat. Moreover, attempts to finance the necessary urban improvements may place a heavy burden on intervening pockets of land still held in agricultural use.

Commercial Land Use: The commercial land use category includes all types of retail and serviceoriented commercial uses, including neighborhood, community, and major regional shopping areas, highway-oriented commercial areas, and professional and executive offices, but excludes related off-street parking of more than ten spaces. At the time of the land use inventory in 1985, a total of about 8,700 acres of land were devoted to commercial land uses in southeastern Wisconsin. Milwaukee County accounted for almost 40 percent of all commercial land use in the Region, while Waukesha County and Racine Counties accounted for 22 percent and 10 percent, respectively, Kenosha, Ozaukee, Walworth, and Washington Counties each accounted for less than 10 percent of the regional total (see Table 77).

Between 1963 and 1970, the amount of commercial land in the Region increased by about 1,100 acres, or about 20 percent, an average annual increase of 161 acres. Between 1970, the base

PROVISION OF PUBLIC SANITARY SEWER SERVICE TO OCCUPIED HOUSING UNITS IN THE REGION BY COUNTY: 1970 AND 1985

	l Sew	lousing U	nits: 1970 Unser	wered	Incre Housi Betwe and	ease in ng Units een 1970 I 1985	Housing Units Without Sanitary Sewer Service in 1970—Provided	H Sewe	lousing U	Jnits: 1985 Unsewered		
County	Number	Percent of Total	Number	Percent of Total	Sewered (number)	Unsewered (number)	Between 1970 and 1985 (number)	Number	Percent of Total	Number	Percent of Total	
Kenosha	28,562	80.5	6,906	19.5	6,936	1,774	2,174	37,672	85.3	6,506	14.7	
	333,233 9,943	98.4 67.4	6,372 4,810	1.6 32.6	29,239 6,709	350 1,454	3,826 1,032	17,684	99.5 77.2	5,232	22.8	
Racine	40,748	81.8 49.5	9,048	18.2 50.5	9,906	1,547 2,645	2,869 1 439	53,523 15,053	87.4 58.8	7,726	12.6 41.2	
Washington	8,618	49.6	8,767	50.4	6,642	4,455	597	15,857	55.7	12,625	44.3	
Waukesha	33,013	53.3	28,922	46.7	20,967	10,290	10,721	64,701	69.4	28,491	30.6	
Region	463,305	86.4	73,181	13.6	84,825	22,515	22,658	570,788	88.7	73,038	11.3	

NOTE: Data pertain to occupied housing units, or households; vacant year-round and seasonal housing units are not included. Source: SEWRPC.

Table 77

COMMERCIAL LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

				(Commerc	ial Land Use	a		·	
	1	963	[970		1975	[1980	1985	
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region
Kenosha	450	8.0	504	7.5	525	6.9	593	7.3	615	7.1
Milwaukee	2,564	45.7	2,869	42.6	3,118	41.2	3,237	39.7	3,454	39.6
Ozaukee	264	4.7	327	4.9	382	5.0	428	5.2	470	5.4
Racine	527	9.4	656	9.7	721	9.5	811	9.9	906	10.4
Walworth	581	10.4	659	9.8	704	9.3	753	9.2	776	8.9
Washington	279	5.0	377	5.6	451	6.0	508	6.2	547	6.3
Waukesha	945	• 16.8	1,342	19.9	1,669	22.1	1,832	22.5	1,946	22.3
Region	5,610	100.0	6,734	100.0	7,570	100.0	8,162	100.0	8,714	100.0

	Change in Commercial Land Use											
	1963	B-1970	1970	0-1975	1971	5-1980	1980-1985		1970-1985			
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent		
Kenosha	54	12.0	21	4.2	68	13.0	22	3.7	111	22.0		
Milwaukee	305	11.9	249	8.7	119	3.8	217	6.7	585	20.4		
Ozaukee	63	23.9	55	16.8	46	12.0	42	9.8	143	43.7		
Racine	129	24.5	65	9.9	90	12.5	95	11.7	250	38.1		
Walworth	78	13.4	45	6.8	49	7.0	23	3.1	117	17.8		
Washington	98	35.1	74	19.6	57	12.6	39	7.7	170	45.1		
Waukesha	397	42.0	327	24.4	163	9.8	114	6.2	604	45.0		
Region	1,124	20.0	836	12.4	592	7.8	552	6.8	1,980	29.4		

^aExcludes off-street parking areas of more than 10 spaces. Source: SEWRPC.

COMPARISON OF EXISTING AND PLANNED COMMERCIAL LAND USE IN THE REGION BY COUNTY: 1985

County	Commercial Land Use: 1985			
	Actual (acres)	Planned (acres)	Variance Between Existing and Planned Land Use	
			Acres ^a	Percent ^b
Kenosha	615	519	96	18.5
Milwaukee	3,454	2,977	477	16.0
Ozaukee	470	347	123	35.4
Racine	906	710	196	27.6
Walworth	776	689	87	12.6
Washington	547	395	152	38.5
Waukesha	1,946	1,459	487	33.4
Region	8,714	7,096	1,618	22.8

^aActual 1985 land use minus planned 1985 land use.

^bAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

year of the adopted regional land use plan, and 1985, commercial lands in the Region increased by 2,000 acres, or about 29 percent, an average annual increase of 132 acres. Each county in the Region gained at least 100 acres of commercial land between 1970 and 1985, with the largest increases of 604 acres and 585 acres occurring in Waukesha and Milwaukee Counties, respectively.

Since 1970, the development of commercial land in the Region has occurred at a faster rate than anticipated under the adopted regional land use plan. The plan envisioned a total of about 7,100 acres of commercial land in the Region by 1985. The actual 1985 commercial land area of just over 8,700 acres is greater than the planned acreage by about 1,600 acres, or 23 percent. The actual commercial land area exceeded the area anticipated under the plan for each of the seven counties, with variances of more than 30 percent occurring in Ozaukee, Washington, and Waukesha Counties (see Table 78 and Figure 32).

It should be noted that some of the areas identified as "commercial" in the regional land use inventory contain vacant structures once in commercial use as well as underutilized commercial structures. In the preparation of the regional land use plan, it was assumed such areas would

Figure 32

COMPARISON OF EXISTING AND PLANNED COMMERCIAL LAND USE IN THE REGION BY COUNTY: 1970 AND 1985



be conserved or redeveloped as necessary and remain viable commercial centers. The development of new commercial land in excess of the amounts envisioned under the plan may be attributed in part to the fact that such older commercial development has not been utilized to the extent anticipated under the plan.

Industrial Land Use: The industrial land use category includes all land used for manufacturing activities, wholesaling, and warehouse and storage areas, but excludes related off-street parking of more than 10 spaces. Land devoted to industrial land use encompassed 12,100 acres in the Region in 1985. Although industrial development comprised only 0.7 percent of the Region, the spatial distribution of this land use category is of major importance, since about onethird of the Region's labor force finds employment in these industrial areas. About 45 percent of all industrial land in the southeastern Wisconsin is located in Milwaukee County, although that County's relative share of industrial land use in the Region has been decreasing over the past two decades. Concentrations of industrial land also exist in and around the Cities of Kenosha and Racine and in many outlying communities.
INDUSTRIAL LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

		Industrial Land Use ^a										
	1963		1970		1975		1	980	1985			
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region		
Kenosha	711	9.7	769	8.4	836	8.1	888	8.0	917	7.6		
Milwaukee	4,257	58.2	4,580	50.0	4,849	47.2	5,046	45.2	5,375	44.5		
Ozaukee	273	3.7	389	4.2	485	4.7	534	4.8	577	4.8		
Racine	664	9.1	1,079	11.8	1,224	11.9	1,319	11.8	1,416	11.7		
Walworth	343	4.7	458	5.0	531	5.2	604	5.4	678	5.6		
Washington	289	3.9	449	4.9	534	5.2	641	5.7	690	5.7		
Waukesha	782	10.7	1,437	15.7	1,815	17.7	2,139	19.1	2,427	20.1		
Region	7,319	100.0	9,161	100.0	10,274	100.0	11,171	100.0	12,080	100.0		

	Change in Industrial Land Use											
	1963	8-1970	1970)-1975	197!	5-1980	1980	D-1985	1970	0-1985		
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent		
Kenosha	58	8.2	67	8.7	52	6.2	29	3.3	148	19.2		
Milwaukee	323	7.6	269	5.9	197	4.1	329	6.5	795	17.4		
Ozaukee	116	42.5	96	24.7	49	10.1	43	8.1	188	48.3		
Racine	415	62.5	145	13.4	95	7.8	97	7.4	337	31.2		
Walworth	115	33.5	73	15. 9	73	13.7	74	12.3	220	48.0		
Washington	160	55.4	85	18.9	107	20.0	49	7.6	241	53.7		
Waukesha	655	83.8	378	26.3	324	17.9	288	13.5	990	68.9		
Region	1,842	25.2	1,113	12.1	897	8.7	909	8.1	2,919	31.9		

^aExcludes off-street parking areas of more than 10 spaces.

Source: SEWRPC.

The amount of industrial land in the Region increased by 1,800 acres, or 25 percent, between 1963 and 1970, an average annual increase of 263 acres (see Table 79). Between 1970 and 1985, the industrial land base increased by an additional 2,900 acres, or 32 percent, an average annual increase of 195 acres. Varying rates of industrial development have resulted in a change in the distribution of industrial land among the seven counties in southeastern Wisconsin. Most notable is the increase in Waukesha County's share of industrial land use in the Region from about 11 percent in 1963, to about 16 percent in 1970, and to about 20 percent in 1985. Conversely, Milwaukee County's share of the regional industrial land base decreased from about 58 percent in 1963, to about 50 percent in 1970, and to about 45 percent in 1985.

Since 1970, the development of industrial land in the Region has occurred at a rate slightly lower than called for in the adopted regional land use plan. The plan anticipated a total of about 12,700 acres of industrial land in the Region by 1985. The actual 1985 land base of 12,100 acres is about 600 acres, or 5 percent, less than the planned acreage. As indicated in Table 80 and illustrated in Figure 33, the variance between the

COMPARISON OF EXISTING AND PLANNED INDUSTRIAL LAND USE IN THE REGION BY COUNTY: 1985

	1	ndustrial La	nd Use: 19	85			
			Variance Between Existing and Planned Land Use				
County	(acres)	(acres)	Acres ^a	Percent ^b			
Kenosha	917	951	-34	-3.6			
Milwaukee	5,375	5,679	-304	-5.4			
Ozaukee	577	635	-58	-9.1			
Racine	1,416	1,497	-81	-5.4			
Walworth	678	700	-22	-3.1			
Washington	690	648	42	6.5			
Waukesha	2,427	2,593	-166	-6.4			
Region	12,080	12,703	-623	-4.9			

^aActual 1985 land use minus planned 1985 land use.

^bAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

actual and planned industrial land area was less than 10 percent for each of the seven counties. Only in Washington County did the actual increase in industrial land area exceed the planned growth.

<u>Governmental and Institutional Land Use</u>: The governmental and institutional land use category includes areas occupied by government buildings and public and private institutional buildings including county courthouses and administrative offices; city, village, and town halls and administrative offices; schools, including elementary schools, high schools, and colleges and universities; churches; libraries; museums; hospitals and nursing homes; among others. Land devoted to governmental and institutional uses encompassed about 17,200 acres, or about 1 percent of the Region, in 1985.

Between 1963 and 1970, governmental and institutional land in the Region increased by 2,800 acres, or 21 percent, an average annual increase of 399 acres (see Table 81). Among the seven counties, the relative increase in governmental and institutional land during this time ranged from about 10 percent in Milwaukee county to just over 35 percent in Racine, Wash-

Figure 33

COMPARISON OF EXISTING AND PLANNED INDUSTRIAL LAND USE IN THE REGION BY COUNTY: 1970 AND 1985



Source: SEWRPC.

ington, and Waukesha Counties. During the fifteen years from 1970 to 1985, governmental and institutional land increased by an additional 1,400 acres, or 9 percent, an average annual increase of 91 acres. Among the seven counties, the increase in such land ranged from 3 percent in Milwaukee County to 23 percent in Kenosha County.

The increase in governmental and institutional land between 1970 and 1985 was greater than envisioned under the adopted regional land use plan. The plan envisioned a total of about 16,200 acres of governmental and institutional land in the Region by 1985. The actual governmental and institutional land area of 17,200 acres exceeded the planned area by about 1,000 acres, or by about 6 percent. The actual area devoted to governmental and institutional use exceeded the planned area in each of the seven counties, with the variances ranging from just under 3 percent in Milwaukee County to about 20 percent in Kenosha County (see Table 82 and Figure 34).

Transportation, Community, and Utility Land Use: The transportation, communication, and utility land use category includes all street and

GOVERNMENTAL AND INSTITUTIONAL LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

	Governmental and Institutional Land Use ^a											
	1963		1970		1975		1980		1985			
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region		
Kenosha	835	6.4	1,067	6.7	1,265	7.6	1,295	7.6	1,314	7.6		
Milwaukee	6,286	48.0	6,921	43.6	7,030	42.2	7,097	41.7	7,154	41.5		
Ozaukee	690	5.3	866	5.5	929	5.6	1,003	5.9	1,024	6.0		
Racine	1,271	9.7	1,731	10.9	1,802	10.8	1,814	10.6	1,813	10.5		
Walworth	1,005	7.7	1,189	7.5	1,238	7.4	1,252	7.4	1,259	7.3		
Washington	669	5.1	909	5.7	978	5.9	1,074	6.3	1,087	6.3		
Waukesha	2,326	17.8	3,194	20.1	3,422	20.5	3,498	20.5	3,589	20.8		
Region	13,082	100.0	15,877	100.0	16,664	100.0	17,033	100.0	17,240	100.0		

	Change in Governmental and Institutional Land Use										
	1963-1970		1970	1970-1975		1975-1980		0-1985	1970-1985		
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	
Kenosha	232	27.8	198	18.6	30	2.4	19	1.5	247	23.1	
Milwaukee	635	10.1	109	1.6	67	1.0	57	0.8	233	3.4	
Ozaukee	176	25.5	63	7.3	74	8.0	21	2.1	158	18.2	
Racine	460	36.2	71	4.1	12	0.7	-1	-0.1	82	4.7	
Walworth	184	18.3	49	4.1	14	1.1	7	0.6	70	5.9	
Washington	240	35.9	69	7.6	96	9.8	13	1.2	178	19.6	
Waukesha	868	37.3	228	7.1	76	2.2	91	2.6	395	12.4	
Region	2,795	21.4	787	5.0	369	2.2	207	1.2	1,363	8.6	

^aExcludes off-street parking areas of more than 10 spaces.

Source: SEWRPC.

highway rights-of-way; railway rights-of-way and yards; airport, railway, ship, bus, and truck terminals; communication facilities such as radio or television stations and transmission towers; utility plants, such as sewage and water treatment facilities; and all off-street parking areas containing more than 10 parking spaces.

Transportation and related activities are inherently large consumers of land. Next to residential land, the transportation, communication, and utility land use category is the most extensive type of urban development in the Region. Because of their supportive nature, lands devoted to transportation, communication, and utility uses are closely associated with urban development, with their greatest concentration occurring in the urban centers. At the time of the regional land use inventory in 1985, a total of about 120,300 acres, representing 7 percent of the total land area of the Region, were devoted to transportation, communication, and utility uses. The magnitude of this land use category ranged from a low of about 8,600 acres in Ozaukee County to a high of more than 36,300 acres in Milwaukee County (see Table 83).

COMPARISON OF EXISTING AND PLANNED GOVERNMENTAL AND INSTITUTIONAL LAND USE IN THE REGION BY COUNTY: 1985

	Governmental and Institutional Land Use: 1985								
			Variance Between Existing and Planned Land Use						
County	Actual (acres)	Planned (acres)	Acresa	Percentb					
Kenosha	1,314	1,097	217	19.8					
Milwaukee	7,154	6,956	198	2.8					
Ozaukee	1,024	921	103	11.2					
Racine	1,813	1,755	58	3.3					
Walworth	1,259	1,204	55	4.6					
Washington	1,087	955	132	13.8					
Waukesha	3,589	3,313	276	8.3					
Region	17,240	16,201	1,039	6.4					

^aActual 1985 land use minus planned 1985 land use.

^bAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

Between 1963 and 1970, land devoted to transportation, communication, and utility uses in the Region increased by 12,100 acres, or 13 percent, an average annual increase of 1,724 acres. Between 1970, the base year of the adopted regional land use plan, and 1985, transportation, communication, and utility land in the Region increased by an additional 16,600 acres, or 16 percent, an average annual increase of 1,106 acres. Each of the seven counties in southeastern Wisconsin gained at least 1,000 acres of transportation, communication, and utility land since 1970, with Waukesha County experiencing the largest increase, nearly 5,000 acres.

The increase in transportation, communication, and utility land in the Region between 1970 and 1985 was somewhat greater than that anticipated under the adopted regional land use plan (see Table 84 and Figure 35). The plan envisioned a total of about 114,400 acres of transportation, communication, and utility land in the Region in 1985. The actual area devoted to such use is thus greater than the planned area by about 5,900 acres, or 5 percent. This is directly related to the supportive nature of the transportation, communication, and utility uses relative to other urban land uses and the fact that most of the other urban uses have, as previously noted, increased at rates somewhat greater than planned.

Figure 34

COMPARISON OF EXISTING AND PLANNED GOVERNMENTAL AND INSTITUTIONAL LAND USE IN THE REGION BY COUNTY: 1970 AND 1985



Source: SEWRPC.

<u>Recreational Land Use</u>: The recreational land use category includes public and private land devoted to recreational uses, including playgrounds, parks, golf courses, zoos, campgrounds, picnic areas, marinas, and others. It is important to note that this category includes only those areas which have been developed for intensive recreational use. Adjacent portions of public and private sites that have not been developed for intensive recreational use are classified in the regional land use inventory according to their land cover, that is, classified as wetland, woodland, or other open land as appropriate, rather than as recreational land.⁵

⁵This section pertains to recreational land use, defined as those public or private lands which have been developed for intensive recreational use. Adjacent portions of public or private open space sites that have not been developed for such use are not taken into account in this section. It should be noted that the total area of all public and private outdoor recreation sites, including both developed and undeveloped portions, was 114,200 acres in 1985. Of this total, 84,300 acres, or 74 percent, were in public ownership. Additional information on outdoor recreation sites in southeastern Wisconsin is presented in Chapter V of this report.

TRANSPORTATION, COMMUNICATION, AND UTILITY LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

	Transportation, Communication, and Utility Land Use ^a											
	1	1963		1970		1975		980	1985			
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region		
Kenosha	8,142	8.9	8,674	8.4	9,046	8.1	9,639	8.2	9,912	8.2		
Milwaukee	28,714	31.3	33,118	31.9	34,539	30.8	35,681	30.3	36,337	30.2		
Ozaukee	5,971	6.5	6,956	6.7	8,192	7.3	8,548	7.3	8,637	7.2		
Racine	10,768	11.7	11,795	11.4	12,253	10.9	12,753	10.8	12,973	10.8		
Walworth	10,959	12.0	12,161	11.7	13,916	12.4	14,474	12.3	14,603	12.1		
Washington	10,238	11.2	10,997	10.6	11,693	10.5	12,273	10.4	12,828	10.7		
Waukesha	16,836	18.4	19,993	19.3	22,407	20.0	24,338	20.7	24,989	20.8		
Region	91,628	100.0	103,694	100.0	112,046	100.0	117,706	100.0	120,279	100.0		

	Change in Transportation, Communication, and Utility Land Use											
	1963-1970		1970-1975		1975-1980		1980)-1985	1970-1985			
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent		
Kenosha	532	6.5	372	4.3	593	6.6	273	2.8	1,238	14.3		
Milwaukee	4,404	15.3	1,421	4.3	1,142	3.3	656	1.8	3,219	9.7		
Ozaukee	985	16.5	1,236	17.8	356	4.3	89	1.0	1,681	24.2		
Racine	1,027	9.5	458	3.9	500	4.1	220	1.7	1,178	10.0		
Walworth	1,202	11.0	1,755	14.4	558	4.0	129	0.9	2,442	20.1		
Washington	759	7.4	696	6.3	580	5.0	555	4.5	1,831	16.6		
Waukesha	3,157	18,8	2,414	12.1	1,931	8.6	651	2.7	4,996	25.0		
Region	12,066	13.2	8,352	8.1	5,660	5.1	2,573	2.2	16,585	16.0		

^aIncludes off-street parking areas of more than 10 spaces.

Source: SEWRPC.

At the time of the regional land use inventory in 1985, a total of about 25,600 acres of land, representing 1.5 percent of the total area of the Region, was devoted to intensive recreational use. Major concentrations of recreational lands occur in the Kenosha, Milwaukee, and Racine metropolitan areas as well as in many of the Region's smaller urban centers. Concentrations of recreational land also occur around many lakes, streams, and woodland areas in outlying areas of the Region. Milwaukee County accounted for 28 percent of all recreational lands in the Region, Waukesha County for 23 percent, Walworth County for 14 percent, and Kenosha County for 11 percent. Ozaukee, Racine, and Washington County each accounted for less than 10 percent of the regional total (see Table 85).

Between 1963 and 1970, recreational land use in the Region increased by about 4,500 acres, or 27 percent, an average annual increase of 639 acres. Between 1970 and 1985, this category increased by an additional 4,300 acres, or 20 percent, an

COMPARISON OF EXISTING AND PLANNED TRANSPORTATION, COMMUNICATION, AND UTILITY LAND USE IN THE REGION BY COUNTY: 1985

	Transportation, Communication, and Utilty Land Use: 1985							
			Variance Between Existing and Planned Land Use					
County	Actual (acres)	Planned (acres)	Acresa	Percent ^b				
Kenosha	9,912	10,362	-450	-4.3				
Milwaukee	36,337	34,482	1,855	5.4				
Ozaukee	8,637	7,937	700	8.8				
Racine	12,973	12,637	336	2.7				
Walworth	14,603	13,287	1,316	9.9				
Washington	12,828	12,451	377	3.0				
Waukesha , , , , ,	24,989	23,228	1,761	7.6				
Region	120,279	114,384	5,895	5.2				

^aActual 1985 land use minus planned 1985 land use.

^bAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

average annual increase of 286 acres. Among the seven counties in southeastern Wisconsin, the relative increases in recreational land use between 1970 and 1985 ranged from about 8 percent in Milwaukee County to 47 percent in Washington County.

In the preparation of the adopted regional land use plan, only the future requirement for public recreational land use was determined. Because the number, size, and location of new nonpublic recreational areas are generally unknown until their development is imminent, such areas cannot be anticipated and included in any regional plan, although sites particularly well suited for such use can be identified and recommendations made for their protection. Table 86 and Figure 36 compare the amount of public land in recreational use in the Region in 1985 with the amount of land recommended for such use under the 1985 stage of the adopted regional land use plan.

Land in public recreational use encompassed about 13,000 acres in 1985 and accounted for about one half of all recreational land in the

COMPARISON OF EXISTING AND PLANNED TRANSPORTATION, COMMUNICATION, AND UTILITY LAND USE IN THE REGION BY COUNTY: 1970 AND 1985



Source: SEWRPC.

Region. For the Region overall the actual public recreational land area in 1985 was nearly the same as the planned amount. There was, however, significant variance between the actual and planned amounts of public recreational land at the county level. Actual public recreational land use was greater than the planned level in Kenosha, Milwaukee, Walworth, and Waukesha Counties and less than the planned level in Ozaukee, Racine, and Washington Counties. The relative variances between actual and planned public recreational land use ranged from 5 percent in Milwaukee County to 46 percent in Kenosha County. The large absolute variance indicated for Ozaukee County in Table 86 is attributable, in part, to the fact that outdoor recreational facility development at Harrington Beach State Park has not proceeded at the scale originally envisioned under the adopted regional land use plan, although land acquisition by the State has proceeded substantially as recommended by the plan. Additional camping and other recreational facility development is proposed for Harrington Beach State Park in a park master plan under preparation in 1990.

RECREATIONAL LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

		Recreational Land Use ^a											
	1	963	1970		1975		1980		1985				
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region			
Kenosha	1,827	10.8	2,036	9.6	2,376	10.1	2,456	10.1	2,749	10.8			
Milwaukee	6,078	36.2	6,706	31.5	6,937	29.4	6,968	28.6	7,206	28.2			
Ozaukee	905	5.4	1,439	6.8	1,666	7.0	1,746	7.2	1,809	7.1			
Racine	1,628	9.7	2,041	9.6	2,159	9.1	2,354	9.7	2,391	9.4			
Walworth	1,996	11.9	2,941	13.8	3,445	14.6	3,435	14.1	3,541	13.8			
Washington	939	5.6	1,279	6.0	1,684	7.1	1,767	7.3	1,874	7.3			
Waukesha	3,423	20.4	4,828	22.7	5,369	22.7	5,583	23.0	5,994	23.4			
Region	16,796	100.0	21,270	100.0	23,636	100.0	24,309	100.0	25,564	100.0			

	Change in Recreational Land Use										
	1963-1970		1970	1970-1975		1975-1980		D-1985	1970-1985		
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	
Kenosha	209	11.4	340	16.7	80	3.4	293	11.9	713	35.0	
Milwaukee	628	10.3	231	3.4	31	0.4	238	3.4	500	7.5	
Ozaukee	534	59.0	227	15.8	80	4.8	63	3.6	370	25.7	
Racine	413	25.4	118	5.8	195	9.0	37	1.6	350	17.1	
Walworth	945	47.3	504	17.1	-10	-0.3	106	3.1	600	20.4	
Washington	340	36.2	405	31.7	83	4.9	107	6.1	595	46.5	
Waukesha	1,405	41.0	541	11.2	214	4.0	411	7.4	1,166	24.2	
Region	4,474	26.6	2,366	11.1	673	2.8	1,255	5.2	4,294	20.2	

^aIncludes only those areas intensively used for recreational purposes.

Source: SEWRPC.

Unused Urban Land

The unused urban land category includes open lands, other than wetlands and woodlands, which are located within urban areas but which have not been developed for, or otherwise committed to, a specific urban use. At the time of the 1985 regional land use inventory, lands in this category encompassed about 19,200 acres, or 1 percent of the total area of the Region (see Table 87). Since 1963, there have been increases in the unused urban land category in certain areas of the Region and decreases in other areas. The net effect of these changes was a decrease in unused urban land of about 2,700 acres, or 10 percent, between 1963 and 1970, and a further decrease of about 4,800 acres, or 20 percent, between 1970 and 1985. Much of the decrease occurred in Milwaukee and Waukesha Counties, a result of infilling of urban land in partially developed areas.

COMPARISON OF EXISTING AND PLANNED PUBLIC RECREATIONAL LAND USE IN THE REGION BY COUNTY: 1985

		Public Recreational Land Use										
		Act	tual		Variance Betwee Existing and							
	1070	1005	Change:	1970-1985	Planned	Planned Land Use						
County	(acres)	(acres)	Acres	Percent	(acres)	Acres ^a	Percent ^b					
Kenosha	639	1,270	631	98.7	870	400	46.0					
Milwaukee	5,415	5,989	574	10.6	5,696	293	5.1					
Ozaukee	489	745	256	52.4	1,134	-389	-34.3					
Racine	1,101	1,300	199	18.1	1,425	-125	-8.8					
Walworth	345	429	84	24.3	358	71	19.8					
Washington	351	462	111	31.6	754	-292	-38.7					
Waukesha	2,187	2,761	574	26.2	2,583	178	6.9					
Region	10,527	12,956	2,429	23.1	12,820	136	1.1					

^aActual 1985 land use minus planned 1985 land use.

^bAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

Figure 36

COMPARISON OF EXISTING AND PLANNED PUBLIC RECREATIONAL LAND USE IN THE REGION BY COUNTY: 1970 AND 1985



Source: SEWRPC.

Nonurban Land Uses

Agricultural Land: The agricultural land use category includes all croplands, pasturelands, orchards, nurseries, and fowl and fur farms. Under the regional land use inventory, farm dwelling sites are classified as residential land. All other farm buildings are included in agricultural land use.

Agriculture is the largest single land use in the southeastern Wisconsin. In 1985, agricultural lands encompassed about 932,000 acres, or 54 percent of the total area of the Region. Walworth County ranked first in agricultural land, containing 27 percent of the regional total, while Washington County, with 18 percent, ranked second. Highly urbanized Milwaukee County still contained about 21,100 acres of agricultural land in 1985, about 2 percent of the regional total.

The agricultural land base of the Region has declined significantly due largely to the conversion of farmland to urban land uses. Between

UNUSED URBAN LAND IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980 AND 1985

	Unused Urban Land													
	1963		1970		1975		1980		1985					
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region				
Kenosha	1,242	4.6	1,220	5.1	1,200	5.8	1,105	5.5	1,144	5.9				
Milwaukee	15,292	57.3	12,307	51.2	10,662	51.7	10,003	50.2	9,274	48.3				
Ozaukee	912	3.4	1,027	4.3	1,055	5.1	1,073	5.4	1,081	5.6				
Racine	1,576	5.9	1,718	7.1	1,593	7.7	1,432	7.2	1,400	7.3				
Walworth	913	3.4	870	3.6	752	3.7	763	3.8	745	3.9				
Washington	631	2.4	641	2.7	543	2.7	562	2.8	568	3.0				
Waukesha	6,144	23.0	6,244	26.0	4,810	23.3	4,997	25.1	5,003	26.0				
Region	26,710	100.0	24,027	100.0	20,615	100.0	19,935	100.0	19,215	100.0				

	Change in Unused Urban Land												
	1963	-1970	1970	1970-1975		1975-1980		0-1985	1970-1985				
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent			
Kenosha	-22	-1.8	-20	-1.6	-95	-7.9	39	3.5	-76	-6.2			
Milwaukee	-2,985	-19.5	-1,645	-13.4	-659	-6.2	-729	-7.3	-3,033	-24.6			
Ozaukee	115	12.6	28	2.7	18	1.7	8	0.7	54	5.3			
Racine	142	9.0	-125	-7.3	-161	-10.1	-32	-2.2	-318	-18.5			
Walworth	-43	-4.7	-118	-13.6	11	1.5	-18	-2.4	-125	-14.4			
Washington	10	1.6	-98	-15.3	19	3.5	6	1.1	-73	-11.4			
Waukesha	100	1.6	-1434	-23.0	187	3.9	6	0.1	-1,241	-19.9			
Region	-2,683	-10.0	-3,412	-14.2	-680	-3.3	-720	-3.6	-4,812	-20.0			

Source: SEWRPC.

1963 and 1970, agricultural land use in the Region declined by 46,300 acres, or just over 4 percent, representing an average annual loss of 6,620 acres, or about 10.3 square miles. Between 1970, the base year of the adopted regional land use plan, and 1985, the agricultural land base in the Region declined by an additional 69,400 acres, or 7 percent, an average annual loss of 4,629 acres, or 7.2 square miles. Each county in the Region has experienced a significant loss of agricultural land since 1963. The unusually large loss of farmland in Waukesha County, indicated in Table 88, reflects the previously described rapid increase in residential and related urban development in that County. Agricultural lands in the Region serve as a land reserve for urban expansion necessitated by growth and redistribution of the regional population and economic activity. While the regional land use plan envisioned that the agricultural land base would decline in order to accommodate new urban growth, the rate of decline has been greater than anticipated under the plan (see Table 89 and Figure 37). The plan envisioned a total of about 966,300 acres of agricultural land in the Region in 1985. The actual agricultural land area in 1985 was lower by about 34,300 acres, or about 4 percent, than the planned amount. Actual agricultural land use was less than the planned amount in each of the seven

AGRICULTURAL LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

	Agricultural Land Use												
	1963		19	1970		1975		980	1985				
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region			
Kenosha	114,042	10.9	111,188	11.1	108,793	11.2	107,298	11.4	106,165	11.4			
Milwaukee	34,044	3.3	27,803	2.8	25,694	2.6	23,050	2.4	21,128	2.3			
Ozaukee	104,154	9.9	99,161	9.9	95,848	9.9	93,832	9.9	92,650	9.9			
Racine	148,717	14.2	142,185	14.2	140,464	14.5	138,260	14.6	137,196	14.7			
Walworth	260,647	24.9	257,701	25.7	252,721	26.0	250,659	26.6	249,705	26.8			
Washington	185,894	17.7	178,971	17.9	174,561	18.0	169,575	18.0	168,134	18.0			
Waukesha	200,242	19.1	184,389	18.4	172,558	17.8	161,558	17.1	156,978	16.9			
Region	1,047,740	100.0	1,001,398	100.0	970,639	100.0	944,232	100.0	931,956	100.0			

	Change in Agricultural Land Use												
	1963-	-1970	1970-	1970-1975		1975-1980		1985	1970-1985				
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent			
Kenosha	-2,854	-2.5	-2,395	-2.2	-1,495	-1.4	-1,133	-1.1	-5,023	-4.5			
Milwaukee	-6,241	-18.3	-2,109	-7.6	-2,644	-10.3	-1,922	-8.3	-6,675	-24.0			
Ozaukee	-4,993	-4.8	-3,313	-3.3	-2,016	-2.1	-1,182	-1.3	-6,511	-6.6			
Racine	-6,532	-4.4	-1,721	-1.2	-2,204	-1.6	-1,064	-0.8	-4,989	-3.5			
Walworth	-2,946	-1.1	-4,980	-1.9	-2,062	-0.8	-954	-0.4	-7,996	-3.1			
Washington	-6,923	-3.7	-4,410	-2.5	-4,986	-2.9	-1,441	-0.8	-10,837	-6.1			
Waukesha	-15,853	-7.9	-11,831	-6.4	-11,000	-6.4	-4,580	-2.8	-27,411	-14.9			
Region	-46,342	-4.4	-30,759	-3.1	-26,407	-2.7	-12,276	-1.3	-69,442	-6.9			

Source: SEWRPC.

counties. The variance between actual and planned agricultural land was 16 percent in Milwaukee County, 8 percent in Waukesha County, and less than 3 percent in Kenosha, Ozaukee, Racine, Walworth, and Washington Counties. It should be noted that the decrease in agricultural lands reflects in large part the conversion of agricultural lands to urban use at rates higher than envisioned under the adopted regional land use plan despite the fact that the regional population has not increased as suggested by the population forecast on which future urban land requirements were based. This is due, in part, to the development of residential land in outlying areas of the Region at lower densities than recommended in the plan. A relatively small part of the decrease in agricul-

tural land reflects a discontinuation of active use and reversion of the land to the unused category.

A major recommendation of the adopted regional land use plan is the preservation in essentially agricultural use of most of the remaining prime agricultural lands of southeastern Wisconsin. Prime agricultural lands have been identified on the basis of soils, the size of individual farm units, and the size of the agricultural area comprised by the farm units. The preservation of these lands in agricultural use is important to assure the availability of productive farmlands for the future, to maintain an important sector of the regional economy, and to help certain communities preserve their rural lifestyle.

COMPARISON OF EXISTING AND PLANNED AGRICULTURAL LAND USE IN THE REGION BY COUNTY: 1985

	Aç	pricultural La	and Use: 19	85		
			Variance Betwee Existing and Planned Land Us			
County	Actual (acres)	(acres)	Acres ^a	Percent ^b		
Kenosha	106,165	107,789	-1,624	-1.5		
Milwaukee	21,128	25,281	-4,153	-16.4		
Ozaukee	92,650	95,213	-2,563	-2.7		
Racine	137,196	139,188	-1,992	-1.4		
Walworth	249,705	254,805	-5,100	-2.0		
Washington	168,134	173,066	-4,932	-2.8		
Waukesha	156,978	170,966	-13,988	-8.2		
Region	931,956	966,308	-34,352	-3.6		

^aActual 1985 land use minus planned 1985 land use.

^bAbsolute variance as percent of planned 1985 land use.

Source: SEWRPC.

In 1985, prime agricultural lands encompassed about 670,100 acres, representing 39 percent of the total area of the Region. Walworth County accounted for about 208,900 acres of prime agricultural land, or 31 percent of the regional total. Significant amounts of prime agricultural land also existed in Kenosha, Ozaukee, Racine, Washington, and Waukesha Counties. Milwaukee County contained less than 1 percent of the regional prime agricultural land acreage in 1985 (see Table 90).⁶

Between 1963 and 1985, with the continued urbanization of the Region, the area of prime agricultural lands decreased by about 102,700 acres, or 13 percent. As indicated in Table 90, each county in the Region experienced a significant loss in prime agricultural land, with Waukesha County experiencing the greatest loss, about 36,900 acres. The decrease in prime agricultural land is, for the most part, due to the actual conversion of farmland to urban use. The decrease is also attributable, in part, to the division of large farm tracts into smaller tracts. In such cases, although the land may have remained in agricultural use, the fragmentation of ownership caused such lands to be removed from the inventory of prime agricultural lands.

Figure 37

COMPARISON OF EXISTING AND PLANNED AGRICULTURAL LAND USE IN THE REGION BY COUNTY: 1970 AND 1985



While the adopted regional land use plan recommended the preservation of most prime agricultural land, the plan recognized that some prime

⁶Data regarding the areal extent of prime agricultural lands in the Region presented herein differ somewhat from data presented in SEWRPC Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin-2000, Volume I, Inventory Findings. Subsequent to the adoption of the regional land use plan, farmland preservation planning programs were undertaken in Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties, the six counties in the Region with a significant agricultural land base. Those plans resulted in a refinement of the generalized agricultural land preservation recommendations of the regional land use plan, including refinement of the criteria used to identify prime farming areas. The data pertaining to prime agricultural lands in this chapter reflect the refinements provided under the county farmland preservation plans. The areal extent of prime agricultural lands in the Region as presented herein is about 50 percent greater than indicated in Planning Report No. 25.

	Prime Agricultural Land												
						Change: 19	963-1985						
	19	963	15	985	Tot	al	Inside Urban Service	Outside Urban Service					
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent	Area (acres)	Area (acres)					
Kenosha	84,864	11.0	76,471	11.4	-8,393	-9.9	-1,163	-7,230					
Milwaukee	11,983	1.5	1,351	0.2	-10,632	-88.7	-4,610	-6,022					
Ozaukee	81,564	10.6	73,335	10.9	-8,229	-10.1	-947	-7,282					
Racine	108,601	14.0	98,626	14.7	-9,975	-9.2	-1,846	-8,129					
Walworth	220,114	28.5	208,941	31.2	-11,173	-5.1	-939	-10,234					
Washington	125,632	16.3	108,256	16.2	-17,376	-13.8	-1,208	-16,168					
Waukesha	139,975	18.1	103,078	15.4	-36,897	-26.4	-6,486	-30,411					
Region	772,733	100.0	670,058	100.0	-102,675	-13.3	-17,199	-85,476					

PRIME AGRICULTURAL LAND IN THE REGION BY COUNTY: 1963 AND 1985

Source: SEWRPC.

farmland would necessarily be converted to urban use to accommodate future urban growth and development. The plan recommended that the conversion of prime agricultural land to urban use be limited to those lands which were already committed to urban development because of the proximity to existing and expanding concentrations of urban uses and the prior commitment of capital in utility extensions. Of the prime agricultural lands lost between 1963 and 1985, 17,200 acres, or 17 percent, were located in or adjacent to expanding urban areas; the conversion of these areas to urban use was generally consistent with the regional land use plan. The balance, about 85,500 acres, or 83 percent of the total loss, was located in outlying rural areas generally recommended to remain in agricultural and related use under the plan.

It should be noted that, while the conversion of prime agricultural land to urban use has exceeded the amounts envisioned under the adopted regional land use plan, many local units of government in the Region, cognizant of the resource value of such lands, have enacted zoning to preserve such lands in agricultural use, most such zoning having been enacted after 1980. By 1985, exclusive agricultural zoning prohibiting the division of farmland into parcels less than 35 acres had been applied to almost 375,000 acres, or 56 percent of the remaining prime agricultural lands in the Region. Exclusive agricultural zoning prohibits incompatible urban use, especially intensive residential development, and thereby assists in minimizing the expensive and inefficient urban sprawl development patterns which are so detrimental to the Region's natural resource base. A detailed description of exclusive agricultural zoning in the Region is presented in Chapter VII of this report.

<u>Woodlands</u>: This land use category includes upland areas of one acre or more which are covered with trees or heavy brush, including tree farms.⁷ Woodland areas have very obvious and important direct values as wildlife habitat; as aesthetic settings for urban development; and as areas for nature study, scientific pursuits, and outdoor recreational activities. They also have

⁷Lowland wooded areas, such as tamarack swamps, are classified as wetlands in the regional land use inventory.

WOODLANDS IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, 1985

		Woodlands													
	1963		15	1970		1975		980	1985						
County	Acres	Percent of Region													
Kenosha	9,907	8.3	9,735	8.3	9,705	8.2	9,572	8.2	9,655	8.3					
Milwaukee	5,467	4.6	5,087	4.3	4,951	4.2	4,856	4.2	4,770	4.1					
Ozaukee	6,805	5.7	6,664	5.7	6,700	5.6	6,620	5.7	6,600	5.7					
Racine	13,699	11.4	13,234	11.2	13,165	11.1	12,953	11.1	12,873	11.1					
Walworth	31,516	26.3	31,535	26.7	31,810	26.8	31,382	27.0	31,409	27.0					
Washington	21,008	17.6	20,905	17.7	21,806	18.4	21,540	18.5	21,755	18.7					
Waukesha	31,181	26.1	30,818	26.1	30,455	25.7	29,472	25.3	29,166	25.1					
Region	119,583	100.0	117,978	100.0	118,592	100.0	116,395	100.0	116,228	100.0					

	Change in Woodlands											
	1963	-1970	1970	0-1975	1975-1980		1980-1985		1970-1985			
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent		
Kenosha	-172	-1.7	-30	-0.3	-133	-1.4	83	0.9	-80	-0.8		
Milwaukee	-380	-7.0	-136	-2.7	-95	-1.9	-86	-1.8	-317	-6.2		
Ozaukee	-141	-2.1	36	0.5	-80	-1.2	-20	-0.3	-64	-1.0		
Racine	-465	-3.4	-69	-0.5	-212	-1.6	-80	-0.6	-361	-2.7		
Walworth	19	0.1	275	0.9	-428	-1.3	27	0.1	-126	-0.4		
Washington	-103	-0.5	901	4.3	-266	-1.2	215	1.0	850	4.1		
Waukesha	-363	-1.2	-363	-1.2	-983	-3.2	-306	-1.0	-1652	-5.4		
Region	-1,605	-1.3	614	0.5	-2,197	-1.9	-167	-0.1	-1,750	-1.5		

Source: SEWRPC.

indirect and significant values for the reduction of soil erosion and stream sedimentation, reduction of runoff, maintenance of water tables and stream and lake levels, and promotion of groundwater recharge.

There was a total of about 116,200 acres of woodlands in southeastern Wisconsin in 1985, representing about 7 percent of the total area of the Region. Three counties, Walworth, Washington, and Waukesha, accounted for about 71 percent of the woodlands acreage. Among the seven counties in the Region, the woodlands acreage ranged from about 4,800 acres in Milwaukee County to about 31,400 acres in Walworth County. The spatial distribution of woodlands in the Region is shown on Map 30 in Chapter V of this report. Table 91 indicates the extent of changes in woodlands in the Region between 1963 and 1985. These changes are the net results of decreases in woodlands in certain areas due largely to their conversion to intensive urban or agricultural uses, and increases in other areas as a result of reforestation activities. The overall effect of such changes in the Region between 1963 and 1970 was a net decrease in woodlands of about 1,600 acres, or 1.3 percent. Each county in the Region except Walworth County experienced a net decrease in woodlands during that time. Between 1970 and 1985, there was a net decrease in woodlands of 1,750 acres, or 1.5 percent, with each county except Washington County experiencing a net loss. As indicated in Table 91, Washington County experienced a net gain in woodlands of about 850 acres, or 4 percent.

		Wetlands													
	19	63	1970		1975		1980		1985						
County	Acres	Percent of Region													
Kenosha	16,518	9.4	16,066	9.3	15,823	9.2	15,612	9.2	15,233	9.0					
Milwaukee	4,176	2.4	4,139	2.4	4,143	2.4	4,129	2.4	4,140	2.5					
Ozaukee	16,357	9.3	16,274	9.4	16,197	9.4	15,988	9.4	15,898	9.4					
Racine	15,443	8.8	15,398	8.9	15,020	8.7	15,083	8.8	15,056	8.9					
Walworth	28,688	16.3	27,679	16.0	27,512	16.0	26,669	15.6	26,552	15.7					
Washington	41,794	23.8	41,779	24.1	42,062	24.4	41,910	24.6	41,313	24.4					
Waukesha	52,588	30.0	51,660	29.9	51,466	29.9	51,233	30.0	50,790	30.1					
Region	175,564	100.0	172,995	100.0	172,223	100.0	170,624	100.0	168,982	100.0					

WETLANDS IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

	Change in Wetlands												
	1963	-1970	1970	0-1975	1975-1980		1980-1985		1970-1985				
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent			
Kenosha	-452	-2.7	-243	-1.5	-211	-1.3	-379	-2.4	-833	-5.2			
Milwaukee	-37	-0.9	4	0.1	-14	-0.3	11	0.3	1				
Ozaukee	-83	-0.5	-77	-0.5	-209	-1.3	-90	-0.6	-376	-2.3			
Racine	-45	-0.3	-378	-2.5	63	0.4	-27	-0.2	-342	-2.2			
Walworth	-1,009	-3.5	-167	-0.6	-843	-3.1	-117	-0.4	-1127	-4.1			
Washington	-15	0.0	283	0.7	-152	-0.4	-597	-1.4	-466	-1.1			
Waukesha	-928	-1.8	-194	-0.4	-233	-0.5	-443	-0.9	-870	-1.7			
Region	-2,569	-1.5	-772	-0.4	-1,599	-0.9	-1,642	-1.0	-4,013	-2.3			

Source: SEWRPC.

The adopted regional land use plan recommended the preservation of most of the remaining woodlands in the Region. The plan envisioned minimal conversion of woodlands to urban use, about 500 acres between 1970 and 1985. Most of the acreage proposed to be converted consisted of individual woodlots, located directly in the path of urban growth, which were generally insufficient in size or quality to warrant permanent preservation. The net decrease in woodlands of 1,750 acres between 1970 and 1985 is somewhat greater than the loss of woodlands anticipated under the adopted regional land use plan. <u>Wetlands</u>: Lands classified as wetlands include lands in which the water table is at, near, or above the land surface and which are characterized by both hydric soils and by the growth of sedges, cattails, or other wetland vegetation. Wetland areas are important elements of the natural resource base, providing opportunities for a variety of educational, recreational, and scientific activities and contributing to the ecological balance of the Region in many ways. At the time of the regional land use inventory in 1985, there were 169,000 acres of wetlands in the Region, representing about 10 percent of the total area of the Region (see Table 92).

The spatial distribution of wetlands in the Region is shown on Map 31 in Chapter V of this report. This map clearly indicates the presence of large wetland areas such as the Cedarburg Bog in Ozaukee County and the Vernon Marsh and the Tamarack Swamp in Waukesha County; scattered wetlands in the Kettle Moraine State Forest; and other wetlands adjacent to inland lakes and streams throughout the Region. Map 31 also reflects the extensive urban development in the Kenosha, Milwaukee, and Racine metropolitan areas and the accompanying landfill operation and drainage improvements. Milwaukee County in particular contains a very limited amount of wetland areas. Its total of about 4,100 acres of wetlands comprises only 2.5 percent of the regional total.

Over time wetlands may decrease in certain areas and increase in other areas. Wetlands may be lost as a result of drainage and fill activities. In rural areas, certain lands may be able to be cultivated, without artificial drainage, during extended periods of below average precipitation, and may revert to wetlands during periods of average or above average precipitation. Wetland areas may be inundated as a result of water impoundment activities. Wetlands may be created or expanded through wetland restoration efforts. As previously indicated, under regional land use inventory procedures, areas are classified according to existing cover at the time of the inventory, and accordingly the areal extent of wetlands, as indicated by the various land use inventory updates, may be expected to change over time. The overall effect of the types of changes noted above, as determined under the regional land use inventory, was a net decrease of about 2,600 acres, or 1.5 percent, between 1963 and 1970 and an additional net decrease of about 4,000 acres, or 2.3 percent, between 1970 and 1985.

Surface Water: Under the regional land use inventory, surface water includes all inland lakes and ponds and all streams 50 feet or greater in width. Streams less than 50 feet wide are allocated to the land use inventory category of the adjacent area. At the time of the regional land use inventory in 1985, the surface water area of the Region stood at 48,800 acres, representing just under 3 percent of the total area of the Region (see Table 93). The areal extent of surface waters is subject to change as a result of impoundment projects as well as the draining or filling of tributary areas. Slight changes also occur as a result of variations in rainfall. The combined effect of these phenomena was a net increase of 1,546 acres, or 3.4 percent, in the surface water area of the Region between 1963 and 1970, followed by an increase of 1,482 acres, or 3.1 percent, between 1970 and 1985.

Unused Rural and Other Open Lands: This land use category includes open lands in rural areas which are not utilized for agricultural purposes and which have not been identified as wetlands or woodlands. Also included are lands devoted to such temporary uses as solid waste disposal sites and quarrying. At the time of the regional land use inventory in 1985, there were 67,430 acres of land in this category, representing about 4 percent of the total area of the Region (see Table 94). Unused land accounted for about 57,225 acres, or 85 percent of this total. Land devoted quarrying operations accounted for an additional 7,873 acres, or 12 percent, and land used as solid waste disposal sites comprised the small balance, 2,332 acres, or 3 percent.

Since 1963, there were increases in unused and other open lands in certain areas of the Region and decreases in other areas. The net effect of these changes was an increase in the unused and other open lands category of 9,069 acres, or 19 percent, between 1963 and 1970, including an increase of 246 acres of land used as solid waste disposal sites, 792 acres of land devoted to quarrying, and 8,031 acres of unused land. Between 1970 and 1985, there was an additional increase in this category of 9,544 acres, or 17 percent, including 982 acres of land used as solid waste disposal sites, 981 acres of land used for quarrying, and 7,581 acres of unused land.

CURRENT USE RATIOS

An analytical relationship useful in the planning process is the ratio between the area devoted to a given land use and the resident population creating the demand for that land use. Such ratios, which are termed "people-use ratios," are commonly developed for several major land use categories, and are expressed as the number of acres of a given land use per thousand persons in the area under consideration. These people-use ratios are applied pri-

SURFACE WATER IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

· · · · ·	Surface Water													
	1963		1970		1975		1980		1985					
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region				
Kenosha	4,351	9.5	4,683	9.9	4,777	9.8	4,826	9.9	4,829	9.9				
Milwaukee	1,193	2.6	1,261	2.7	1,323	2.7	1,327	2.7	1,345	2.7				
Ozaukee	1,723	3.8	1,823	3.8	1,953	4.0	1,986	4.1	1,992	4.1				
Racine	4,772	10.4	5,002	10.6	5,304	10.8	5,173	10.6	5,177	10.6				
Walworth	13,769	30.1	14,025	29.6	14,583	29.8	14,394	29.5	14,381	29.5				
Washington	3,910	8.5	4,085	8.6	4,286	8.7	4,311	8.8	4,345	8.9				
Waukesha	16,076	35.1	16,461	34.8	16,749	34.2	16,753	34.4	16,753	34.3				
Region	45,794	100.0	47,340	100.0	48,975	100.0	48,770	100.0	48,822	100.0				

	Change in Surface Water												
	1963	3-1970	1970-1975		1975-1980		1980-1985		1970-1985				
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent			
Kenosha	332	7.6	94	2.0	49	1.0	3	0.1	146	3.1			
Milwaukee	68	5.7	62	4.9	4	0.3	18	1.4	84	6.7			
Ozaukee	100	5.8	130	7.1	33	1.7	6	0.3	169	9.3			
Racine	230	4.8	302	6.0	-131	-2.5	4	0.1	175	3.5			
Walworth	256	1.9	558	4.0	-189	-1.3	-13	-0.1	356	2.5			
Washington	175	4.5	201	4.9	25	0.6	34	0.8	260	6.4			
Waukesha	385	2.4	288	1.7	4	0.0	0	0.0	292	1.8			
Region	1,546	3.4	1,635	3.5	-205	-0.4	52	0.1	1,482	3.1			

Source: SEWRPC.

marily in the preparation of conditional forecasts of future land use requirements, which are accomplished by combining the ratios with forecasts of future population levels to arrive at the probable future demand for specific land use categories.

People-use ratios for certain major land use categories for 1963, 1970, and 1985 by county are shown in Table 95. People-use ratios for each of the selected land use categories increased between 1963 and 1970 and, again, between 1970 and 1985, reflecting faster rates of growth for each land use category than for the regional population. The people-use ratio for residential land in particular increased substantially, a reflection of the continuation of the trend toward declining residential densities discussed earlier in this chapter.

A second series of analytical relationships, which fulfill a purpose similar to the people-use ratios, are termed "employee-land use ratios." Employee-use ratios are presented as the number of acres devoted to a given activity per hundred persons employed in that activity. Employee-use ratios for certain major land use categories are presented for 1963, 1970, and 1985 in Table 96. The most notable trend is the increase in the employee-use ratio for manufacturing activities, from 1.2 acres per hundred employees in 1963 to 1.6 acres per hundred employees in 1970 and to

UNUSED RURAL AND OTHER OPEN LAND IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

	Unused Rural and Other Open Land ^a									
	1963		1970		1975		1980		1985	
County	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region	Acres	Percent of Region
Kenosha	9,492	19.4	9,963	17.2	9,862	17.6	9,762	15.5	10,321	15.3
Milwaukee	5,440	11.1	6,381	11.0	6,020	10.7	6,603	10.5	7,012	10.4
Ozaukee	4,924	10.1	5,546	9.6	4,959	8.9	5,489	8.7	6,024	8.9
Racine	5,745	11.8	7,145	12.3	6,578	11.7	6,879	10.9	7,271	10.8
Walworth	6,749	13.8	6,749	11.7	6,971	12.4	8,400	13.3	8,827	13.1
Washington	5,840	12.0	8,482	14.7	7,534	13.4	9,164	14.6	9,616	14.3
Waukesha	10,627	21.8	13,620	23.5	14,193	25.3	16,651	26.5	18,359	27.2
Region	48,817	100.0	57,886	100.0	56,117	100.0	62,948	100.0	67,430	100.0

	Change in Unused Rural and Other Open Land									
	1963-1970		1970-1975		1975-1980		1980-1985		1970-1985	
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Kenosha	471	5.0	-101	-1.0	-100	-1.0	559	5.7	358	3.6
Milwaukee	941	17.3	-361	-5.7	583	9.7	409	6.2	631	9.9
Ozaukee	622	12.6	-587	-10.6	530	10.7	535	9.7	478	8.6
Racine	1,400	24.4	-567	-7.9	301	4.6	392	5.7	126	1.8
Walworth	0	0.0	222	3.3	1,429	20.5	427	5.1	2,078	30.8
Washington	2,642	45.2	-948	-11.2	1,630	21.6	452	4.9	1,134	13.4
Waukesha	2,993	28.2	573	4.2	2,458	17.3	1,708	10.3	4,739	34.8
Region	9,069	18.6	-1,769	-3.1	6,831	12.2	4,482	7.1	9,544	16.5

^aIncludes unused rural land, landfill sites, and quarries.

Source: SEWRPC.

Table 95

ACRES OF SELECTED LAND USES PER THOUSAND PERSONS IN THE REGION: 1963, 1970, AND 1985

	Selected Land Use Category						
Year	Residential	Commercial	Governmental	Recreational			
1963	73.2	3.4	7.8	10.0			
1970	81.3	3.8	9.0	12.1			
1985	105.9	5.0	9.9	14.7			
Change: 1963-70	8.1	0.4	1.2	2.1			
Change: 1970-85	24.6	1.2	0.9	2.6			

Source: SEWRPC.

State Store

		Industrial				
Year	Commercial	Manufacturing	Wholesaling	Total Industrial		
1963	2.8	1.2	12.7	2.2		
1970	2.5	1.6	13.3	2.9		
1985	2.5	2.5	13.5	4.2		
Change: 1963-70	-0.3	0.4	0.6	0.7		
Change: 1970-85	0.0	0.9	0.2	1.3		

ACRES OF SELECTED LAND USES PER HUNDRED EMPLOYEES IN THE REGION: 1963, 1970, AND 1985

Source: SEWRPC.

2.5 acres per hundred employees in 1985. The increase between 1970 and 1985 is the result of a 33 percent increase in lands devoted to manufacturing operations on one hand and a 13 percent decrease in manufacturing employment on the other. In contrast, the employee-use ratios for commercial and wholesaling activities have been fairly stable since 1963.

SUMMARY

This chapter has provided an overview of development trends in southeastern Wisconsin since 1850 along with a description of the existing, 1985, land use base of the Region and changes in that base over approximately the last two decades. Attention was focused, in particular, on changes in land use between 1970, the base year of the adopted regional land use plan, and 1985, in order to help assess the conformance of actual land use development in the Region with the pattern of development recommended under the plan. The most important findings of this chapter are summarized below.

1. Although urban development in the Region has been continuous since 1850, the character of this development has changed dramatically since 1950. The earlier form of compact, concentric urban development has been supplanted by a highly diffused pattern of areawide development. Between 1950 and 1985, a 47 percent increase in urban population was accompanied by a 227 percent increase in land committed to urban use. The conversion of land to urban uses as measured by the Commission urban growth ring analysis indicates such conversion occurred at a rate of about 10.5 square miles per year between 1950 and 1963, about 8.0 square miles per year between 1963 and 1970, and about 9.3 square miles per year between 1970 and 1985.⁸

⁸The Commission relies on two types of inventories and analyses in order to monitor urban growth and development in the Region, an urban growth ring analysis and a land use inventory. The urban growth ring analysis delineates the outer limits of the lands developed and committed to urban use. The growth rings encompass both lands committed to urban use but not yet in such use, and open lands proposed to be preserved for resource conservation purposes within the urban concentrations. The Commission land use inventory identifies all lands actually in urban use wherever located. Thus, open lands included as urban within the delineated urban growth rings are, in the land use inventory, classified as rural. Thus, it may be expected that the urban growth ring analysis will show higher increments of urban growth than the land use inventory for certain time periods. When related to urban population levels, the urban growth ring analysis provides a good basis for calculating urban population densities. The regional land use inventory is a "land cover" inventory and as such identifies as urban all land which has been developed for residential, commercial, industrial, institutional, transportation, and similar uses, regardless of location.

- 2. The spread of urban development in southeastern Wisconsin has been accompanied by a marked reduction in the urban population density of the developed portions of the Region, which decreased from 11,300 persons per square mile in 1920, the historic peak, to about 5,100 persons per square mile in 1970 and further, to about 3,600 persons per square mile in 1985. The adopted regional land use plan recommended a gradual stabilization of the urban population density of the Region. The plan anticipated an urban population density of about 4,500 persons per square mile by 1985, and 3,800 persons per square mile by the year 2000. The actual 1985 urban population density is thus considerably lower than the planned 1985 density and slightly lower than the planned year 2000 density.
- 3. Urban land uses, consisting of lands devoted to residential, commercial, industrial, governmental and institutional, recreational, transportation, and unused urban lands, as identified in the regional land use inventory, encompassed a total of 387,700 acres, or just under 23 percent of the Region, in 1985. Between 1963 and 1970, urban lands in the Region increased by 39,800 acres, or by 14 percent, an average annual increase of 5,681 acres. Between 1970, the base year of the adopted regional land use plan, and 1985, urban lands increased by an additional 64,200 acres, or 20 percent, an average annual increase of 4.283 acres. The overall increase in urban lands between 1970 and 1985 was somewhat greater than anticipated under the adopted plan. As a result, the actual area in 1985 of residential, commercial, industrial, governmental and institutional, transportation, and public recreation lands. those categories for which incremental amounts were specifically identified under the adopted land use plan, exceeded the area envisioned under the plan by 12,700 acres, or 4 percent.
- 4. The urban land use category occupying the greatest area is residential, which accounted for 184,600 acres, or about 11 percent of the total area of the Region, in 1985. The residential land base in the

Region increased by 20,200 acres, or 16 percent, between 1963 and 1970, an average annual increase of 2,879 acres. Residential land in the Region increased by an additional 41,900 acres, or 29 percent, between 1970 and 1985, an average annual increase of 2,794 acres. Since 1970, the development of residential land in the Region has proceeded at a rate just slightly faster than envisioned under the adopted regional land use plan. However, while the plan recommended that new residential development occur primarily at medium density, with an average of about four housing units per net residential acre, the period from 1970 to 1985 saw the continued widespread development of residential land at lower densities. Such lands, which include areas with lot sizes of one half acre or more, increased by 30,400 acres between 1970 and 1985, accounting for almost 73 percent of the total increase in residential land during that time.

5. The adopted regional land use plan recommended that new urban growth occur in areas contiguous to the existing urban centers of the Region which can be readily served by essential public facilities. Of the 41,900 acres of residential land developed in the Region between 1970 and 1985, only about 38 percent, or 15,800 acres, was served by sanitary sewerage facilities. On the other hand, of the 107,300 additional occupied housing units in the Region, about 79 percent, or 84,800 units, were served by sanitary sewers. Those housing units which were developed with onsite sewage disposal systems, while representing a minority, 21 percent, of all new housing units, accounted for a disproportionate share, 62 percent, of the overall increase in residential land in the Region between 1970 and 1985. This continued proliferation of residential development in areas of the Region not served by public water supply and sanitary sewerage facilities may be expected to intensify problems of ground and surface water pollution and to result in the creation of incomplete neighborhoods requiring extensive urban services which can be provided only in a costly and inefficient manner.

- 6. Significant growth has also occurred in each of the other major urban land use categories between 1970 and 1985. During this time, commercial land increased by about 2,000 acres, or 29 percent, an average annual increase of 132 acres. Industrial land increased by 2,900 acres, or 32 percent, an annual average increase of 195 acres. Governmental and institutional land increased by 1,400 acres, or 9 percent, an annual average increase of 91 acres. Transportation, communication, and utility lands increased by 16,600 acres, or 16 percent, an annual average increase of 1,106 acres. Intensive recreational lands increased by 4,300 acres, or 20 percent, an annual average increase of 286 acres, with public recreational lands accounting for more than one-half of the total increase. The aforementioned increases in commercial, governmental and institutional, and transportation land uses were somewhat greater than proposed under the adopted regional land use plan; the increase in industrial land use was slightly less than envisioned under the plan; and the increase in public recreational land was about the same as that envisioned under the plan, although there was significant variance between the actual and planned amounts of recreational land at the county level. As a result, the actual 1985 commercial land area exceeded the planned acreage by 1,600 acres, or 23 percent; the actual 1985 governmental and institutional land area exceeded the planned area by about 1,000 acres, 6 percent; and the actual transportation land area exceeded the planned area by about 5.900 acres, or 5 percent. Conversely, the actual 1985 industrial land area was about 600 acres, or 5 percent, less than the planned area. The actual 1985 public recreational land area was just 100 acres, or 1 percent, more than the area envisioned under the plan.
- 7. Nonurban lands, consisting of agricultural, woodlands, surface water and wetlands, and unused rural and other open land, encompassed 1,333,400 acres, or 77 percent of the total area of the Region, in 1985. The nonurban category occupying the greatest area was agricultural, which accounted for 932,000 acres, or 70 percent of all nonurban lands and 54 percent of the

total area of the Region. The agricultural land base of the Region has decreased significantly due largely to the conversion of farmland to urban uses. Between 1963 and 1970, agricultural land use in the Region decreased by 46,300 acres, or about 4 percent, an average annual decrease of 6,620 acres. Between 1970 and 1985, agricultural land use decreased by an additional 69,400 acres, or 7 percent, an average annual decrease of 4,629 acres. The rate of decrease between 1970 and 1985 was greater than anticipated under the adopted regional land use plan. The plan envisioned a decrease in agricultural lands from 1,001,400 acres in 1970 to 966,300 acres in 1985. The actual agricultural area in 1985 of 932,000 acres was lower by 34,300 acres, or about 4 percent, than the planned area. The accelerated loss of agricultural land was due, in part, to the continued development of residential land in outlying areas of the Region at lower densities than recommended under the plan.

8. A major recommendation of the adopted regional land use plan is the preservation in agricultural use of the remaining prime agricultural lands of southeastern Wisconsin, the most productive farming areas in the Region. The preservation of these lands is necessary for economic reasons as well as to to ensure the overall wholesomeness of the regional environment. In 1985. prime agricultural lands encompassed 670,100 acres, or 39 percent of the total area of the Region. Between 1963 and 1985, prime agricultural lands decreased by about 102,700 acres, or 13 percent. Of this total, 17,200 acres, or 17 percent, were located in or adjacent to expanding urban areas; the conversion of these areas to urban use was generally consistent with the adopted regional land use plan. The balance, about 85,500 acres, or 83 percent of the total loss, was located in outlying rural areas generally recommended to remain in agricultural use and related use under the plan.

As noted above, the conversion of land from rural to urban use in the Region between 1970 and 1985 occurred at a rate somewhat greater than envisioned under the adopted regional land use plan. This occurred despite the fact that the population increased at a slower rate than envisioned in that plan. Two other key determinants of the overall scale of urban development, the number of households and the number of jobs, however, increased substantially as forecast.

In evaluating progress toward implementation of the regional land use plan, the location of new urban development is an even more important consideration than the absolute amount of such development. While much urban development has occurred in areas contiguous to existing urban centers, as recommended under the plan, a substantial amount has also occurred in outlying areas of the Region, at lower densities than recommended in the plan. This pattern of development, a continuation of the urban sprawl pattern of development which first became evident in the Region after 1950, has resulted in the creation of isolated urban enclaves to which the provision of basic urban services and facilities is difficult and costly, if at all possible. This dispersed pattern of development has also resulted in the excessive loss of prime agricultural land and other farmland. Moreover, such development may result in the destruction of environmentally sensitive areas and, because of the reliance on private wells and onsite sewage disposal systems, may intensify problems of groundwater and surface water pollution.

Given the diffusion of decision making authority regarding land use development in the Region, implementation of the land use development and open space preservation recommendations of the regional land use plan may be expected to be achieved only over the long term. It should be noted that a number of actions have been taken by the concerned units and agencies of government which should serve to foster a more compact, centralized settlement pattern recommended under the plan. These include the adoption of exclusive agricultural zoning to ensure the preservation of important farming areas; the adoption of shoreland-wetland zoning and floodland regulations to ensure the preservation of wetlands and floodlands; and a wide range of local planning activities which may be expected to promote growth and development consistent with the regional land use plan, including the preparation of local sewer service area refinement plans and local land use plans. Because many of these actions were taken in the late 1970s and early 1980s, their impacts on regional development patterns are not yet fully apparent.

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Chapter VII

COMMUNITY PLANS AND LAND USE REGULATORY ORDINANCES

INTRODUCTION

Under the first- and second-generation regional land use planning programs, inventories were conducted of county and local community plans and zoning ordinances. These inventories were intended to provide an understanding of county and local community development objectives and of the effects those objectives collectively would have upon regional development. Such an understanding was, and still is, essential to the formulation of practicable and implementable regional land use plans. County and local land use plans and zoning ordinances, when adopted in accordance with Wisconsin statutory provisions, probably represent the best available expression of county and local community development objectives. Some local land use plans contain an explicit expression of the community development objectives underlying the plans. Where such explicit expression is omitted, it may be reasonably assumed that the community development objectives are implicit in the plan proposals and the zoning ordinances and zoning district maps.

When viewed in a regional context, knowledge of county and local community plans and land use regulatory ordinances becomes an important basis for synthesizing and testing ultimate regional land use plan proposals. The need to recognize and incorporate county and local development objectives into regional development plans to the maximum extent practicable is particularly important in view of the advisory nature of regional planning. To be viable, regional plans must be designed to fulfill local as well as regional development objectives wherever possible, and therefore be more readily accepted and implemented by local communities.

The 1990 regional land use plan adopted in December 1966, and the year 2000 regional land use plan adopted in December 1977, were accompanied by a series of plan implementation recommendations directed at the local communities in the Region. Of particular importance were recommendations directed at the revision of local zoning and other land use control ordinances to reflect, as appropriate, the regional land use plan recommendations. The Commission in the years following plan adoption worked diligently with many local communities in the Region, upon request, to carry out the regional plan recommendations through appropriate adjustments to local land use control ordinances.

In light of this activity, and in light of other local planning and land use control activity to which the Commission may not have been a party, it is appropriate that the local community plans and land use control ordinances in the Region again be inventoried to ascertain the extent to which local communities in the Region may have adjusted their plans and ordinances to reflect regional plan recommendations, or perhaps to reflect changing community development objectives at variance with regional plan recommendations.

This chapter contains a brief review of the year 2000 regional land use plan implementation recommendations with respect to local plans and land use control ordinances. Following this review, the chapter contains a brief description of the procedures followed in, and the findings of, the reinventory of the existing county and local land use plans, zoning ordinances and zoning district maps, and other related land use control ordinances of the 147 municipal governments and seven counties in the Region. The changes in land use that would occur if the development proposals now expressed in the local land use plans and land use control ordinances were fully carried out are analyzed and significant relationships identified. In addition, the extent to which counties and local communities in the Region have specifically adjusted their local plans and land use control ordinances to reflect specific regional land use plan implementation recommendations is identified.

A REVIEW OF SELECTED YEAR 2000 REGIONAL LAND USE PLAN IMPLEMENTATION RECOMMENDATIONS

Before presenting the results of the reinventory of community plans and land use regulatory ordinances in the Region, it is appropriate to review briefly the major plan implementation recommendations set forth in the year 2000 regional land use plan, with particular emphasis upon those recommendations specifically relating to land use regulations.¹ These recommendations may be summarized as follows:

- 1. It was recommended that, as appropriate, local communities prepare community and neighborhood unit development plans that would refine and detail the regional land use plan.
- 2. It was recommended that all counties and local communities review and update their zoning ordinances to reflect the objectives expressed in the general urban and rural land use development pattern shown on the year 2000 regional land use plan map. Those areas recommended for residential development in the plan were to be placed in exclusive residential districts and related to the development densities indicated on the recommended plan. Those areas shown on the plan map as devoted to agricultural use were to be placed in an exclusive agricultural use district. Such a district would permit only agricultural use and dwellings accessory to the basic agricultural uses. The primary environmental corridors shown on the plan map, as well as significant resource areas lying outside the corridors, were to be placed in appropriate zoning districts to reflect the character of the specific resource values to be protected. These districts would include various conservancy districts, including floodland districts, park districts, exclusive agricultural districts, or large estate-type residential use districts. Finally, county shoreland zoning regulations were to be reviewed to determine if changes were necessary to meet the land use develop-

ment objectives of the year 2000 regional land use plan.

- 3. It was recommended that, as appropriate, counties in the Region formulate soil and water conservation regulations and hold the necessary public hearings and referenda thereon, relating such regulations to the basic land use and natural resource elements identified in the regional land use plan.
- 4. It was recommended that, as appropriate, counties in the Region adopt sanitary ordinances to prevent the installation of onsite soil absorption sewage disposal systems in areas poorly suited for such systems.
- 5. It was recommended that counties, cities, villages, and towns adopt or amend land subdivision ordinances to ensure that new urban development is placed in areas where essential urban services and facilities can be provided and to assure the orderly acquisition of recreational sites and corridor parklands through dedication or payment of fees in lieu of such dedication as appropriate.
- 6. It was recommended that, as appropriate, all units of government in the Region prepare and adopt official maps to reserve recommended regional park sites, as well as selected park and drainageway areas contained in the primary environmental corridors.

COMMUNITY PLANS AND ORDINANCES INVENTORY

As an integral part of its ongoing comprehensive planning program, the Commission maintains a file of all local community planning documents and land use control ordinances. This file was initially established in the early 1960s and comprehensively updated in 1972. The information contained in this file has been utilized as a basis for the community plans and zoning inventory conducted as part of the first and

¹For a complete description of the plan implementation recommendations pertaining to the year 2000 regional land use and transportation plans, see SEWRPC Planning Report No. 25, <u>A</u> <u>Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin-2000, Volume Two, <u>Alternative and Recommended Plans</u>, Chapter IX, "Plan Implementation."</u>

second regional land use planning studies.² In its role as a center for the coordination of planning and plan implementation activities in the Region, the Commission routinely receives copies of new local planning documents and land use control ordinances as they are prepared and adopted by local units of government in the Region. These materials are added to the base file. In some cases, the Commission staff may actually assist in the preparation of the plan or the land use control ordinance, and may therefore be intimately familiar with the existence and content of such planning documents.

However, in order to assure that a complete file of community planning documents and ordinances exists to provide a base for analysis of local community land use development objectives, the Commission in 1985 and 1986 conducted a complete reinventory of all local plans and land use control ordinances. This inventory consisted of a review of all materials in the Commission community files, a personal interview by a Commission staff member of a responsible local official, in most cases the municipal clerk, to complete an inventory form relating to community planning and land use control documents, a review of the results of that inventory form against the contents of the Commission community files, and a request to the municipality to provide copies of any relevant planning and land use control documents that the Commission did not yet have in its files. Obtaining up-to-date zoning district maps from all local units of government in the Region was of particular importance.

The planning and zoning information collected from the local units of government was carefully analyzed in order to meet the needs of the continuing regional land use study. All local community planning documents were identified and collected, and a determination was made as to whether or not a community had formally adopted a comprehensive or master plan, or a land use element of such a plan, pursuant to the provisions set forth in Section 62.23 of the Wisconsin Statutes. In addition, all local land use zoning district categories were identified.

In the initial SEWRPC community plans and zoning inventory conducted in 1964, it was determined to utilize the adopted community land use plan, where such plan existed, as the basis for identifying the land use development objectives for a community, rather than the local zoning ordinance and zoning district maps. This decision was made because, in accordance with public planning theory and good practice, the adopted local plans were believed to provide a more accurate representation of long-range community development objectives than the zoning ordinances. Of the 146 cities, villages, and towns existing in the Region in 1964, 15 indicated they had formally adopted comprehensive plans or land use elements thereof. Accordingly, the quantitative data presented in SEWRPC Planning Report No. 7 in the local plans and zoning inventory reflected the utilization of locally adopted plans for those 15 communities, rather than the corresponding local zoning ordinances. The local zoning ordinance, where such ordinances then existed, were used to identify the land use development objectives for remaining communities.

In conducting the 1972 and 1985 inventories of community plans and land use control ordinances, it was determined to utilize zoning ordinances and zoning district maps exclusively as a basis for the quantitative analysis of local land use development objectives in the Region. This determination was made because it was found in some instances that communities indicating adoption of local land use plans had not, in fact, formally adopted such plans, or even if they had, had not changed their zoning ordinances and zoning district maps to reflect staged development in accordance with such plans. Thus, the majority of communities view their zoning ordinances and zoning district maps as the best single expression of their community's longrange land use development objectives. Consequently, to provide a uniform and convenient method of quantifying local land use development objectives, it was determined in the 1972, and again in the 1985, reinventory of community plans and zoning ordinances to utilize exclu-

²See SEWRPC Planning Report No. 7, <u>Land</u> <u>Use-Transportation Study</u>, Volume One, <u>Inven-</u> <u>tory Findings—1963</u>, Chapter VI, "Community Plans and Zoning," and SEWRPC Planning Report No. 25, <u>A Regional Land Use Plan and</u> <u>a Regional Transportation Plan for Southeastern Wisconsin—2000</u>, Volume One, <u>Inventory</u> <u>Findings</u>, Chapter VII, "Community Plans and Land Use Regulatory Ordinances."

sively the zoning ordinances and zoning district maps in any quantitative analyses relating to long-range community development objectives.³

Accordingly, in the 1985 reinventory, independent analyses were made with respect to community development plans and community zoning ordinances. All quantitative data relating to community development objectives, however, were derived from the zoning ordinances and zoning district maps. As in the 1964 and 1972 inventories, a regional zoning district classification system was developed in order to reduce the many local zoning districts to a common, uniform, areawide classification suitable for areawide analysis. This classification system not only permits analyses of the local zoning data for regional planning purposes without losing locally established density patterns, but also permits individual communities to analyze local land use zoning proposals in light of areawide land use demands. The classification system is compatible with the land use classifications utilized by the Commission in the preparation of the two previous regional land use plans, and recognizes standards established for sanitary sewer and water supply services at varying development densities.

³It is recognized that the 1972 and 1985 quantitative data presented in this chapter, since they have been derived solely from the local community zoning ordinances and zoning district maps, are not strictly comparable to the 1964 quantitative data which were based in part upon utilization of adopted community plans and in part upon utilization of community zoning ordinances and zoning district maps. However, since most of the 15 instances of land use plan data utilization in the 1964 inventory consist of small villages; since collectively the 15 communities comprised in 1964 only about 10 percent of the area of the Region; and since the majority of land in such communities was generally fully developed for urban land use purposes, resulting in situations where either the community land use plans or the zoning district maps would reflect, in the main, existing land use development, it is believed that any quantitative differences due to the utilization of 15 local land use plans in 1964 rather than the 15 local zoning ordinances are relatively minor, and would not. therefore, significantly affect the comparisons of the quantitative data over time on a regional and county basis.

All zoning district categories were converted to the regional classification system and their boundaries delineated on Commission 1 inch equals 2,000 feet scale county base maps.⁴ The land use zoning information so mapped was then quantified by U.S. Public Land Survey section, and the areas devoted to each category measured, tabulated, and transferred to a medium permitting machine processing and analyzing. From the 1 inch equals 2,000 feet scale county base maps, a composite map of local zoning districts was prepared on a 1 inch equals 8,000 feet scale regional base map. This map is reproduced as Map 42. For comparison purposes, Map 43 and Map 44 represent a composite of local zoning districts in 1964 and 1972, respectively.

Finally, it should be recognized that basing the inventory of locally proposed land use development objectives on local zoning ordinances and district maps, rather than local land use plans, is not intended as an endorsement of the common practice of using such ordinances and maps as a surrogate for comprehensive development plans, with the land use plan comprising a key element of such a comprehensive plan. It is therefore appropriate that the proper relationship between land use plans and zoning be reiterated. The land use plan should represent the long-range proposal for the future use of land within a community. The primary function of zoning should be to implement the community land use plan. This does not mean, however, that the zoning ordinance and zoning district map should directly reflect the land use plan. Zoning for long-term future uses indicated on the land use plan may not be required for many years, and premature zoning may create serious land use problems. The zoning district map should be amended to provide for development or redevelopment in accordance with the land use plan as the need for such development or redevelopment is demonstrated. Zoning so

⁴In 1964, the conversion to a regional classification system was accomplished on Commission 1 inch equals 4,000 feet scale county base maps. A 1 inch equals 2,000 feet scale map was utilized in the 1972 and 1985 inventory effort because it made possible a more precise delineation of local zoning district boundaries, and further enabled the direct correlation of the local zoning data with other regional planning data, also mapped at a scale of 1 inch equals 2,000 feet.



ILLINOIS

Comparison of the above map with Map 44 indicates that substantial additional progress was achieved in the implementation of the local zoning recommendations of the regional land use plan between 1972 and 1985. This progress is most evident in the continued reduction in residential zoning in outlying rural towns in the Region, in the increased application of floodland zoning and other conservancy zoning to protect important elements of the naturally resource base, the increased application of exclusive agricultural zoning to protect prime agricultural lands, and the attendant reduction in "nominal" agricultural zoning districts, which allow low-density residential development in addition to basic agriculture uses. While considerable progress has been made since the initial community plans and zoning inventory in 1964 and the second such inventory in 1972, some work still remained to be done in 1985 in terms of adjusting local zoning to regional development objectives. Continued efforts are necessary to bring the amount of land zoned and available for residential, commercial, and industrial use more into accord with actual demand; to reduce strip commercial zoning; to apply exclusive agricultural zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands not so protect; and to apply appropriate conservancy zoning to remaining prime agricultural lands no zoning to unprotected environmental corridor lands, particularly the upland corridor areas. Source: SEWRPC.



The land use development proposals of the local communities in the Region in 1964 are collectively shown on the above map. In general, the development objectives reflected in the local land use proposals at that time indicated a local desire for the continuation of the low-density urban development pattern prevalent in the Region during the 1950 to 1963 period. The development pattern shown is characterized by widespread residential zoning, encompassing in some cases entire townships; extensive strip commercial and industrial zoning; and a conspicuous lack in many areas of conservancy zoning aimed at protecting the natural resource base. The first-generation, design year 1990, regional land use plan recommended that these local land use development objectives be modified in order to provide for overall urban development densities greater than envisioned in the local land use plans and zoning ordinances, to ensure that new urban development would not intrude into environmentally significant areas and prime agricultural lands, and to ensure that new urban development would be located so as to be capable of being readily served by essential public services and facilities, such as centralized sanitary sewer and water supply services and mass transit service.

Map 44



By 1972, the land use development proposals of the local communities in the Region had been significantly revised from those expressed in 1964, largely in accordance with recommendations set forth in the adopted first generation regional land use plan. All 17 communities in the Region which were unzoned in 1964 had adopted zoning ordinances by 1972. In addition, considerable rezoning activity occurred between the 1964 and 1972. The results of these zoning and rezoning efforts are evident when the above map is compared with Map 43. Particularly significant are changes in accordance with the recommendations of the regional land use plan from residential zoning to agricultural zoning in certain outlying areas, the establishment of new conservancy zoning districts in certain areas, and the initiation of floodland zoning efforts. Despite such progress, much remained to be accomplished to bring local land use development proposals into conformance with regional development objectives. Major additional efforts needed in this respect included the further reduction in residential zoning to protect environmentally significant areas and the amplication of exclusive agricultural zoning to protect environmentally significant areas. application of conservancy zoning to protect environmentally significant areas, and the application of exclusive agricultural zoning to protect prime agricultural lands in the Region. Source: SEWRPC.

applied becomes a tool to place development in both time and space in accordance with the longrange plan.

INVENTORY FINDINGS

Community Plans

The adopted 1990 and year 2000 regional land use plans recognized that amendments, extensions, additions, and refinements to the regional land use plan would be forthcoming not only from the work of the Commission under the continuing regional land use and related planning programs, such as the comprehensive watershed studies, but also from county and local planning programs which should constitute refinements of the regional plans. The formulation of such county and local comprehensive, or master, plans, or the land use elements of such local plans, should be properly undertaken within the context of an adopted regional land use plan. The local master plans should set forth recommendations for all aspects of municipal development, including the location, character, and extent of neighborhood units and community centers; sites for public places and areas, parks, parkways, and playgrounds; sites for schools and other public buildings and structures; airports; the general location and extent of storm and sanitary sewers, water conduits, and other utilities, whether privately or publicly owned; the general location, character, and extent of the transportation system; the general character, extent, and layout of the replatting of older blighted areas; and the comprehensive zoning plan related to the comprehensive community land use plan.

Such community comprehensive, or master, plans had been prepared for 73 of the 147 cities, villages, and towns in the Region in 1985 (see Table 97 and Map 45)⁵. These plans covered an area of about 1,023 square miles, or about 38 percent of the total area of the Region. Plans for 56 communities were prepared concurrently with or since the preparation and adoption of the 1990 regional land use plan, and thus represent community planning efforts which have been conducted within the context of an established regional land use planning effort. Plans for 23 of these 56 communities were prepared by the Commission at the request of the local units of government concerned. The remaining 33 plans prepared within the context of the regional land use plan constituted individual planning efforts for cities, villages, and towns throughout the Region.

Significant progress has been made in the preparation of local comprehensive, or master, plans since the previous inventory of community plans in 1972. Between 1972 and 1985, the number of communities with such plans increased from 46 to 73, while the area covered by such plans increased from 612 square miles to 1,023 square miles, an increase of 411 square miles, or 67 percent. Moreover, of the 46 communities which had prepared plans by 1972, 12 communities extensively revised their plans or prepared entirely new plans between 1972 and 1985.

Although the Wisconsin Statutes provide a mandate to local plan commissions to prepare and adopt community comprehensive, or master, plans, it is significant that of the 73 communities which have completed such plans, only 41 have adopted the plan by action of the local plan commissions. However, of the 39 communities completing land use plans or major plan revisions since the 1972 inventory, 35 have formally adopted the plan.

The Commission recommends that community comprehensive, or master, plans or components thereof be formally adopted by the local plan commission and, desirably, endorsed by the local

⁵Since 1985, the Village of Paddock Lake and the Town of Salem in Kenosha County; the City of Cedarburg in Ozaukee County; the Village of Union Grove in Racine County; the Village of East Troy in Walworth County; the Town of Erin in Washington County; and the City of New Berlin and the Villages of Menomonee Falls and Oconomowoc Lake in Waukesha County have completed and adopted new com-

munity master plans. The City of Brookfield in Waukesha County has updated several components of its master plan. In addition, master plan preparation was underway in the Cities of Greenfield, Franklin, and Wauwatosa in Milwaukee County; the Town of La Grange in Walworth County; the City of West Bend and the Village of Slinger in Washington County; and the City of Waukesha in Waukesha County.

LOCAL COMPREHENSIVE PLANS INCLUDING LAND USE ELEMENT IN THE REGION BY COUNTY: 1985^a

Community	Plan Document	Year Plan Completed	Year Plan Adopted	Relationship to Adopted Regional Land Use Plan
Kenosha County Kenosha Urban Plan- ning District (City of Kenosha, Towns of Pleasant Prairie and Somers)	"A Comprehensive Plan for the Kenosha Planning District", Southeastern Wisconsin Regional Planning Commission	1967	Kenosha: 1968	Refines and details regional land use plan
	<u> </u>			
Milwaukee County City of Franklin	"A Comprehensive Plan for Franklin, Wisconsin", William S. Lawrence and Associates	1965		Completed prior to preparation of regional land use plan
City of Glendale	"The Comprehensive Plan, Glendale Wisconsin", Harland Bartholomew and Associates	1976	1976	Refines and details regional land use plan
City of Milwaukee	'Toward a Comprehensive Plan'', City of Milwaukee	1977		Refines and details regional
City of Oak Creek	"Comprehensive Plan 85, City of Oak Creek, Wisconsin", Harland Bartholomew and Associates	1985	1985	Refines and details regional land use plan
City of St. Francis	"Master Plan, St. Francis, Wisconsin", Mead and Hunt	1963		Completed prior to preparation
City of South Milwaukee	"South Milwaukee Comprehensive Plan Report",	1963		Completed prior to preparation
City of Wauwatosa	Waynard Meyer and Associates "Waynardosa, Wisconsin Comprehensive Plan	1977	1977	Refines and details regional
City of West Allis	"Master Plan for Land Use, City of West Allis,	1979	1979	Refines and details regional
Village of Brown Deer	Wisconsin , Jonnson, Jonnson, and Roy "Plan Update of Land Use Elements",	1975	1975	Refines and details regional
Village of Greendale	James 1. Barry Company "Master Plan Update", Gardner and Associates	1973		Refines and details regional
Village of River Hills	"Comprehensive Plan, Village of River Hills",	1957	1958	Completed prior to preparation
Village of Shorewood	H. C. Webster and Son "Comprehensive Plan Map", Village of Shorewood	1981	1981	of regional land use plan Refines and details regional
Village of West	"Comprehensive (Master) Development Plan",	1968	·'	land use plan Refines and details regional
Milwaukee	J. C. Zimmerman and Associates			land use plan
City of Cedarburg	"General Plan for Community Development, Cedarburg", Nelson and Associates	1961		Completed prior to preparation
City of Mequon	"Comprehensive Plan—Mequon Wisconsin", City of	1985	1985	Refines and details regional
City of Port Washington	"General Plan Studies, City of Port Washington",	1962		Completed prior to preparation
Village of Fredonia	"A Land Use and Traffic Circulation Plan for the Village of Fredonia-2000", Southeastern	1980	1984	Refines and details regional land use plan
Village of Grafton	Wisconsin Regional Planning Commission "Master Plan for Grafton, Wisconsin", Donohue	1965		Completed prior to preparation
Village of Saukville	and Associates, Inc. "Master Plan Saukville, Wisconsin", Max Anderson	1982	1982	of regional land use plan Refines and details regional
Town of Fredonia	Associates "A Land Use Plan for the Town of Fredonia—2000",	1979	1979	land use plan Refines and details regional
	Southeastern Wisconsin Regional Planning Commission			land use plan
Racine County Racine Urban Planning District (City of Racine; Villages of Elwood Park, North Bay, Sturtevant, and Wind Point; Towns of Caledonia and Mt.	"A Comprehensive Plan for the Racine Urban Planning District", Southeastern Wisconsin Regional Planning Commission	1971		Refines and details regional land use plan
Pieasant)		1		
City of Burlington	"Burlington, Wisconsin, Master Plan", Mead and Hunt	1960		Completed prior to preparation of regional land use plan

Table 97 (continued)

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Community	Plan Document	Year Plan Completed	Year Plan Adopted	Relationship to Adopted Regional Land Use Plan
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Racine County (continued) City of Racine	"Land Use Plan Map", City of Racine	1975	1975	Refines and details regional land use plan
Village of Union Grove	"Union Grove, Wisconsin, Comprehensive Planning Program", Wisconsin Department of Local Affairs and Development	1968	1968	Refines and details regional land use plan
Town of Raymond	"Alternative Land Use and Sanitary Sewerage System Plans for the Town of Raymond—1990", Southeastern Wisconsin Regional Planning Commission	1974	1974	Refines and details regional land use plan
Walworth County				
City of Delavan	"Comprehensive Land Use and Thoroughfare Plan for the City of Delavan, Wisconsin", Donohue and Associates	1980	1980	Refines and details regional land use plan
City of Elkhorn	"A Land Use and Urban Design Plan for the City of Elkhorn: 2000, Walworth County, Wisconsin", Southeastern Wisconsin Regional Planning	1985	1985	Refines and details regional land use plan
City of Lake Geneva	Commission "Citizens Committee Master Plan Update", City of Lake Geneva	1980		Refines and details regional land use plan
City of Whitewater	"Whitewater Comprehensive Plan", Maynard Meyer and Associates	1968	'	Refines and details regional land use plan
Village of Darien	"A Land Use Plan for the Village of Darien: 2000", Southeastern Wisconsin Regional Planning Commission	1981	1981	Refines and details regional land use plan
Village of East Troy	"A Comprehensive Plan for the Village of East Troy", Wisconsin Department of Local Affairs and Development	1971	*	Refines and details regional land use plan
Village of Fontana	"Comprehensive Land Use Plan", Nelson and	1983	1983	Refines and details regional
Village of Genoa City	"Genoa City Comprehensive Planning Program",	1965		Refines and details regional
Village of Sharon	Wisconsin Department of Resource Development "Sharon, Wisconsin, Comprehensive Planning Program", Wisconsin Department of Resource	1965		land use plan Refines and details regional land use plan
Village of Walworth	"Walworth, Wisconsin, Comprehensive Planning Program", Wisconsin Department of Resource Development	1965		Completed prior to preparation of regional land use plan
Village of Williams Bay	"Williams Bay Plan-1964", Maynard Meyer	1964		Completed prior to preparation
Town of Delavan	"Land Use Plan for the Town of Delavan, Walworth County, Wisconsin", Emmerich Wantschik, Consultant	1983	1983	Refines and details regional land use plan
Town of East Troy	"Land Use Plan for the Town of East Troy, Walworth County, Wisconsin", Walworth County Planning Department	1978	1986	Refines and details regional land use plan
Washington County	<u> </u>	[1	
City of Hartford	"City of Hartford Neighborhood Plans" ^b , City of Hartford	1982	1982	Refines and details regional land use plan
City of West Bend	"Master Plan, West Bend, Wisconsin", Mead and Hunt	1963		Completed prior to preparation of regional land use plan
Village of Jackson	"Land Use and Arterial Street System Plans, Village of Jackson, Washington County", Southeastern Wisconsin Regional Planning Commission	1976	1976	Refines and details regional land use plan
Village of Germantown	"A Land Use Plan for the Village of Germantown: 2000", Southeastern Wisconsin Regional Planning Commission	1980	1981	Refines and details regional land use plan
Village of Slinger	"Village of Slinger, Wisconsin, Comprehensive Plan Report", Scheftell and Nill Associates	1963		Completed prior to preparation of regional land use plan
Waukesha County City of Brookfield	"A Comprehensive Plan Report for the City of Brockfield Wisconsin" Starton and Portugal	1959		Completed prior to preparation
City of Delafield	"A Comprehensive Land Use and Thoroughfare Plan for the City of Delafield, Wisconsin", Donohue and Associates	1976	1976	Refines and details regional land use plan

Table 97 (continued)

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Community	Plan Document	Year Plan Completed	Year Plan Adopted	Relationship to Adopted Regional Land Use Plan
Community		Completed	Adopted	
Waukesha County (continued)				
City of Muskego	"General Plan for Community Development", Nelson and Associates	1963	1963	Completed prior to preparation of regional land use plan
City of New Berlin	"Development Plan, New Berlin, Wisconsin", City Planning Associates, Inc.	1961	1962	Completed prior to preparation
City of Oconomowoc	"A Master Plan for the City of Oconomowoc, Wisconsin", Elmer Krieger, City Planning Consultant	1971		Refines and details regional land use plan
City of Waukesha	"City Plan for Waukesha, Wisconsin", Ladislas Segoe and Associates	1957	1957	Completed prior to preparation of regional land use plan
Village of Butler	"A Master Plan for the Village of Butler, Wisconsin", Carl L. Gardner & Associates Inc.	1966		Completed prior to preparation of regional land use plan
Village of Dousman	"Village of Dousman Master Plan", Owen Ayres and Associates	1978	1978	Refines and details regional land use plan
Village of Eagle	"A Land Use Plan for the Village of Eagle: 2000, Waukesha County, Wisconsin", Southeastern Wisconsin Regional Planning Commission	1983	1983	Refines and details regional land use plan
Village of Hartland	"A Land Use and Traffic Circulation Plan for the Village of Hartland: 2000", Southeastern Wisconsin Regional Planning Commission	1981	1981	Refines and details regional land use plan
Village of Lac La Belle	"Master Plan Village of Lac La Belle, Waukesha County, Wisconsin", Jahnke and Jahnke	1978	1979	Refines and details regional
Village of Merton	"Generalized Land Use Plan for Merton, Wisconsin, A Master Plan Element", Donohue and Associates	1980	1980	Refines and details regional land use plan
Village of Mukwonago	"Mukwonago, Wisconsin, Comprehensive Planning Program", Wisconsin Department of Local Affairs and Development	1969		Refines and details regional land use plan
Village of Nashotah	"Village of Nashotah Comprehensive Land Use and Thoroughfare Plan", Graef Anhalt Schloemer and Associates	1980	1980	Refines and details regional land use plan
Village of Pewaukee	"A Land Use Plan for the Town and Village of Pewaukee: 2000, Waukesha County, Wisconsin", Southeastern Wisconsin Regional Planning Commission	1982	1983	Refines and details regional land use plan
Village of Sussex	"A Land Use Plan for the Village of Sussex: 2000", Southeastern Wisconsin Regional Planning Commission	1982	1982	Refines and details regional land use plan
Town of Eagle	"Town of Eagle Land Use Plan", Graef Anhalt Schloemer and Associates	1983	1983	Refines and details regional land use plan
Town of Genesee	"Alternative and Recommended Land Use Plans for the Town of Genesee2000", Southeastern Wisconsin Regional Planning Commission	1978		Refines and details regional land use plan
Town of Merton	"Town of Merton Master Plan", Town of Merton Plan Commission	1981	1981	Refines and details regional land use plan
Town of Mukwonago	"Master Plan, Town of Mukwonago, Waukesha County, Wisconsin", Graef Anhalt Schloemer and Associates	1981	1981	Refines and details regional land use plan
Town of Pewaukee	"A Land Use Plan for the Town and Village of Pewaukee: 2000, Waukesha County, Wisconsin", Southeastern Wisconsin Regional Planning Commission	1982	1982	Refines and details regional land use plan
Town of Summit	"Land Use: A Study of Potentials and Alternatives, Town of Summit", Nelson and Associates	1972	1979	Refines and details regional land use plan

⁸Since 1985, the Village of Paddock Lake and the Town of Salem in Kenosha County; the City of Cedarburg in Ozaukee County; the Village of Union Grove in Racine County; the Village of East Troy in Walworth County; the Town of Erin in Washington County; and the City of New Berlin and the Villages of Menomonee Falls and Oconomowoc Lake in Waukesha County have completed and adopted new community master plans. The City of Brookfield in Waukesha County has updated several components of its master plan. In addition, master plan preparation was underway in the Cities of Greenfield, Franklin, and Wauwatosa in Milwaukee County; the Town of La Grange in Walworth County; the City of West Bend and the Village of Slinger in Washington County; and the City of Waukesha in Waukesha County.

^bThe City of Hartford Land Use Plan is comprised of seven neighborhood plans, one each for the Fairview, Industrial, Pike Lake, Memorial Park, Pleasant Hill, Riverview, and Woodlawn neighborhoods.

Source: SEWRPC.

governing body. Not only do the Wisconsin Statutes provide in Section 62.23(2) that the local plan commissions shall make and adopt a master plan, but various implementing actions which may be highly desirable depend upon formal adoption for their validity. For example, Section 236.13 of the Wisconsin Statutes provides that local communities may, in reviewing subdivision plats, utilize as a basis for denial a finding that the plat does not conform with a duly adopted local master plan. Hence, master or comprehensive plans, no matter how well prepared, are of greatly reduced value in plan implementation actions, particularly with respect to difficult and controversial situations such as subdivision plats located beyond a planned urban area, if they are not formally adopted by the local plan commissions. Ideally, a local plan commission would adopt the regional land use plan and other applicable regional plan elements, and then prepare and adopt within the context of such regional plan elements a local comprehensive plan that refines, details, and adds to the regional plan recommendations.

In addition to the preparation of local community master, or comprehensive, plans, the Commission has recommended that its constituent local units of government consider the preparation of precise neighborhood unit development plans.⁶ With respect to community land use planning, such plans represent a very high level of precision and detail. Precise neighborhood unit development plans delineate the amount, types, densities, extent, and location of planned residential, commercial, industrial, institutional, and recreational areas, along with the associated street and lot and block patterns. To date neighborhood plans have been prepared for all or parts of the City of Kenosha and Village of Pleasant Prairie in Kenosha County; the City of Franklin in Milwaukee County; the City of Burlington in Racine County; the City of Delavan in Walworth County; and the City of Hartford and the Village of Germantown in Washington County.

Local Zoning Regulations

Background: Local zoning regulations include general, or comprehensive, zoning regulations and special-purpose regulations governing floodland and shoreland areas. General zoning and special-purpose zoning regulations may be adopted as a single ordinance or as separate ordinances; they may or may not be contained in the same document. Any analysis of locally proposed land use must take into account the provisions of both general and any specialpurpose zoning.

It should be noted that in addition to general zoning and special-purpose floodland and shoreland zoning, any county, city, village, or town in Wisconsin that owns federal- or state-approved airport facilities has the authority under Section 114.136 of the Wisconsin Statutes to adopt a special-purpose height zoning ordinance in the vicinity of the airport to protect aerial approaches to the site. Such ordinances are effective whether the lands affected are located within or outside the corporate limits of the public airport owner and may be administered without the consent of any other governing body. While such special-purpose airport zoning can protect the airspace around airports and thereby help ensure safe and proper operations, such zoning should be supplemented by general zoning to assure compatibility between the airport and surrounding land uses, thereby avoiding noise, air pollution, and traffic congestion, as well as safety problems. A summary of the status of airport zoning in the Region is presented in SEWRPC Planning Report No. 38, A Regional Airport System Plan for Southeastern Wisconsin: 2010.

General Zoning: Cities in Wisconsin are granted comprehensive, or general, zoning powers under Section 62.23 of the Wisconsin Statutes. The same powers are granted to villages under Section 61.35 of the Statutes. Counties are granted general zoning powers within unincorporated areas under Section 59.97 of the Wisconsin Statutes. However, a zoning ordinance becomes effective only in those towns which ratify the county ordinance. Towns which have not adopted a county zoning ordinance may adopt village powers and subsequently utilize the city and village zoning authority referenced above, subject, however, to county board approval where a general purpose county zoning ordinance exists. Alternatively, where a general purpose county zoning ordinance has not been

⁶For a discussion of the neighborhood unit concept and the recommended procedures for carrying out such planning, see SEWRPC Planning Report No. 7, <u>Land Use-Transportation Study</u>, Volume Three, <u>Recommended Regional</u> <u>Land Use and Transportation Plans-1990</u>, Appendix D.

Map 45



By 1985, community comprehensive, or master, plans had been prepared for 73 of the 147 local units of government in the Region. These plans covered an area of about 1,023 square miles, or about 38 percent of the total area of the Region. Plans for 56 of the communities concerned were prepared concurrently with or since preparation and adoption of the initial design year 1990 regional land use plan and, thus, represent community planning efforts which have been conducted within the context of an established regional land use planning effort. Of the 73 communities for which local comprehensive, or master, plans have been prepared, 41 have formally adopted the plan by action of the local plan commission. Formal adoption of such plans is highly desirable, not only to assure a common understanding among all concerned of development objectives, but also because certain important plan implementation actions, such as land subdivision control, depend for their validity in part upon a finding of conformance to, or conflict with, a formally adopted plan. Source: SEWRPC.

adopted, a town may adopt a zoning ordinance under Section 60.61 of the Wisconsin Statutes, but only after the county board fails to adopt a county zoning ordinance at the petition of the town board concerned.

Map 46

GENERAL ZONING ORDINANCES IN THE REGION: 1985



In 1985, comprehensive zoning was in effect in all but two of the 147 municipalities in the Region, including all 28 cities, all 54 villages, and all but two of the 65 towns. Forty-two towns were under the jurisdiction of a county zoning ordinance, while 21 towns had adopted their own zoning ordinances. Since 1985, the base year of the most recent regional zoning inventory, several changes have occurred in the local zoning framework in the Region. In 1986, Washington County rescinded its general zoning ordinance, and all nine towns which were subject to the general county ordinance have since adopted a town zoning ordinance. In 1989, the Town of Pleasant Prairie incorporated as a village and now administers its own village zoning ordinance. The Towns of Bristol and Salem acted to approve the Kenosha County zoning ordinance in 1990, followed by the Town of Paris in 1991. As of 1991, then, general zoning was in effect in each municipality in the Region except the Town of Brighton in Kenosha County.

Source: SEWRPC.

Comprehensive zoning was in effect in all but two of the 147 municipalities in the Region in 1985 (see Map 46). Comprehensive zoning was in effect in each of the 28 cities, in each of the 54 villages, and in 63 of the 65 towns in the Region. Forty-two towns in the Region were under the jurisdiction of a county zoning ordinance, while 21 towns had adopted their own zoning ordinance. General zoning was not in effect in the Towns of Brighton and Bristol in Kenosha County. These two towns had been under the jurisdiction of the Kenosha County zoning ordinance. However, general zoning in these Towns expired in 1984 after the Towns failed to approve a new zoning ordinance that had been adopted by Kenosha County in 1983. Accordingly, except for those areas lying within the statutory shoreland jurisdiction area, these two towns were unzoned in 1985, the base year for the local zoning inventory.

In addition to Kenosha County, many other local units of government have adopted new zoning ordinances or major zoning revisions since the previous Commission zoning inventory in 1972. Of particular significance are the major new zoning or rezoning actions undertaken by the Towns of Belgium, Cedarburg, Fredonia, Grafton, Port Washington, and Saukville in Ozaukee County; the Town of Norway in Racine County; the City of Delavan and the Village of Darien in Walworth County; the Village of Germantown and the Town of Richfield in Washington County; and the Town of Pewaukee in Waukesha County.⁷

It should be noted that many communities in the Region have followed the principles regarding zoning ordinance construction recommended in the Commission model zoning ordinance. The model ordinance, set forth in SEWRPC Planning Guide No. 3, <u>Zoning Guide</u>, recommends a set of exclusive-use districts for the proper allocation of

⁷Since 1985 several changes have occurred in the local zoning framework in the Region. In 1986, Washington County rescinded its general zoning ordinance. All of the nine towns which were subject to the general county ordinance have since adopted a town zoning ordinance. In 1989, the Town of Pleasant Prairie incorporated as a village and now administers its own village zoning ordinance. The Towns of Bristol and Salem acted to approve the Kenosha County zoning ordinance in 1990, followed by the Town of Paris in 1991. As of 1991, then, general zoning was in effect in each municipality in the Region except the Town of Brighton in Kenosha County. land to urban and open space uses⁸. Zoning jurisdictions that have utilized the Commission model zoning ordinance as a basis in establishing new or comprehensively revised zoning ordinances include 22 cities and villages, nine towns, and four counties, shown on Map 47.⁹

<u>Floodland Zoning</u>: The regional land use plan has, since its initial adoption in 1966, recommended that local units of government adopt special floodland regulations to preserve the floodwater conveyance and storage capacity of floodplain areas and to avoid the location of new flood damage-prone urban development in flood hazard areas. Recognizing the importance of floodland protection, the Wisconsin Legislature has mandated that cities, villages, and counties with respect to their unincorporated areas adopt such floodland zoning, provided that the hydraulic and engineering data required to formulate the ordinance are available (see Section 87.30, Wisconsin Statutes).

⁸The phrase "exclusive use district" should be distinguished from the phrase "exclusionary zoning." An exclusive use zoning district is one which permits only one major type of land use, such as residential, commercial, industrial, or agricultural. An exclusive use agricultural district, for example, would permit only agricultural uses as a matter of right, with farm residences being considered accessory to the principal agricultural use. The phrase "exclusionary zoning" is commonly used to describe situations where a local community utilizes the zoning power, and in particular such zoning restrictions as minimum lot and building sizes and residential structure types, in an attempt to ensure the construction, typically, of large, relatively expensive, single-family homes, and thereby either advertently or inadvertently exclude from the community those with relatively low incomes.

⁹One of these four county zoning ordinances, the Washington County ordinance, was rescinded in 1986. The zoning ordinances subsequently adopted by the nine towns which had been under the jurisdiction of the county zoning ordinance all adhere to the format of the SEWRPC model zoning ordinance.
The minimum standards which such ordinances must meet are set forth in Chapter NR 116 of the Wisconsin Administrative Code. The required regulations govern filling and development within the 100-year recurrence interval floodplain, that is, the area subject to inundation by the 100-year recurrence interval flood event. This is the event which has a probability of 1 percent of occurring in any given year. Under Chapter NR 116, local floodland zoning regulations must prohibit nearly all forms of development within the floodway. The floodway is that area of the floodplain required to convey the 100-year recurrence interval peak flood flow. Local regulations must also restrict filling and development within the flood fringe, which consists of the portion of the floodplain located outside of the floodway that would be covered by floodwater during the 100-year recurrence interval flood.

In 1985, floodland ordinances were in effect in each of the six counties that have unincorporated areas as well as in 61 cities and villages in the Region (see Map 48).¹⁰ All the county ordinances and most community ordinances had been approved by the Wisconsin Department of Natural Resources. Many local units of government in the Region, including four of the six counties which have unincorporated areas, have adopted floodland zoning that exceeds the minimum standards forth in Chapter NR 116 by prohibiting, as long recommended by the Commission, nearly all forms of development within flood fringe areas as well as in the floodway, thereby affording a high level of protection of the entire floodplain area.

It should be noted that towns may adopt, and in some cases have adopted, floodplain ordinances which are more restrictive than the corresponding county ordinance. Such ordinances typically prohibit any development in the floodplain in accordance with sound planning practice and Commission recommendations.

<u>Shoreland Zoning</u>: The regional land use plan also recommended the adoption of special shoreland regulations designed to ensure the protection and proper development of shoreland areas.

GENERAL ZONING ORDINANCES IN THE REGION BASED UPON THE SEWRPC MODEL ZONING ORDINANCE: 1985

Map 47



The above map identifies zoning jurisdictions which have followed the principles regarding zoning ordinance construction set forth in the Commission's model zoning ordinance. The model zoning ordinance recommends a set of exclusive-use districts for the proper allocation of land to urban and open space uses. As of 1985, 22 cities and villages, nine towns, and four counties with general zoning jurisdiction over 37 towns had utilized this model zoning ordinance as a basis for establishing either new or comprehensively revised zoning ordinances. *Source: SEWRPC*.

Counties in Wisconsin are required under Section 59.971 to adopt such regulations within statutorily defined shoreland areas within their unincorporated areas. By statutory definition, shoreland areas are those lands within 1,000 feet of a navigable lake, pond, or flowage, or 300 feet of a navigable stream, or to the landward side of the floodplain, whichever distance is greater.

Minimum standards for county shoreland regulations are set forth in Chapter NR 115 of the Wisconsin Administrative Code. Chapter NR 115

¹⁰By the end of 1988, three additional municipalities, the Village of Williams Bay in Walworth County and the Villages of Union Grove and Wind Point in Racine County, had adopted floodland zoning ordinances.

sets forth minimum requirements regarding lot sizes and building setbacks as well as restrictions on cutting of trees and shrubbery that must be incorporated into county shoreland zoning regulations. In addition, Chapter NR 115 requires that counties place all wetlands at least five acres in size lying in shoreland areas in a protective conservancy zoning district, after completion of appropriate wetland inventories by the Wisconsin Department of Natural Resources.

In 1985 shoreland zoning ordinances were in effect in all six counties in the Region that have unincorporated areas. By 1985, one county shoreland zoning ordinance, the Walworth County ordinance, had been certified by the Department of Natural Resources as meeting the shoreland-wetland zoning requirements of Chapter NR 115. The shoreland-wetland provisions of the shoreland zoning ordinances of the other five counties concerned have since been approved by the Department.

It should be noted that in 1982 the State Legislature extended shoreland-wetland zoning requirements to cities and villages in Wisconsin. Under Sections 62.231 and 61.351, respectively, cities and villages in Wisconsin are also required to place wetlands located in the statutory shoreland area in a shoreland-wetland zoning district. Administrative rules pertaining to city and village shoreland-wetland zoning are set forth in Chapter NR 117 of the Wisconsin Administrative Code. In March, 1986, the City of West Bend in Washington County became the first municipality in the Region to have its shoreland-wetland zoning ordinance certified by the Department of Natural Resources. By the end of 1989, 20 cities and villages in southeastern Wisconsin had received department approval of their shoreland-wetland zoning regulations (see Map 49).

Locally Proposed Land Use Pattern

urban development. In unincorporated areas, statutorily defined shoreland areas have been mapped according to the provisions of the county shoreland zoning ordinance. County shoreland regulations, it should be noted, are typically more restrictive than town-enacted general zoning within shoreland areas.

For comparison purposes, similar maps showing locally proposed land use in the Region as of 1964 and 1972, developed under the two previous inventories of community plans and zoning, are also presented herein (see Maps 43 and 44). A summary of the major categories of locally proposed land use for the years 1985, 1972, and 1964 is presented in Table 98. A comparison of actual and locally proposed land use for these categories is presented for the three inventory years in Table 99 and Figure 38. As in the 1964 and 1972 zoning inventories, it was again necessary to provide a uniform basis of comparison between existing and locally proposed land uses. As in the previous inventories, the principal adjustment required in 1985 to render existing land uses comparable to proposed land uses, as the latter are expressed in local zoning ordinances, was to allocate existing street, highway, and off-street parking acreages to their principal associated uses.¹¹

With respect to zoning for urban development, perhaps the most visible change since 1964 is the reduction in residential zoning in outlying areas of the Region (see Maps 44 and 42). Lands in residential zoning districts decreased from over 440,000 acres in 1964 and 1972 to 384,600 acres in 1985. Much of the reduction in residentially zoned land after 1972 involved a rezoning from residential districts to appropriate exclusive

The spatial distribution of proposed land use within the Region, as established in local zoning regulations, is shown on Map 42. The land use pattern shown on Map 42 reflects general zoning and special-purpose floodland and shoreland zoning regulations, as appropriate. On this map, floodland zoning districts are shown as conservancy, regardless of any underlying general zoning district regulations, if the provisions of the floodplain district effectively preclude new

¹¹It should be noted that the previous land use inventories and zoning inventories involved slightly different base years. Throughout this chapter, locally proposed land use as reflected in local land use plans and zoning ordinances in effect in 1964 is compared with actual land use from the Commission 1963 land use inventory. Locally proposed land use as reflected in zoning ordinances in effect in 1972 is compared with actual land use as identified in the Commission 1970 land use inventory. These differences in base years are not believed to significantly affect the comparisons of actual and locally proposed land use presented herein.

Map 48 FLOODLAND ZONING ORDINANCES

IN THE REGION: 1985

Since its initial adoption in 1966, the regional land use plan has recommended that local units of government adopt special floodland regulations to prevent the unwise filling and development of natural floodlands. In 1985 such floodlands ordinances were in effect in each of the six counties that have unincorporated areas as well as in 61 cities and villages in the Region. Four of these six counties and many of the cities and villages have adopted floodland regulations that prohibit nearly all forms of development within flood fringe portions of the floodplain as well as in the floodway, thereby affording a high level of protection of the entire floodplain area.

Source: SEWRPC.

agricultural and conservancy districts, in accordance with regional land use plan recommendations for zoning of rural areas. Conversely, some of the reduction involved a rezoning from residential to agricultural districts which, in addition to desirable agricultural and other open space uses, also permit very low-density residential development. The use of the latter type of Special shoreland regulations designed to protect the shoreland areas around lakes and along streams have been adopted by all six counties in the Region having unincorporated areas, as recommended in the first- and second-generation regional land use plans and as required under Wisconsin Statute. As part of these regulations, each of these counties has adopted special shoreland-wetland zoning to ensure the preservation of wetlands in unincorporated shoreland areas. Cities and villages throughout the Region are also implementing shoreland-wetland zoning to protect wetlands in their shoreland areas as required by state law. By the end of 1989, 20 cities and villages in the Region had adopted state-approved shoreland-wetland zoning regulations.

Source: SEWRPC.

agricultural district probably better reflects local land use objectives for the areas concerned than the previous residential zoning. Where the restrictions on residential development were not materially altered by the change from residential to agricultural zoning, however, the change to agricultural zoning does not protect the affected rural areas from urban encroachment.

Map 49



				Loca	Illy Proposed	Land Us	3			·
	1964	1 ^a	1972	2 ^b	1985	⁵ c	1964- Cha	1972 nge	1972- Chai	1 985 nge
Land Use Category	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent
Residential	443,906	25.8	445,383	25.9	384,627	22.3	1,477	0.3	-60,756	-13.6
Commercial	31,516	1.8	40,115	2.3	41,388	2.4	8,599	27.3	1,273	3.2
Government and	/0,4/9	4.1	83,807	4.9	75,942	4.4	13,328	18.9	-7,865	-9.4
	10,699	0.6	3,169	0.2	24.024	1.4	-7,530	-70.4	20.855	658,1
Recreational	31,297	1.8	19,708	1.1	22,211	1.3	-11,589	-37.0	2,503	12.7
Agricultural	895,847	52.1	984,570	57.2	830,552	48.3	88,723	9.9	-154,018	-15.6
"All Other" ^d	237,262	13.8	144,348	8.4	342,369	19.9	-92,914	-39.2	198,021	137.2
Region	1,721,006	100.0	1,721,100	100.0	1,721,113	100.0	94	0.0	13	0.0

LOCALLY PROPOSED LAND USE IN THE REGION: 1964, 1972, AND 1985

NOTE: The change in the total area of the Region is the net effect of Lake Michigan shoreline erosion, accretion, and landfill.

^aProposed by local communities in land use plans and zoning ordinances, 1964.

^bProposed by local communities in zoning ordinances, 1972.

^cProposed by local communities in zoning ordinances, 1985.

^dIncludes land in conservancy zoning districts, surface water, and unzoned land.

Source: SEWRPC.

As a result of the reduction in the gross area specifically zoned for residential use and the actual development of substantial amounts of residentially zoned land over time, the incremental land area proposed for residential use under local zoning in the Region has decreased significantly, from 285,100 acres in 1964 to 256,400 acres in 1972 and, further, to 153,500 acres in 1985 (see Table 99). This suggests movement toward the more judicious allocation of land to residential use recommended under the regional land use plan. It should be noted, however, that this decrease is due in part, at least, to the rezoning of some areas from residential to "nominal" agricultural districts, as noted above. Moreover, despite the substantial reduction in proposed incremental residential land, the Region remains overzoned with respect to residential development.

With respect to the zoning of open space lands, two changes are particularly noteworthy. The first of these is the increase in the use of various resource conservancy districts to protect environmentally sensitive areas. The protection of such areas through appropriate zoning is a key recommendation of the regional land use plan. Much of the new conservancy zoning is in the form of special floodland and shoreland zoning. Floodland and shoreland zoning were just beginning to be implemented at the time of the previous zoning inventory, and much progress has since been made with respect to the mapping of floodland and shoreland areas and with respect to the establishment of related district regulations. It should be noted that in Table 98 lands in conservancy districts are included in the "all other" category. The large increase in the "all other" category between 1972 and 1985 is, to a large extent, attributable to the increase in conservancy zoned lands.

The second major change in open space zoning is the increased use of exclusive agricultural zoning districts to protect farming areas from urban encroachment. Exclusive agricultural

COMPARISON OF EXISTING AND LOCALLY PROPOSED LAND USE IN THE REGION: 1964, 1972, AND 1985

					Existing	and Locally P	roposed Lan	d Use				
		1964	4			197:	2			198	ō	
	Eulatia a	Pronocadb	Proposed	Change	Friedor	bd	Proposed	Change	Eviation®	a f	Proposed	Change
Land Use Category	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	{acres}	(acres)	Acres	Percent
Residential	158,765	443,906	285,141	179.6	188,943	445,383	256,440	135.7	231,105	384,627	153,522	66.4
Commercial	8,006	31,516	23,510	293.7	10,873	40,115	29,242	268.9	15,177	41,388	26,211	172.7
Industrial	17,419	70,479	53,060	304.6	20,041	83,807	63,766	318.2	25,202	75,942	50,740	201.3
Government and	Construction of the	and second and	Transfer States	1. 1. 5460 - 74	Contraction of the second	an anne	STAR SHOW AND		2012/02/02/02/02			
Institutional	18,587	10,699	-7,888	-42.4	21,892	3,169	-18,723	-85.5	24,743	24,024	-719	-2.9
Recreational	23,944	31,297	7,353	30.7	29,947	19,708	-10,239	-34.2	33,440	22,211	-11,229	-33.6
Agricultural	1,114,096	895,847	-218,249	-19.6	1,073,627	984,570	-89,057	-8.3	1,029,883	830,552	-199,331	-19.4
"All Other" ^g	380,189	237,262	-142,927	-37.6	375,777	144,348	-231,429	-61.6	361,563	342,369	-19,194	-5.3
Region	1,721,006	1,721,006	0	0.0	1,721,100	1,721,100	0	0.0	1,721,113	1,721,113	0	0.0

NOTE: The change in the total area of the Region is the net effect of Lake Michigan shoreline erosion, accretion, landfill.

^aAdapted from 1963 SEWRPC land use inventory.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^cAdapted from 1970 SEWRPC land use inventory.

^dProposed by local communities in zoning ordinances, 1972.

^eAdapted from 1985 SEWRPC land use inventory.

^fProposed by local communities in zoning ordinances, 1985.

^gWith respect to existing land use, "all other" includes woodlands; surface water and wetlands; and land devoted to transportation, communication and utility uses other than streets and off-street parking. With respect to proposed land use, "all other" includes land in conservancy zoning districts, surface water, and unzoned land.

Source: SEWRPC.

Figure 38

EXISTING AND LOCALLY PROPOSED LAND USE IN THE REGION BY CATEGORY: 1964, 1972, AND 1985



LOCALLY PROPOSED

Source: SEWRPC.

			_								-
				Locall	y Proposed	Residential	Land			<u></u>	٦
	196	34 ^a	197	/2 ^b	198	35 ^c	1964- Cha	1972 nge	1972- Cha	1985 nge	
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent	
Kenosha	21,873	4.9	21,193	4.7	23,641	6.1	-680	-3.1	2,448	11.6	
Milwaukee	95,623	21.5	103,623	23.3	98,403	25.6	8,000	8.4	-5,220	-5.0	
Ozaukee	45,067	10.2	39,895	8.9	38,755	10.1	-5,172	-11.5	-1,140	-2.9	
Racine	34,768	7.8	28,937	6.5	28,324	7.4	-5,831	-16.8	-613	-2.1	
Walworth	35,792	8.1	29,846	6.7	23,314	6.1	-5,946	-16.6	-6,532	-21.9	
Washington	31,240	7.0	33,220	7.5	35,575	9.2	1,980	6.3	2,355	7.1	
Waukesha	179,543	40.5	188,669	42.4	136,615	35.5	9,126	5.1	-52,054	-27.6	
Region	443,906	100.0	445,383	100.0	384,627	100.0	1,477	0.3	-60,756	-13.6	

LOCALLY PROPOSED RESIDENTIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

^aProposed by local communities in land use plans and zoning ordinances, 1964.

^bProposed by local communities in zoning ordinances, 1972.

^cProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

zoning limits the use of land to agricultural use, permits only those structures which are consistent with agriculture, and establishes relatively large minimum parcel sizes as appropriate in agricultural areas. The application of exclusive agricultural zoning to protect prime agricultural lands and other farming areas is another important recommendation of the regional land use plan. It should be noted that while the majority of land that has been placed in exclusive agricultural zoning districts was rezoned from other agricultural zoning districts, some had previously been zoned for residential or other urban uses.

The balance of this section provides a description of existing zoning and changes in zoning by individual zoning category. Attention is drawn, as appropriate, to progress achieved relative to the zoning recommendations of the regional land use plan as well as to any major shortcomings in this regard.

<u>Proposed Residential Land Use</u>: Under the local zoning inventory, the residential zoning category includes lands which have been placed in zoning districts specifically intended to accommodate residential development. Not included are those lands which may be zoned agricultural but which also permit residential development. Accordingly, the amount of residentially zoned land as presented herein represents a conservative indication of the amount of land actually available for residential use, since substantial amounts of new residential development could occur in many agriculturally zoned areas.

In 1985 lands zoned for residential use encompassed 384,600 acres, or about 22 percent of the total area of the Region. Waukesha County accounted for 36 percent of all residentially zoned land in the Region, while Milwaukee County and Ozaukee County accounted for 26 percent and 10 percent, respectively. Kenosha, Racine, Walworth, and Washington Counties each accounted for less that 10 percent of the regional total (see Table 100).

Between 1964 and 1972, the overall amount of land zoned for residential use in the Region increased slightly, from 443,900 acres in 1964 to 445,400 acres in 1972, an increase of 1,500 acres, or less than one percent. Waukesha, Milwaukee, and Washington Counties experienced increases of 9,100 acres, 8,000 acres, and 2,000 acres, respectively, while Ozaukee, Racine, and Walworth Counties experienced decreases of over 5,000 acres. In Kenosha County, the area zoned for residential use decreased slightly, by 700 acres, during this time.

Between 1972 and 1985, the amount of land in the Region zoned for residential use decreased significantly, from 445,400 acres to 384,600 acres, a decrease of 60,800 acres, or 14 percent. The largest decrease occurred in Waukesha County, where the amount of residentially zoned land decreased by 52,100 acres, or 28 percent. Milwaukee and Walworth Counties also experienced significant decreases of 5,200 acres and 6,500 acres, respectively. Only Kenosha and Washington Counties experienced an increase in residentially zoned land during this period of time.

As previously noted, much of the reduction in residentially zoned land after 1972 involved a rezoning from residential to appropriate exclusive agricultural, agricultural holding, and conservancy zoning districts, in substantial conformance with the regional land use plan. This type of rezoning was most evident in the Towns of Oconomowoc and Pewaukee in Waukesha County, the Town of Grafton in Ozaukee County, the Town of Mt. Pleasant in Racine County, and areas surrounding many of the inland lakes in Walworth County. On the other hand, some of the reduction in residentially zoned land occurred as a result of rezoning from residential zoning districts to agricultural zoning districts which allow low-density residential development in addition to agricultural and open space uses. Substantial areas of the Towns of Eagle and Genesee were rezoned in this manner. Such areas remain subject to scattered low density residential development.

An important consideration in the evaluation of residential zoning and other urban zoning is the amount of additional development implied. If all lands in residential zoning districts were developed in accordance with existing zoning district regulations, the amount of land in residential use in the Region would increase by 153,500 acres, or 66 percent (see Table 101 and Figure 39). This is substantially less than the 256,400 acres which could have been developed under local zoning in the Region in 1972, and the 285,100 acres developable in 1964. The reduction in locally proposed incremental residential land is due to rezoning of land from residential to other zoning districts, particularly after 1972, as well as to the actual development of residentially zoned land for residential use since 1964.

In order to provide perspective on the scale of residential development permitted under local zoning in the Region in 1985, an estimate was made of the additional population which could be accommodated. Assuming the prevailing density of the areas in which they are located, it is estimated that the incremental residential lands proposed under local zoning in the Region in 1985 could accommodate an additional 943,200 persons. Assuming a rate of population increase of about 4,000 persons per year, as envisioned for the Region under an intermediate regional growth scenario, it would take over 230 years to fully utilize all of the proposed residential lands. Thus, despite the substantial reduction in the amount of land that is zoned and available for residential development, it is apparent that the Region is still overzoned with respect to residential use. Overzoning can lead to premature development, creating scattered, incomplete neighborhoods far removed from existing urban service areas, and may generate serious and costly environmental problems.

The adopted regional land use plan recommended that, as appropriate and in accordance with stage development in a community, those areas shown on the plan as devoted predominantly to low-, medium-, and high-density residential use be placed in exclusive residential use zoning districts. The plan recommended that existing and platted residential areas, as well as those areas that have immediate residential development potential and are capable of being economically served by municipal utilities and facilities such as sanitary sewer, public water supply, and schools, be placed in exclusive residential zoning districts. They would be related, ideally, through the preparation of precise neighborhood unit development plans and local zoning controls enacted in accordance with such plans, to the residential densities indicated on the plan map. The plan further recommended that the balance of the areas recommended for residential development by the year 2000 be placed either in exclusive agricultural districts or residential holding zones to be held for future development at such time as the local community can economically and efficiently extend the essential municipal utilities and facilities to the proposed development.

In order to provide a gross measure of the extent to which the local communities in the Region have carried out these recommendations, an

COMPARISON OF EXISTING AND LOCALLY PROPOSED RESIDENTIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

					Existing an	d Locally Prop	osed Reside	ntial Land				
	-	196	4			197	2			198	5	
	Existinga	Brancedb	Proposed	Change	EviationC	Proposed	Proposed	Change	Existing®	Proposed	Proposed	Change
County	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent
Kenosha	14,052	21,873	7,821	55.7	15,721	21,193	5,472	34.8	18,525	23,641	5,116	27.6
Milwaukee	57,231	95,623	38,392	67.1	62,358	103,623	41,265	66.2	68,386	98,403	30,017	43.9
Ozaukee	10,271	45,067	34,796	338.8	13,569	39,895	26,326	194.0	16,170	38,755	22,585	139.7
Racine	16,094	34,768	18,674	116.0	19,664	28,937	9,273	47.2	23,778	28,324	4,546	19.1
Walworth	14,028	35,792	21,764	155.1	15,740	29,846	14,106	89.6	19,636	23,314	3,678	18,7
Washington	8,372	31,240	22,868	273.1	12,578	33,220	20,642	164.1	17,919	35,575	17,656	98.5
Waukesha	38,717	179,543	140,826	363.7	49,313	188,669	139,356	282.6	66,691	136,615	69,924	104.8
Region	158,765	443,906	285,141	179.6	188,943	445,383	256,440	135.7	231,105	384,627	153,522	66.4

^aAdapted from 1963 SEWRPC land use inventory.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^cAdapted from 1970 SEWRPC land use inventory.

^dProposed by local communities in zoning ordinances, 1972.

^eAdapted from 1985 SEWRPC land use inventory.

^fProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

Figure 39



EXISTING AND LOCALLY PROPOSED RESIDENTIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

Source: SEWRPC.

LOCALLY PROPOSED

CHANGE IN LOCALLY PROPOSED RESIDENTIAL LAND IN THE REGION BY COUNTY AND SEWERED AREA: 1972 AND 1985

					Locally	Proposed	Residential	Land	<u> </u>			
•		19	72			19	85			1972-19	35 Change	
	Sew	ered	Unsev	wered	Sew	ered	Unsev	vered	Sev	vered	Unsev	vered
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	12,752 88,097 17,537 22,007 9,965 8,849 38,128	60.2 85.0 44.0 76.1 33.4 26.6 20.2	8,441 15,526 22,358 6,930 19,881 24,371 150,541	39.8 15.0 56.0 23.9 66.6 73.4 79.8	17,315 91,602 18,294 23,269 11,355 8,999 59,361	73.2 93.1 47.2 82.2 48.7 25.3 43.5	6,326 6,801 20,461 5,055 11,959 26,576 77,254	26.8 6.9 52.8 17.8 51.3 74.7 56.5	4,563 3,505 757 1,262 1,390 150 21,233	35.8 4.0 4.3 5.7 13.9 1.7 55.7	-2,115 -8,725 -1,897 -1,875 -7,922 2,205 -73,287	-25.1 -56.2 -8.5 -27.1 -39.8 9.0 -48.7
Region	197,335	44.3	248,048	55.7	230,195	59.8	154,432	40.2	32,860	16.7	-93,616	-37.7

NOTE: Sewered areas approximated by whole U. S. Public Land Survey section for year of inventory.

Source: SEWRPC.

analysis was conducted of residentially zoned lands in terms of whether or not they are served by public sanitary sewers. As indicated in Table 102, at the time of the previous inventory of local zoning in 1972, 197.300 acres of residentially zoned land, representing about 44 percent of all such lands in the Region, were served by public sanitary sewers. The remaining 248,000 acres, or 56 percent of all residentially zoned land, were located beyond public sanitary sewer service areas. This relationship changed significantly between 1972 and 1985 as a result of rezoning activity and as a result of expansion of the areas served by public sanitary sewers. Between 1972 and 1985, the amount of residentially zoned lands served by public sanitary sewers increased by 32,900 acres, or 17 percent, to 230,200 acres, while residentially zoned lands not served by public sanitary sewers decreased by 93,600 acres, or 38 percent, to 154,400 acres. By 1985, then, 60 percent of all residentially zoned land in the Region was served by public sanitary sewers. Between 1972 and 1985, each county except Washington County experienced an increase in the proportion of residentially zoned land served by public sanitary sewers. Among the seven counties, Waukesha County experienced the largest increase in the amount of residentially zoned land served by public sanitary sewers and the largest decrease in the amount of residentially zoned land not served.

<u>Proposed Commercial Land Use</u>: In 1985, land zoned for commercial use encompassed 41,400 acres, or just over 2 percent of the total area of the Region. Milwaukee County and Waukesha County, with about 12,400 acres and 8,800 acres, respectively, accounted for just over one-half of all commercially zoned land in the Region. Conversely, Ozaukee County had the smallest amount of land zoned for commercial use, 2,100 acres, or 5 percent of the regional total.

As indicated in Table 103, the amount of commercially zoned land in the Region increased significantly between 1964 and 1972. During this time, lands zoned for commercial use increased by 8,600 acres, or 27 percent, from 31,500 acres to 40,100 acres, with the largest increases occurring in Milwaukee and Walworth Counties. Only Washington County experienced a decrease in commercially zoned land during this time. As further indicated in Table 103, there was an overall increase of just 1,300 acres, or 3 percent, in commercially zoned land in the Region between 1972 and 1985. Milwaukee, Racine, and Waukesha Counties experienced increases of 2,000 acres, 400 acres, and 2,200 acres, respectively, in commercially zoned land, while Kenosha, Walworth, and Washington Counties experienced decreases of 1.500 acres, 700 acres. and 1,100 acres. The amount of land zoned for commercial use in Ozaukee County did not

				Locally	Proposed	Commercia	I Land			
	19	64 ^a	19	72 ^b	19	85 ^c	1964 Ch	1-1972 ange	1972 Cha	-1985 Inge
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent
Kenosha	3,255	10.3	4,589	11.4	3,047	7.4	1,334	41.0	-1,542	-33.6
Milwaukee	7,030	22.3	10,397	25.9	12,377	29.9	3,367	47.9	1,980	19.0
Ozaukee	1,949	6.2	2,086	5.2	2,067	5.0	137	7.0	-19	-0.9
Racine	3,258	10.3	3,740	9.3	4,107	9.9	482	14.8	367	9.8
Walworth	2,866	9.1	5,838	14.6	5,148	12.4	2,972	103.7	-690	-11.8
Washington	7,508	23.8	6,960	17.4	5,890	14.2	-548	-7.3	-1,070	-15.4
Waukesha	5,650	18.0	6,505	16.2	8,752	21.2	855	15.1	2,247	34.5
Region	31,516	100.0	40,115	100.0	41,388	100.0	8,599	27.3	1,273	3.2

LOCALLY PROPOSED COMMERCIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

^aProposed by local communities in land use plans and zoning ordinances, 1964.

^bProposed by local communities in zoning ordinances, 1972.

^cProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

change significantly between 1972 and 1985. The decreases in commercially zoned land between 1972 and 1985 reflect rezoning from commercial to agricultural and conservancy districts as well at to industrial and other urban districts. The decrease in Kenosha County is also due, in part, to the unzoned status of much of the Towns of Brighton and Bristol in 1985.

Local zoning ordinances in effect in 1985 would permit a substantial increase in the amount of land in the Region devoted to commercial use. As indicated in Table 104 and Figure 40, with full implementation of existing zoning district regulations, the amount of land devoted to commercial use would increase by 26.200 acres, or nearly 173 percent, over the 1985 level of 15,200 acres. The additional commercial land permitted under local zoning in 1985 was somewhat less than could have been developed under local zoning in 1972, 29,200 acres, but somewhat greater than could have been developed under local zoning in 1964, 23,500 acres. At the rate of growth in retail and service employment anticipated under the intermediate regional growth scenario, it would take about 200 years to fully utilize all of the proposed additional commercial land.

It was commonly held in the past that lands abutting arterial streets and highways should generally be zoned for commercial development or apartments. This belief resulted in strip commercial zoning along many arterial streets and highways. Such strip commercial zoning is evident in the Region in fully developed older urban areas, in developing areas, and in undeveloped rural areas (see Map 42). Strip commercial zoning is generally undesirable insofar as it tends to destroy aesthetic values along major arterials: to create traffic hazards and congestion; and to promote scattered development, indiscriminate use of outdoor advertising, and land speculation. It may result in marginal development and unsightly vacant land along public ways and may undermine the public investment in the highways facilities. As an alternative to strip commercial development, the Commission recommends that commercial development occur in planned neighborhood, community, and regional commercial centers having good access to the arterial street and highway system and mass transit system and adequate off-street parking areas. Commercial zoning districts should be used to reserve lands for such planned commercial centers commensurate with the anticipated demand.

COMPARISON OF EXISTING AND LOCALLY PROPOSED COMMERCIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

					Existing and	Locally Propo	sed Comm	ercial Land				
		1964	1			1972	2			1985	5	
	Existing ^a	Proposedb	Propose	d Change	Eviation	Proposed ^d	Propose	d Change	Evicting®	Proposed	Propose	d Change
County	bunty (acres) (acre	(acres)	Acres	Percent	ercent (acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent
Kenosha	579	3,255	2,676	462.2	765	4,589	3,824	499.9	979	3,047	2,068	211.2
Milwaukee	3,995	7,030	3,035	76.0	5,448	10,397	4,949	90.8	6,980	12,377	5,397	77.3
Ozaukee	375	1,949	1,574	419.7	445	2,086	1,641	368.8	724	2,067	1,343	185.5
Racine	823	3,258	2,435	295.9	981	3,740	2,759	281.2	1,590	4,107	2,517	158.3
Walworth	673	2,866	2,193	325.9	818	5,838	5,020	613.7	905	5,148	4,243	468.8
Washington	303	7,508	7,205	2,377.9	429	6,960	6,531	1,522.4	673	5,890	5,217	775.2
Waukesha	1,258	5,650	4,392	349.1	1,987	6,505	4,518	227.4	3,326	8,752	5,426	163.1
Region	8,006	31,516	23,510	293.7	10,873	40,115	29,242	268.9	15,177	41,388	26,211	172.7

^aAdapted from 1963 SEWRPC land use inventory.

^dProposed by local communities in zoning ordinances, 1972.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^cAdapted from 1970 SEWRPC land use inventory.

Source: SEWRPC.

^eAdapted from 1985 SEWRPC land use inventory.

^fProposed by local communities in zoning ordinances, 1985.

Figure 40



EXISTING AND LOCALLY PROPOSED COMMERCIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

Source: SEWRPC.

LOCALLY PROPOSED

LOCALLY PROPOSED INDUSTRIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

	Locally Proposed Industrial Land ^a												
	19	64 ^b	19	72 ^C	19	85 ^d	1964 Cha	-1972 inge	1972 Cha	-1985 inge			
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent			
Kenosha	7,493	10.6	7,856	9.4	5,040	6.6	363	4.8	-2,816	-35.8			
Milwaukee	23,657	33.6	27,904	33.3	25,443	33.5	4,247	18.0	-2,461	-8.8			
Ozaukee	3,799	5.4	5,469	6.5	4,441	5.9	1,670	44.0	-1,028	-18.8			
Racine	5,364	7.6	9,642	11.5	11,025	14.5	4,278	79.8	1,383	14.3			
Walworth	3,316	4.7	3,528	4.2	5,269	6.9	212	6.4	1,741	49.3			
Washington	8,005	11.4	7,586	9.1	5,635	7.4	-419	-5.2	-1,951	-25.7			
Waukesha	18,845	26.7	21,822	26.0	19,089	25.2	2,977	15.8	-2,733	-12.5			
Region	70,479	100.0	83,807	100.0	75,942	100.0	13,328	18.9	-7,865	-9.4			

^aIncludes lands in industrial zoning districts and lands zoned for extractive use.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^cProposed by local communities in zoning ordinances, 1972.

^dProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

<u>Proposed Industrial Land Use</u>: In 1985 land zoned for industrial use encompassed about 75,900 acres, representing just over 4 percent of the total area of the Region. This area consists primarily of land which has been placed in basic industrial zoning districts, but also includes land zoned for extractive, or quarrying, use.¹²

As indicated on Table 105, there was a substantial increase in the amount of industrially zoned land in the Region between 1964 and 1972. The amount of industrially zoned land rose from 70,500 acres in 1964 to 83,800 acres in 1972, an increase of 13,300 acres, or 19 percent. Each county in the Region except Washington County experienced an increase in industrially zoned lands during this time. As further indicated on Table 105, between 1972 and 1985, the amount of industrially zoned land in the Region decreased by 7,900 acres, or 9 percent. Kenosha, Milwaukee, Ozaukee, Washington, and Waukesha Counties experienced decreases of between 1,000 and 2,800 acres. Racine and Walworth Counties experienced increases of 1,400 acres and 1,700 acres, respectively.

Local zoning ordinances in effect in 1985 would permit a substantial increase in the amount of land in the Region devoted to industrial use (see Table 106 and Figure 41). With full implementation of existing zoning district regulations, the amount of land in industrial use, including extractive use, would increase by 50,700 acre, or 201 percent, over the 1985 level of 25,200 acres.

¹²While contemporary zoning ordinances commonly include a separate district for extractive use, earlier zoning ordinances often permitted extractive activity in other, primarily industrial, zoning districts. Under the previous zoning inventories in 1964 and 1972, lands on which extractive activity was permitted under local zoning were included in the industrial zoning category. In the interest of consistency, lands zoned for extractive use in 1985 were again included in the industrial zoning category for the purposes of this report. As part of the 1985 inventory, however, a separate accounting was kept of lands in exclusive extractive zoning districts. Such lands totaled about 11,100 acres and constituted about 15 percent of 75,900 acres of industrially zoned land reported on Table 105.

COMPARISON OF EXISTING AND LOCALLY PROPOSED INDUSTRIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

					Existing and	d Locally Prop	osed Indus	trial Land ^a					
		1964	Ļ			1972	2			1985	;		
	Existingb	Bronosod ^C	Propose	d Change	Existing	Proposed [®]	Proposed	d Change	Evicting	Proposed	Propose	d Change	
County	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	
Kenosha	1,436	7,493	6,057	421.8	1,604	7,856	6,252	389.8	2,109	5,040	2,931	139.0	
Milwaukee	6,941	23,657	16,716	240.8	7,397	27,904	20,507	277.2	8,613	25,443	16,830	195.4	
Ozaukee	817	3,799	2,982	365.0	1,032	5,469	4,437	429.9	1,274	4,441	3,167	248.6	
Racine	2,106	5,364	3,258	154.7	2,421	9,642	7,221	298.3	2,963	11,025	8,062	272.1	
Walworth	1,316	3,316	2,000	152.0	1,499	3,528	2,029	135.4	1,825	5,269	3,444	188.7	
Washington	1,254	8,005	6,751	538.4	1,484	7,586	6,102	411.2	1,925	5,635	3,710	192.7	
Waukesha	3,549	18,845	15,296	431.0	4,604	21,822	17,218	374.0	6,493	19,089	12,596	194.0	
Region	17,419	70,479	53,060	304.6	20,041	83,807	63,766	318.2	25,202	75,942	50,740	201.3	-

^aExisting industrial land includes land in industrial or extractive use. Proposed industrial land includes land in industrial zoning districts and land zoned for extractive use.

^bAdapted from 1963 SEWRPC land use inventory.

^cProposed by local communities in land use plans and zoning ordinances, 1964.

^dAdapted from 1970 SEWRPC land use inventory.

^eProposed by local communities in zoning ordinances, 1972.

^fAdapted from 1985 SEWRPC land use inventory.

^gProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

Figure 41



EXISTING AND LOCALLY PROPOSED INDUSTRIAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

Source: SEWRPC.

LOCALLY PROPOSED

			Loc	ally Propos	ed Govern	ment and I	nstitutiona	al Land		
	19	64 ^a	19	972 ^b	19	85 ^c	1964 Cha	-1972 Inge	1972 Ch	2-1985 ange
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent
Kenosha	5	0.0	32	1.0	3,847	16.0	27	540.0	3,815	11,921.9
Milwaukee	7,797	72.9	1,285	40.5	5,021	20.9	-6,512	-83.5	3,736	290.7
Ozaukee	1,125	10.5	369	11.6	681	2.8	-756	-67.2	312	84.6
Racine			192	6.1	2,705	11.3	192		2,513	1,308.9
Walworth	340	3.2	279	8.9	1,814	7.6	-61	-17.9	1,535	550.2
Washington	416	3.9	71	2.2	1,239	5.2	-345	-82.9	1,168	1,645.1
Waukesha	1,016	9.5	. 941	29.7	8,717	36.2	-75	-7.4	7,776	826.4
Region	10,699	100.0	3,169	100.0	24,024	100.0	-7,530	-70.4	20,855	658.1

LOCALLY PROPOSED GOVERNMENTAL AND INSTITUTIONAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

^aProposed by local communities in land use plans and zoning ordinances, 1964.

^bProposed by local communities in zoning ordinances, 1972.

^cProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

The amount of additional industrial land permitted under local zoning in 1985 was, however, somewhat less than could have been developed under local zoning in 1972, 63,800 acres. The reduction in the amount of land zoned and available for industrial use after 1972 reflects the reduction in the gross area zoned for industrial use noted above as well as the continued development of industrially zoned land. Despite this reduction, however, it is evident that the Region remains overzoned with respect to industrial land. In this respect, it should be noticed that at the rate of industrial employment growth anticipated under the intermediate regional growth scenario, it would take about 215 years to fully utilize all of the proposed additional industrial land.

Proposed Governmental and Institutional Land <u>Use</u>: Local zoning ordinances vary considerably in their treatment of governmental and institutional lands. Some ordinances incorporate exclusive governmental and institutional districts that are intended to be applied to schools, churches, and other institutional sites, a practice recommended by the Commission. Other ordinances include broadly defined "public" districts or combination institutional-park districts which may be applied to traditional governmental and institutional use areas as well as to public park and open space areas and other public lands. Still other ordinances have no special district for governmental and institutional lands, with such uses being allowed in other zoning districts, particularly residential districts. In the past, many governmental and institutional lands have simply been left unzoned.

As indicated in Table 107, governmental and institutional zoning districts, consisting of exclusive governmental and institutional use districts, broadly defined "public" districts, and combination institutional-park districts, encompassed 24,000 acres, or just over 1 percent of the total area of the Region, in 1985. This represents a significant increase over 1964 and 1972, when 10,700 acres and 3,200 acres, respectively, were included in such districts. A comparison of Maps 44 and 42 indicates that a number of large sites have been placed in governmental and institutional districts since 1972, including the Kenosha Municipal Airport and Waukesha County Airport, the County Institutions grounds and Wisconsin State Fair Park in Milwaukee County, and portions of the Kettle Moraine State

COMPARISON OF EXISTING AND LOCALLY PROPOSED GOVERNMENTAL AND INSTITUTIONAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

				Existing a	and Locally F	roposed Gove	rnmental ar	nd Institutio	onal Land			
		1964				1972	2			1985	5	
	- · · · 3	b	Proposed	d Change	E ini C	Dd	Proposed	l Change	Fuinting@	Bronnad	Propose	d Change
County	Existing ⁻ (acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent
Kenosha	1,233	5	-1,228	-99.6	1,606	32	-1,574	-98.0	1,839	3,847	2,008	109.2
Milwaukee	9,872	7,797	-2,075	-21.0	10,771	1,285	-9,486	-88.1	11,651	5,021	-6,630	-56.9
Ozaukee	830	1,125	295	35.5	1,080	369	-711	-65.8	1,284	681	-603	-47.0
Racine	1,765		-1,765	-100.0	2,196	192	-2,004	-91.3	2,444	2,705	261	10.7
Walworth	1,204	340	-864	-71.8	1,446	279	-1,167	-80.7	1,638	1,814	176	10.7
Washington	833	416	-417	-50.1	1,085	71	-1,014	-93.5	1,354	1,239	-115	-8.5
Waukesha	2,850	1,016	-1,834	-64.4	3,708	941	-2,767	-74.6	4,533	8,717	4,184	92.3
Region	18,587	10,699	-7,888	-42.4	21,892	3,169	-18,723	-85.5	24,743	24,024	-719	-2.9

^aAdapted from 1963 SEWRPC land use inventory.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^CAdapted from 1970 SEWRPC land use inventory.

^dProposed by local communities in zoning ordinances, 1972.

^eAdapted from 1985 SEWRPC land use inventory.

^fProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

Figure 42

EXISTING AND LOCALLY PROPOSED GOVERNMENTAL AND INSTITUTIONAL LAND IN THE REGION BY COUNTY: 1964, 1972, 1985



Source: SEWRPC.

Forest in Waukesha County. There has also been a considerable increase in the application of governmental and institutional districts to schools, churches, cemeteries, and park lands within many urban areas of the Region. The amount of land in governmental and institutional zoning districts is compared with the amount of land actually devoted to governmental and institutional use for each County in Table 108 and Figure 42. These comparisons are

	Locally Proposed Recreational Land												
	19	64 ^a	19	72 ^b	19	85 ^c	1964- Cha	1972 nge	1972 Cha	-1985 Inge			
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent			
Kenosha	1,337	4.3	2,848	14.5	3,483	15.7	1,511	113.0	635	22.3			
Milwaukee	8,711	27.8	1,083	5.6	1,512	6.8	-7,628	-87.6	429	39.6			
Ozaukee	1,340	4.3	1,348	6.8	1,582	7.1	8	0.6	234	17.4			
Racine	7,765	24.8	5,863	29.7	3,661	16.5	-1,902	-24.5	-2,202	-37.6			
Walworth	5,449	17.4	1,659	8.4	7,487	33.7	-3,790	-69.6	5,828	351.3			
Washington	4,266	13.6	6,001	30.4	1,559	7.0	1,735	40.7	-4,442	-74.0			
Waukesha	2,429	7.8	906	4.6	2,927	13.2	-1,523	-62.7	2,021	223.1			
Region	31,297	100.0	19,708	100.0	22,211	100.0	-11,589	-37.0	2,503	12.7			

LOCALLY PROPOSED RECREATIONAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

^aProposed by local communities in land use plans and zoning ordinances, 1964.

^bProposed by local communities in zoning ordinances, 1972.

^cProposed by local communities in zoning ordinances, 1985. Source: SEWRPC.

clouded by the wide range of practices with respect to the zoning of governmental and institutional lands described above. No meaningful comparison of existing and locally proposed governmental and institutional lands can be made unless and until the use of exclusive governmental and institutional zoning districts gains greater acceptance.

<u>Proposed Recreational Land Use</u>: Local zoning ordinances also vary considerably in their treatment of recreational lands. Some ordinances include exclusive recreational districts that are intended to be applied to public and private recreation areas, as recommended by the Commission. Other ordinances do not provide a zoning district for recreational uses, but rather permit recreational uses in one or more of their other zoning districts.

Under the inventory of local zoning, the recreational zoning category includes lands which have been placed in zoning districts specifically intended to reserve land for recreational and open space use. As indicated in Table 109, in 1985 such lands encompassed about 22,200 acres, or just over 1 percent of the total area of the Region. This is substantially less than in 1964, when 31,300 acres were zoned for recreation use, but somewhat more than in 1972, when 19,700 acres were so zoned.

A comparison of Maps 44 and 42 indicates that the most notable changes in recreational zoning since 1972 include a substantial increase in recreational zoned land in the Kettle Moraine State Forest in Walworth County and a decrease in recreational zoning around inland lakes, particularly in Racine and Washington Counties. Around a number of inland lakes, recreational zoning districts, districts which usually permitted low-density residential development in addition to recreational uses, have been replaced by residential, conservancy, agricultural, and other districts which, generally, better reflect existing and proposed uses. In Washington County, however, much of the "new" agricultural zoning around inland lakes also permits low-density residential development.

Table 110 and Figure 43 provide a comparison of the amount of land in recreational zoning districts with the amount of land actually devoted to public and private recreational use for each county in the Region. These comparisons are also clouded by the varying practices with

COMPARISON OF EXISTING AND LOCALLY PROPOSED RECREATIONAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

					Existing and	d Locally Prop	osed Recrea	itional Land	1			
	1964				197:	2		1985				
	Existing ^a Proposed Change		E lini - C	Proposed Change			f		Proposed Change			
County (acres) (acres	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percen	
Kenosha	2,148	1,337	-811	-37.8	2,760	2,848	88	3.2	3,208	3,483	275	8.6
Milwaukee	9,119	8,711	-408	-4.5	10,271	1,083	-9,188	-89.5	11,499	1,512	-9,987	-86.9
Dzaukee	1,374	1,340	-34	-2.5	1,712	1,348	-364	-21.3	1,968	1,582	-386	-19.6
Racine	2,150	7,765	5,615	261.2	2,643	5,863	3,220	121.8	2,911	3,661	750	25.8
Walworth	2,922	5,449	2,527	86.5	4,372	1,659	-2,713	-62.1	4,483	7,487	3,004	67.0
Washington	1,253	4,266	3,013	240.5	1,713	6,001	4,288	250.3	2,168	1,559	-609	-28.1
Waukesha	4,978	2,429	-2,549	-51.2	6,476	906	-5,570	-86.0	7,203	2,927	-4,276	-59.4
Region	23,944	31,297	7,353	30.7	29,947	19,708	-10,239	-34.2	33,440	22,211	-11,229	-33.6

^aAdapted from 1963 SEWRPC land use inventory.

^dProposed by local communities in zoning ordinances, 1972.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^cAdapted from 1970 SEWRPC land use inventory.

^eAdapted from 1985 SEWRPC land use inventory.

^fProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

Figure 43



EXISTING AND LOCALLY PROPOSED RECREATIONAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

Source: SEWRPC.

respect to the zoning of recreational lands. No meaningful conclusions regarding the relationship between existing and locally proposed recreational lands can be drawn until the use of exclusive recreational zoning districts becomes more prevalent.

		_		Locali	Proposed	Agricultur	al Land			· · · · · · · · · · · · · · · · · · ·
	1964 ^a		1972 ^b		1985 ^c		1964-1972 Change		1972-1985 Change	
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	95,525 7,929 32,321 160,874 281,465 219,679 98,054	10.7 0.9 3.6 18.0 31.4 24.5 10.9	132,728 1,914 83,884 158,984 309,272 207,512 90,276	13.5 0.2 8.5 16.1 31.4 21.1 9.2	73,508 3,599 81,375 138,602 241,855 178,835 112,778	8.9 0.4 9.8 16.7 29.1 21.5 13.6	37,203 -6,015 51,563 -1,890 27,807 -12,167 -7,778	38.9 -75.9 159.5 -1.2 9.9 -5.5 -7.9	-59,220 1,685 -2,509 -20,382 -67,417 -28,677 22,502	-44.6 88.0 -3.0 -12.8 -21.8 -13.8 24.9
Region	895,847	100.0	984,570	100.0	830,552	100.0	88,723	9.9	-154,018	-15.6

LOCALLY PROPOSED AGRICULTURAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

^aProposed by local communities in land use plans and zoning ordinances, 1964.

^bProposed by local communities in zoning ordinances, 1972.

^cProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

Proposed Agricultural Land Use: As indicated in Table 111, in 1985 land zoned for agricultural use encompassed 830,600 acres, representing 48 percent of the total area of the Region. Milwaukee County had only 3,600 acres of land zoned for agricultural use and accounted for less than 1 percent of the regional total. Among the other six counties, land zoned for agricultural use ranged from 73,500 acres in Kenosha County to 241,900 acres in Walworth County.

As further indicated in Table 111, the area zoned for agricultural use has decreased significantly. by 154,000 acres, or 16 percent, since the previous zoning inventory in 1972. While some of this decrease is due to rezoning to residential and other urban districts, much of the decrease is attributable to other factors. First, as a result of the increase in floodland zoning, large areas of farmland zoned for agricultural use in 1972, and in many cases still included in basic agricultural districts under general zoning ordinances in 1985, are identified as zoned conservancy under the 1985 zoning inventory. As previously indicated, under the local zoning inventory, floodland zoning districts are represented as conservancy districts, regardless of any underlying basic zoning district, where the provisions of the floodland district effectively preclude urban development. Floodland zoning regulations, however, generally do not restrict the use of land as cropland. Second, in certain other farming areas, wetland and woodland tracts, previously included in agricultural zoning districts, have been rezoned into more appropriate lowland and upland conservancy districts as part of local zoning refinements. Third, large areas of farmland in the Towns of Brighton and Bristol in Kenosha County, formerly zoned for agricultural use, were unzoned in 1985, a result of the decision by those Towns not to approve the new county zoning ordinance adopted by Kenosha County in 1983.

It should be noted that, while there has been an overall decrease in land zoned for agricultural use in the Region since 1972, there have been increases in agricultural zoning in certain areas. This is primarily the result of rezoning of rural areas from residential and other urban districts to agricultural districts, including both exclusive agricultural districts and agricultural districts which allow very low-density residential development in addition to basic agricultural uses. In Waukesha County, such rezoning contributed to

COMPARISON OF EXISTING AND LOCALLY PROPOSED AGRICULTURAL LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

					Existing and	Locally Propo	sed Agricult	tural Land				
	1964				1972	!		1985				
	Fuicting ^a Bronged b		EviationC	Proposed Change		- B - f		Proposed Change				
County (acres) (acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	
Kenosha	120,101	95,525	-24,576	-20.5	117,419	132,728	15,309	13.0	113,310	73,508	-39,802	-35.1
Milwaukee	36,855	7,929	-28,926	-78.5	30,746	1,914	-28,832	-93.8	23,922	3,599	-20,323	-85.0
Ozaukee	108,468	32,321	-76,147	-70.2	104,376	83,884	-20,492	-19.6	102,061	81,375	-20,686	-20.3
Racine	157,917	160,874	2,957	1.9	151,969	158,984	7,015	4.6	148,450	138,602	-9,848	-6.6
Walworth	270,714	281,465	10,751	4.0	267,321	309,272	41,951	15.7	261,887	241,855	-20,032	-7.6
Washington	197,306	219,679	22,373	11.3	192,495	207,512	15,017	7.8	184,372	178,835	-5,537	-3.0
Waukesha	222,735	98,054	-124,681	-56.0	209,301	90,276	-119,025	-56.9	195,881	112,778	-83,103	-42.4
Region	1,114,096	895,847	-218,249	-19.6	1,073,627	984,570	-89,057	-8.3	1,029,883	830,552	-199,331	-19.4

^aAdapted from 1963 SEWRPC land use inventory.

^dProposed by local communities in zoning ordinances, 1972.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^cAdapted from 1970 SEWRPC land use inventory.

^eAdapted from 1985 SEWRPC land use inventory.

^fProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

Figure 44 EXISTING AND LOCALLY PROPOSED AGRICULTURAL

LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985



Source: SEWRPC.

an increase of about 22,500 acres, or about 25 percent, in the amount of land zoned for agricultural use between 1972 and 1985.

As indicated in Table 112 and Figure 44, the area zoned agricultural has historically been somewhat less than the area actually in agricul-

	Prime Agricultural Land									
	Prote through	ected Zoning	Not Pro through	otected Zoning	Total					
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total				
Kenosha	27,800	36.3	48,700	63.7	76,500	100.0				
Milwaukee	700	50.0	700	50.0	1,400	100.0				
Ozaukee	60,400	82.4	12,900	17.6	73,300	100.0				
Racine	19,700	20.0	78,900	80.0	98,600	100.0				
Walworth	208,900	100.0	0	0.0	208,900	100.0				
Washington	32,800	30.3	75,500	69.7	108,300	100.0				
Waukesha	24,300	23.6	78,800	76.4	103,100	100.0				
Region	374,600	55.9	295,500	44.1	670,100	100.0				

PROTECTION OF PRIME AGRICULTURAL LAND IN THE REGION BY COUNTY: 1985

Source: SEWRPC.

tural use in the Region, reflecting, among other factors, the placement of agricultural lands in urban zoning districts in anticipation of future development and, in some cases, the existence of unzoned agricultural areas. The difference between existing and zoned agricultural land in 1985 also reflects the extensive agricultural areas that have been placed in floodland zoning districts, which are represented as conservancy districts under the community zoning inventory.

The regional land use plan as adopted in 1966 recommended that areas of the Region proposed for continued agricultural use, and particularly those identified as prime agricultural lands, be place in an exclusive agricultural use district. Exclusive agricultural zoning districts establish a relatively large minimum parcel size and restrict use of the land primarily to agricultural use. In 1966 the Town of Belgium in Ozaukee County became the first zoning jurisdiction in the Region to apply exclusive agricultural zoning in a substantial way. While it took a number of years to gain public acceptance. exclusive agricultural zoning is now in effect in many areas of the Region. It should be noted that planning for the preservation of farmland and the application of exclusive agricultural zoning received considerable impetus in 1977 with the establishment of the Wisconsin Farmland Preservation Program, a program that combines planning and zoning provisions with

tax incentives to promote the preservation of farmland. The minimum parcel size for exclusive agricultural zoning of 35 acres established under that program has become the generally accepted criterion for exclusive agricultural zoning.

By 1985, exclusive agriculture zoning establishing a minimum parcel size of 35 acres served to protect from inappropriate urban development about 374,600 acres, or 56 percent of the 670,100 acres of all prime agricultural land in the Region (see Table 113). Prime agricultural lands which have been protected through exclusive agricultural zoning are shown on Map 6 in Chapter III of this report. As shown on Map 6, the largest concentrations of prime agricultural lands that have been protected through exclusive agricultural zoning occur in Walworth County, western Racine and Kenosha Counties, and Ozaukee County.

One of the problems with regard to agricultural zoning identified under the 1964 and 1972 zoning inventories was the widespread use of agricultural districts which, while permitting agricultural and open space uses, also permit residential development on lots less than five acres in size. Residential development on lots smaller than five acres in rural areas is generally inconsistent with, and may be disruptive to, agricultural use in such areas and contributes to an urban sprawl pattern of development. Despite

LOCALLY PROPOSED "ALL OTHER" LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

	Locally Proposed "All Other" Land ^a											
	1964 ^b		197	1972 ^c		1985 ^d		1964-1972 Change		1985 nge		
County	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent	Acres	Percent		
Kenosha	48,607	20.5	8,854	6.1	65,608	19.1	-39,753	-81.8	56,754	641.0		
Milwaukee	4,247	1.8	8,861	6.1	8,835	2.6	4,614	108.6	-26	-0.3		
Ozaukee	64,412	27.1	16,962	11.8	21,555	6.3	-47,450	-73.7	4,593	27.1		
Racine	5,517	2.3	10,203	7.1	29,489	8.6	4,686	84.9	19,286	189.0		
Walworth	40,752	17.2	19,560	13.6	84,069	24.6	-21,192	-52.0	64,509	329.8		
Washington	7,618	3.2	17,383	12.0	50,100	14.6	9,765	128.2	32,717	188.2		
Waukesha	66,109	27.9	62,525	43.3	82,713	24.2	-3,584	-5.4	20,188	32.3		
Region	237,262	100.0	144,348	100.0	342,369	100.0	-92,914	-39.2	198,021	137.2		

^aIncludes land in conservancy zoning districts, surface water, and unzoned land.

^bProposed by local communities in land use plans and zoning ordinances, 1964.

^cProposed by local communities in zoning ordinances, 1972.

^dProposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

the increase in such zoning in certain areas, there has been a significant reduction in this type of zoning for the Region overall. In 1972, about 833,000 acres, or about 85 percent of the total of 984,600 acres of land in agricultural zoning districts in the Region, permitted residential development on lots less than five acres in size. Owing to the increased use of exclusive agricultural zoning and other changes in agricultural zoning district regulations since 1972, the amount of agriculturally zoned land permitting residential development on lots smaller than five acres decreased to 291,700 acres, or about 35 percent of all land in agricultural zoning districts in the Region in 1985.

<u>Proposed "All Other" Land Use:</u> The "all other" land use category includes all existing and zoned land uses which could not be meaningfully compared separately. With respect to zoning, the "all other" category includes land in conservancy zoning districts, surface water, and unzoned land. With respect to land use, the "all other" category includes woodlands; surface water and wetlands; and lands devoted to transportation, communication, and utility uses other than streets and off-street parking. The area included in the "all other" zoning category for the years 1964, 1972, and 1985 is indicated in Table 114. Existing and zoned "all other" lands are compared in Table 115 and Figure 45.

The amounts of land in the "all other" zoning category have fluctuated considerably since 1964. As indicated on Table 114, land in this category decreased by 92,900 acres, or 39 percent, from 237,300 acres in 1964 to just under 144,400 acres in 1972, primarily because of a substantial decrease in the amount of unzoned lands, as 17 local units of government previously without comprehensive zoning adopted zoning ordinances during this time. Between 1972 and 1985, the "all other" category rose from 144,400 acres to 342,400 acres, an increase of 198,000 acres, or 137 percent. The increase after 1972 was due, in large measure, to a substantial increase in lands in conservancy zoning districts. Another contributing factor was the unzoned status of much of the Towns of Brighton and Bristol in Kenosha County in 1985.

The increase in the amount of land in conservancy zoning districts after 1972 is particularly noteworthy. Land in conservancy zoning districts is included in the "all other" zoning category in Table 114 and Figure 45, for the sake

COMPARISON OF EXISTING AND LOCALLY PROPOSED "ALL OTHER" LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

					Existing and	Locally Prop	osed "All Oth	ner" Land ^a					
	1964					1972				1985			
	Existing ^b Proposed ^C		Proposed Change		E d		Proposed	Proposed Change		Provense	Proposed Change		
County (acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent		
kenosha	38,546	48,607	10,061	26.1	38,225	8,854	-29,371	-76.8	38,204	65,608	27,404	71.7	
filwaukee	30,981	4,247	-26,734	-86.3	28,073	8,861	-19,212	-68.4	24,139	8,835	-15,304	-63.4	
zaukee	27,878	64,412	36,534	131.0	27,799	16,962	-10,837	-39.0	26,975	21,555	-5,420	-20.1	
lacine	36,691	5,517	-31,174	-85.0	37,687	10,203	-27,484	-72.9	35,777	29,489	-6,288	-17.6	
Valworth	79,123	40,752	-38,371	-48.5	78,786	19,560	-59,226	-75.2	78,582	84,069	5,487	7.0	
Washington	69,411	7,618	-61,793	-89.0	68,950	17,383	-51,567	-74.8	70,422	50,100	-20,322	-28.9	
Waukesha	97,559	66,109	-31,450	-32.2	96,257	62,525	-33,732	-35.0	87,464	82,713	-4,751	-5.4	
Region	380,189	237,262	-142,927	-37.6	375,777	144,348	-231,429	-61.6	361,563	342,369	-19,194	-5.3	

^aExisting "all other" land includes woodlands; surface water and wetlands; and land devoted to transportation, communication, and utility uses other than streets and off-street parking. Proposed "all other" land includes land in conservancy zoning districts, surface water, and unzoned land.

^bAdapted from 1963 SEWRPC land use inventory.

^CProposed by local communities in land use plans and zoning ordinances, 1964.

^dAdapted from 1970 SEWRPC land use inventory.

^eProposed by local communities in zoning ordinances, 1972.

fAdapted from 1985 SEWRPC land use inventory.

^g proposed by local communities in zoning ordinances, 1985.

Source: SEWRPC.

Figure 45



EXISTING AND LOCALLY PROPOSED "ALL OTHER" LAND IN THE REGION BY COUNTY: 1964, 1972, AND 1985

Source: SEWRPC.

EXISTING

LOCALLY PROPOSED

of consistency with previous planning reports. In order to provide insight into the trend in the use of conservancy zoning, the area in conservancy zoning districts is presented for the years 1972 and 1985 in Table 116 and Figure 46. Land in conservancy zoning districts rose from 86,600 acres in 1972 to 260,100 acres in 1985, an increase of 173,500 acres, or 200 percent. As previously noted, much of the new conservancy zoning since 1972 has been in the form of special floodland and shoreland zoning. In addition, many wetland and woodland areas lying outside floodland and shoreland areas were placed in appropriate lowland or upland conservancy districts. The increased use of conservancy zoning represents substantial progress toward protection of the underlying natural resource base, as recommended in the regional land use plan.

Subdivision Regulations

Under Section 236.45 of the Wisconsin Statutes, cities, villages, towns, and counties are authorized to adopt subdivision control ordinances regulating the manner in which land is subdivided and prepared for development. Villages and cities can extend the applicability of their ordinances into extraterritorial areas in outlying towns. The subdivision ordinance powers of towns and counties is confined to their own unincorporated areas. In the case of overlapping jurisdiction, the more restrictive requirements control. The adopted regional land use plan recommended that counties, cities, villages, and towns in the Region revise their existing or prepare new subdivision control ordinances in order to assure that new urban development is placed in those areas where essential public facilities and services can be readily provided, and to assist in the preservation and protection of recommended regional park sites and primary environmental corridor lands by incorporating parkland dedication and/or reservation requirements, as appropriate.

In 1964, local subdivision control ordinances had been adopted by 66 cities and villages, 24 towns, and one county, Racine County, in the Region. Together, these ordinances applied to about 1,436 square miles, or nearly 54 percent of the total area of the Region. By 1985 subdivision control ordinances had been adopted by 80 cities and villages, 39 towns, and all six counties having unincorporated areas. The subdivision control regulations adopted by Ozaukee and Waukesha Counties, it should be noted, applied only to statutorily defined shoreland areas. Together subdivision control ordinances were in effect in over 2,612 square miles, or 97 percent of the Region, in 1985. The only areas of the Region that were not subject to a subdivision control ordinance were the Village of Chenequa in Waukesha County, the Village of West Milwaukee in Milwaukee County, and the portions of the Towns of Belgium, Grafton, and Port Washington located outside the statutory shoreland area in Ozaukee County (see Map 50).

Chapter 236 of the Wisconsin Statutes provides for the regulation of land subdivision where the act of division creates five or more parcels or building sites of one and one-half acres each or less in area or where five or more parcels or buildings sites one and one-half acres each or less in area are created by successive divisions within a period of five years. Chapter 236 authorizes local units of government to adopt subdivision control ordinances regulating subdivisions as defined above and other land divisions. Of the 119 city, village, and town subdivision control ordinances in effect in the Region in 1985, eight ordinances were confined in scope to that specified in Chapter 236, while 111 ordinances exceeded the minimum statutory scope. Of the 111 ordinances which exceeded the minimum statutory scope, 60 ordinances governed all land divisions and six ordinances governed all land divisions except the division of agricultural land into parcels of at least 35 acres in size (see Table 117). Each of the six county land subdivision control ordinances in effect in the Region in 1985 exceeded the minimum regulatory scope set forth in Chapter 236, although none of the county ordinances regulated all land divisions.

An analysis was conducted of the subdivision control ordinances in effect in the Region in 1985 to determine how many were based upon, or were very similar to, the Commission model land division ordinance. The results of that analysis are shown on Map 51. Five county subdivision control ordinances, the countywide subdivision control ordinances for Kenosha, Racine, Walworth, and Washington Counties and the county shoreland subdivision control ordinance for Waukesha County, are based upon the Commission model ordinance. In addition, the subdivision control ordinances of 26 cities, villages, and towns in the Region have been based upon the Commission model. Together, these ordinances applied to about 1,835 square miles, or about 68 percent of the total area of the Region.

	Locally Proposed Conservancy Land									
County	19	072	19	85	Change: 1972-1985					
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent				
Kenosha	584	0.7	23,421	9.0	22,837	3,910.4				
Milwaukee	4,791	5.5	7,901	3.0	3,110	64.9				
Ozaukee	14,848	17.1	19,875	7.6	5,027	33.9				
Racine	4,394	5.1	24,943	9.6	20,549	467.7				
Walworth	5,417	6.3	70,904	27.3	65,487	1,208.9				
Washington	11,956	13.8	46,295	17.8	34,339	287.2				
Waukesha	44,640	51.5	66,777	25.7	22,137	49.6				
Region	86,630	100.0	260,116	100.0	173,486	200.3				

LOCALLY PROPOSED CONSERVANCY LAND IN THE REGION: 1972 AND 1985

Source: SEWRPC.

Official Mapping

The adopted regional land use plan included an important recommendation that local units of government in the Region take steps to prepare and adopt official maps pursuant to Section 62.23(6) of the Wisconsin Statutes. Ideally, such maps would be prepared based upon the standard Commission specifications for largescale topographic base maps, as discussed in SEWRPC Planning Guide No. 2, Official Mapping Guide. The basic purpose of an official map is to prohibit the construction of buildings or structures and their associated improvements on land that has been designated for current or future public use, including streets, highways, drainageways, parkways, parks, and playgrounds. Although the official map is a very effective and efficient device for reserving land for future public use, it is historically an underutilized plan implementation tool.

In 1964, 38 cities, villages, and towns in the Region reported the existence of formally adopted official maps. Milwaukee, Ozaukee, and Waukesha Counties also reported the existence of a county highway width map. Together, these maps applied to about 1,087 square miles, or about 40 percent of the total area of the Region. In 1985 a total of 45 cities, villages, and towns in the Region reported having an official map. Milwaukee and Waukesha Counties again reported having a county highway width map. A highway width map was in effect in Ozaukee County until 1980, when the Ozaukee County Board of Supervisors repealed the highway width ordinance, which was originally adopted in 1927, because the highway width map had become outdated. Together, the 45 local official maps and two county highway width maps in effect in 1985 applied to about 827 square miles, or 31 percent of the total area of the Region (see Map 52).

Special Land Use Regulations

A number of special land use regulatory measures are specifically intended to ensure the wise use and protection of the natural resource base. Two of such measures, shoreland and floodplain regulations, were described earlier in this chapter. Other special land use regulatory measures, including county and local sanitary codes, county and local construction site erosion control ordinances, county soil and water conservation regulations, state administrative rules governing sanitary sewer extensions, and federal wetland protection regulations, are described herein.

<u>Sanitary Codes</u>: As previously indicated, the regional land use plan recommended that counties in the Region should adopt sanitary ordinances to prevent the installation of onsite soil absorption sewage disposal systems in areas that are poorly suited for such systems. Under

Figure 46

LOCALLY PROPOSED CONSERVANCY LAND IN THE REGION BY COUNTY: 1972 AND 1985



Source: SEWRPC.

Sections 59.065 and 145.01 of the Wisconsin Statutes, all counties in Wisconsin, except Milwaukee County, are now required to adopt and enforce a private sewage system ordinance governing septic tank sewage disposal systems, mound systems, and holding tanks. Under Sections 59.065 and 145.01, responsibility for the regulation of private sewage disposal systems in Milwaukee County is assigned to cities and villages.

Ordinances regulating private sewage disposal systems have been adopted by Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties. The Cities of Franklin and Oak Creek, the only civil divisions in Milwaukee County with significant amounts of land not served by public sanitary service, have also adopted private sewage system ordinances.

<u>Construction Site Erosion Ordinances</u>: The development and redevelopment of land for residential, commercial, industrial, transportation, and other intensive urban uses may result in significant soil erosion. Such erosion can contribute to problems on the construction site itself, such as rilled and gullied slopes and washed out roads, and to offsite problems,

Map 50



SUBDIVISION CONTROL ORDINANCES IN THE REGION: 1985

In 1964, local subdivision control ordinances had been adopted by 66 cities and villages, 24 towns, and one county, Racine County, in the Region. In combination, these ordinances applied to about 1,436 square miles, or nearly 54 percent of the area of the Region. By 1985, subdivision control ordinance had been adopted by 80 cities and villages, 39 towns, and all six counties with unincorporated areas, although the ordinances for two of these counties, Ozaukee and Waukesha, applied only to shoreland areas. Subdivision control ordinances were in effect in over 2,612 square miles, or 97 percent of the Region, in 1985.

Source: SEWRPC.

including water quality degradation and the clogging of culverts, roadside ditches, channels, and bays. The adopted regional water quality management plan recommended that local units of government in the Region adopt regulations for the control of construction site erosion, incorporating those regulations into existing local land use control ordinances, as appropriate.

SCOPE OF SUBDIVISION CONTROL ORDINANCES IN THE REGION: 1985

·			
	Governing Body Has Adopted a Subdivision Control	Ordinance Applies to Divisions of Land Other than Subdivisions as Defined in	
Governmental Unit	Ordinance	State Statutes ^a	Scope of Ordinance if Different from Statutory Scope
Kanasha County			
County	Yes	Yes	In unincorporated areas: all land divisions resulting in parcels five acres in size or less
Cities			
Kenosha	Yes	No	
Villages			
Paddock Lake	Yes	Yes	All land divisions resulting in parcels four acres in size or less
Silver Lake	Yes	Yes	All land divisions
Twin Lakes	Yes	Ves	All land divisions except the division of land for agricultural
	100		use into parcels of at least 10 acres in size
	· ·		
Towns			
Brighton	No	í	
Bristol	Ves	Vae	All land divisions
Barie	Vos	Vos	All land divisions
Pleasant Prairie	Ves	Ves	All land divisions
Pandall	No	165	An land divisions
Salam	NO Yes	 V-0	
Salem	Tes		size or less, or any other land division resulting in one to four parcels five acres in size or less
Somers	Yes	Yes	All land divisions
Wheatland	No		
Milwaukee County			
County	No		
Cities	}		
Cudahy	Yes	Yes	All land divisions
Franklin	Yes	Yes	All land divisions resulting in parcels three acres in size
			or less
Glendale	Yes	Yes	All land divisions
Greenfield	Yes	Yes	All land divisions
Milwaukee	Yes	Yes	All land divisions
Oak Creek	Yes	Yes	All land divisions
St. Francis	Yes	Yes	All land divisions
South Milwaukee	Yes	Ves	All land divisions
Wallwatesa	Vee	No	
West Allic	Ves	Ves	All land divisions
West Allis	105	162	
Villages			
Bayside	Yes	Yes	All land divisions
Brown Deer	Yas	Yee	All land divisions resulting in parcels four acres in size or less
For Point	Yee	Yee	All land divisions
Greendale	Vee	Vee	and divisions resulting in five or more percels 1.5 series in
Greenvale	105	162	aire et less et ette lend division resulting in faur et
	}		size or less, or any other land division resulting in four or
	V	v -	Tewer parceis
Hales Corners	res	Yes	All land divisions
River Hills	Yes	Yes	All land divisions
Shorewood	Yes	Yes	All land divisions
West Milwaukee	No		
Whitefish Bay	Yes	Yes	All land divisions, as planned unit developments only

		Ordinance Applies	
	Courseine Dart		
	Governing Body	to Divisions	
	Has Adopted a	of Land Other	
	Subdivision	than Subdivisions	
	Control	as Defined in	
Governmental Unit	Ordinance	State Statutes ^a	Scope of Ordinance if Different from Statutory Scope
Ozaukee County			
County	Yes	Yes	In unincorporated shoreland areas: all land divisions
			resulting in three or more parcels five acres in size or less
Cities			
Cedarburg	Yes	Yes	All land divisions
Meguon	Yes	Yes	All land divisions
Port Washington	Yes	Yes	All land divisions
Villages			
Belgium	Yes	Yes	All land divisions
Erodonia	Vac	Ves	All land divisions excent the division of land for agricultural
Fiedolila	105	103	una inte parcele of at least 25 acres in size
Carlins	Vaa	Vaa	All land divisions
Gration	Tes Vee	Vee	All land divisions
	Yes	Yes	All land divisions
	Yes	Yes	All land divisions
Towns	·	· · · · · · · · · · · · · · · · · · ·	
Belgium	No	••	••
. Cedarburg	Yes	Yes	All land divisions
Fredonia	Yes	Yes	All land divisions
Grafton	No	••	••
Port Washington	No		
Saukville	Yes	Yes	All land divisions
Racine County			
County	Yes	Yes	In unincorporated areas: land divisions resulting in five or more parcels three acres in size or less, or any other land division resulting in four or fewer parcels 35 acres in size or less
Cities			
Burlington	Yes	Yes	All land divisions
Racine	Yes	Yes	All land divisions resulting in parcels three acres in size
Villagos		1	
Figure ad Bark	Vaa	Vac	All land divisions
Elmwood Park	Tes	l Tes	
North Bay	res	Tes	All land divisions resulting in percels five serves in size of loss
Rochester	Yes	tes	All land divisions resulting in parcels five acres in size or less
Sturtevant	Yes	NO	
Union Grove	Yes	Yes	All land divisions resulting two or more parcels 1.5 acres in size or less
Waterford	Yes	Yes	All land divisions resulting in three or more parcels except the division of land for agricultural use into parcels of at
		· · · · ·	least 10 acres in size
Wind Point	Yes	Yes	All land divisions resulting three or more parcels 1.5 acres in size or less
Towns			
Burlington	Ata		
	NO Vaa	Van	All land divisions resulting three or more percels three corres
Caleuonia	Tes	Tes	in size or less
Dover	Yes	Yes	All land divisions resulting in parcels five acres in size or less
Mt. Pleasant	Yes	Yes	Land divisions resulting in five or more parcels three acres in size or less, or any other land division resulting in four or fewer parcels 35 acres in size or less

	Governing Body Has Adopted a Subdivision	Ordinance Applies to Divisions of Land Other than Subdivisions	
Governmental Unit	Control Ordinance	as Defined in State Statutes ^a	Scope of Ordinance if Different from Statutory Scope
Racine County (continued) Towns			
Norway	Yes	No	
Raymond	Yes	Yes	All land divisions resulting in three or more parcels two acres in size or less
Rochester	No		· · ·
Waterford	Yes	Yes	All land divisions resulting in four or fewer parcels five acres in size or less
Yorkville	Yes	Yes	All land divisions resulting in five or more parcels three acres in size or less
Walworth County			
County	Van	Van	In unincorporated areas: all land divisions resulting in paraels
Cities	Tes	Tes	five acres in size or less
Delavan	Yes	Vac	All land divisions
Elkhorp	Yos	Yos	All land divisions resulting in parcels two acres in size or less
Eikiloili	Yes	Yes	All land divisions resulting in parcels two actes in size of less
	Yes	Yes	All land divisions
whitewater	tes	fes	size or less, or any other land division resulting in two to four parcels five acres in size or less
Villages			
Darien	Yes	Yes	All land divisions except the division of land for agricultural use into parcels of at least 35 acres in size
East Trov	Yes	No	
Fontana on Geneva Lake	Yes	Yes	All land divisions
Genoa City	Yes	Yes	All land divisions resulting in two or more parcels two acres in size or less
Sharon	Yes	Yes	All land divisions
Walworth	Yes	Yes	All land divisions except the division of land for agricultural use into parcels of at least 35 acres in size
Williams Bay Towns	Yes	Yes	All land divisions
Bloomfield	No		
Darien	No		
Dahen	Voo	Van	All land divisions except the division of land for agricultural
East Troy	Yes	Yes	use into parcels of at least 35 acres in size All land divisions except the division of land for agricultural
			use into parcels of at least 35 acres in size
Geneva	No		
LaFayette	No		
LaGrange	No		
Linn	No		
Lyons	No		
Richmond	No		
Sharon	No		
Spring Prairie	No		
Sugar Creek	No		
	No		
Walworth	Vae	Vae	All land divisions
Whitewater	No		
	+	<u> </u>	<u></u>
Vvashington County County	Yes	Yes	In unincorporated areas: land divisions resulting in five or more parcels five acres in size or less
Cities	l		
Hartford	Yes	Yes	All land divisions resulting in parcels 10 acres in size or less
West Bend	Yes	Yes	Other land divisions resulting in two to four parcels 10 acres in size or less

	Governing Body Has Adopted a Subdivision	Ordinance Applies to Divisions of Land Other than Subdivisions	
Governmental Unit	Control Ordinance	as Defined in State Statutes ^a	Scope of Ordinance if Different from Statutory Scope
Washington County (continued)			
Germantown	Yes	Yes	Land divisions resulting in five or more parcels, or any other land division resulting in two to four parcels 10 acres in size or less
Jackson	Yes	Yes	All land divisions resulting in two to four parcels five acres in size or less
Kewaskum	Yes	Yes	All land divisions
Newburg	Yes	Yes	All land divisions resulting in parcels 20 acres in size or less
Slinger	Yes	Yes	All land divisions resulting in two to four narcels 10 acres in
			size or less
Towns			
Addison	No		
Barton	Yes	No	
Erin	Yes	Yes	All land divisions
Farmington	No		
Germantown	No		
Hartford	No		
lackson	Vec	Vec	Land divisions resulting in three or more parcels five acres in
Jackson	105	165	size or less, or any other land division resulting in one or more parcels 10 acres in size or less
Kewaskum	Yes	Yes	All land divisions resulting in parcels five acres in size or less
Polk	Yes	Yes	All land divisions
Richfield	Yes	Yes	All land divisions resulting in parcels 20 acres in size or less
Trenton	Yes	Yes	All land divisions resulting in parcels five acres in size or less
Wavne	No	••	••·
West Bend	Yes	No	
Waukesha County			
County	Yes	Yes	In unincorporated shoreland areas: all land divisions
			resulting in a parcel 20 acres in size or less
Cities			
Brookfield	Yes	Yes	All land divisions
Delafield	Yes	Yes	Land divisions resulting in five or more parcels five acres in size or less, or any other land division resulting in four or fewer narcels
Muskego	Yes	Yes	All land divisions
New Berlin	Yee	Yee	All land divisions
Oconomowoc	Yes	Yes	All land divisions resulting in narcels five acres in size or less
Waukesha	Yee	Yee	All land divisions
Villages	193		
Big Bend	Yes	Yee	All land divisions
Butler	Vee	Yee	All land divisions resulting in parcels four acres in size or less
Chenequa	No		
Dousman	Vee	Yee	All land divisions resulting in parcele 1.5 acres in size or less
Facle	Vae	Vae	All land divisions resulting in parcele five scree in size or less
Elm Grove	Vac	Vee	All land divisions resulting in parcels five acres in size or loss
Hartland	Vaa	Vac	All land divisions resulting in parcels four serve in size or less
	Vec	Yee	All land divisions
	Vac	Vac	All land divisions
Menomonon Falla	Ven	Voo	All land divisions
Merton	Tes Van	Vee	All land divisions resulting in three or more served fire
INIGI LOTI	Tes	Tes	in size of less
Mukwonago	Yes	Yes	All land divisions resulting in three or more parcels five acres in size of less
Nashotah	Yes	Yes	All land divisions

Governmental Unit	Governing Body Has Adopted a Subdivision Control Ordinance	Ordinance Applies to Divisions of Land Other than Subdivisions as Defined in State Statutes ^a	Scope of Ordinance if Different from Statutory Scope
Moukeebe County (continued)			
Villages			
North Prairie	Yes	Yes	All land divisions
Oconomowoc Lake	Yes	No	**
Pewaukee	Yes	Yes	All land divisions resulting in parcels four acres in size or less
Sussex	Yes	Yes	All land divisions except the division of land for agricultural
			use into parcels of at least 35 acres in size
Wales	Yes	Yes	All land divisions resulting in parcels five acres in size or less
Towns			
Brookfield	Yes	Yes	Land divisions resulting in five or more parcels 1.5 acres in size or less, or any other land division resulting in one to four parcels five acres in size or less
Delafield	Yes	Yes	All land divisions resulting in parcels 20 acres in size or less
Eagle	Yes	Yes	All land divisions
Genesee	Yes	Yes	All land divisions
Lisbon	Yes	Yes	All land division resulting in one to four parcels 20 acres in
			size or less
Merton	Yes	Yes	All land divisions
Mukwonago	Yes	Yes	All land divisions resulting in three or more parcels five acres
			in size of less
Oconomowoc	Yes	Yes	All land divisions
Ottawa	Yes	Yes	All land divisions
Pewaukee	Yes	Yes	All land divisions
Summit	Yes	Yes	All land divisions
Vernon	Yes	Yes	All land divisions
VVaukesha	Yes	Yes	All land divisions

^aUnder Chapter 236 of the Wisconsin Statutes, a subdivision is the division of a lot, parcel, or tract of land where the act of division creates five or more parcels or building sites of 1.5 acres each or less in area; or where five or more parcels or building sites of 1.5 acres each or less in area are created by successive divisions within a period of five years.

Source: SEWRPC.

Since the adoption of the regional water quality management plan, specific authority to adopt ordinances for the control of construction site erosion has been granted by the State's Legislature to cities, villages, and counties with respect to their unincorporated areas under Sections 62.234, 61.354, and 59.974, respectively, of the Wisconsin Statutes. Construction site erosion regulations may be adopted as part of comprehensive zoning ordinances, as part of land division ordinances, or as freestanding, or separate, ordinances. By June 1990, construction site erosion control ordinances had been adopted by 13 cities, 13 villages, four towns, and two counties, Washington and Walworth, in southeastern Wisconsin (see Map 53).

Soil and Water Conservation Regulations: As noted earlier, the regional land use plan recommended that, as appropriate, counties in the Region should formulate and adopt soil and water conservation regulations, relating such regulations to the basic land and natural resource elements of the plan. Counties as well as cities and villages in Wisconsin have been granted authority under Section 92.11 of the Wisconsin Statutes to adopt such ordinances prohibiting land uses and land management practices which cause excessive soil erosion. sedimentation, nonpoint source pollution, or stormwater runoff. Upon adoption of such an ordinance by the governing body, the ordinance provisions become effective only upon approval

Map 51

Map 52

SUBDIVISION CONTROL ORDINANCES IN THE REGION BASED UPON THE SEWRPC MODEL LAND SUBDIVISION ORDINANCE: 1985



The first- and second-generation regional land use plans recommended that local units of government revise their subdivision control ordinances, utilizing the Commission-developed model land division ordinance for this purpose. As of 1985, five county subdivision control ordinances and 26 city, village, and town subdivision control ordinances were based upon the model ordinance. Together, these ordinances applied to about 1,835 square miles, or about 68 percent of the total area of the Region.

Source: SEWRPC.

by a majority of votes cast in a referendum in the affected area. To date no local unit of government in the Region has adopted soil and water conservation regulations under the authority granted under Section 92.11.

State Administrative Rules Regarding Sewer Extensions: In Wisconsin public and private sewer extensions must be in conformance with an adopted areawide water quality management plan. Specifically, Section NR 110.08(4) and

OFFICIAL MAPS IN THE REGION: 1985



Official maps provide an effective and efficient means for reserving lands for future public uses, including streets, highways, drainageways, parkways, parks, and playgrounds. In 1964, a total of 38 cities, villages, and towns in the Region had such official maps, while Milwaukee, Ozaukee, and Waukesha Counties had related highway width maps. In 1985, 45 cities, villages, and towns in the Region had an official map. Milwaukee and Waukesha Counties both reported having a county highway width map in 1985. The Ozaukee County highway width map was repealed in 1980 because it had become outdated.

Source: SEWRPC.

Section ILHR 82.20(4) of the Wisconsin Administrative Code require that the Wisconsin Department of Natural Resources, in its regulation of public sanitary sewers, and the Wisconsin Department of Industry, Labor and Human Relations, in its regulation of private sanitary sewers, make a finding that all proposed sanitary sewer extensions are in conformance with adopted areawide water quality management plans and the sanitary sewer service areas identified in such plans. If a locally proposed sanitary sewer extension is designed to serve areas not recommended for sewer service in an areawide water quality management plan, the state agencies concerned must deny approval of the extension.

In southeastern Wisconsin, proposed sanitary sewer service areas are identified in the areawide water quality management plan adopted by the Commission in 1979 and numerous amendments to that plan. The areawide water quality management plan and plan amendments identify the outer boundary of the areas within which sanitary sewers may be extended and, in addition, identify primary environmental corridors lying within those areas. By the end of 1989, sewer service area refinement plans had been prepared for 53 sewer service areas in the Region. The proposed sanitary sewer service areas in the Region as identified under the areawide water quality management plan and subsequent plan amendments through the end of 1989 are shown on Map 37. The Department of Natural Resources and the Department of Industry, Labor and Human Relations will not approve sewer extensions beyond the identified sewer service areas without a plan amendment, and generally will not approve sewer service extensions for development proposed to be located within those areas of the primary environmental corridors occupied by wetlands or those areas of the corridors in which intensive urban development may be expected to have adverse water quality impacts.

Section 404, Federal Water Pollution Control Act of 1972: Section 404 of the Federal Water Pollution Control Act of 1972, as amended, requires the U.S. Army Corps of Engineers to regulate, in accordance with guidelines developed by the U. S. Environmental Protection Agency, the discharge of dredge and fill materials into waters of the United States, which waters by definition include adjacent wetlands. The wetland regulatory provisions of this act have important implications for land use planning and development. As this regulatory program is administered in southeastern Wisconsin, any wetland proposed to be filled that lies within a primary environmental corridor is subject to an individual federal Section 404 permit. Filling of wetlands lying outside primary environmental corridors may also require an individual Section 404 permit. Federal permits for wetland filling may be difficult to obtain, particularly within primary environmental corridors, the

Map 53

CONSTRUCTION SITE EROSION CONTROL ORDINANCES IN THE REGION: 1990



Special regulations to control construction site erosion are being adopted increasingly by local units of government in the Region, as recommended in the regional water quality management plan. Construction site erosion regulations may be adopted as part of comprehensive zoning ordinances, as part of land division ordinances, or as freestanding, or separate, ordinances. Construction site erosion control ordinances had been adopted by 13 cities, 13 villages, four towns, and two counties, Walworth and Washington, by 1990.

Source: SEWRPC.

federal government having made a preliminary determination that wetlands located within primary environmental corridors are generally unsuited for filling. Even if permits can be acquired for filling of wetlands either within or outside primary environmental corridors, such permits typically require mitigation activities, including wetland replacement or enhancement measures.

<u>Protection of Primary Environmental Corridors</u> One of the most important recommendations of the regional land use plan is the preservation in

PROTECTION OF PRIMARY ENVIRONMENTAL CORRIDORS IN THE REGION BY COUNTY: 1985

	Primary Environmental Corridors Protected													
	Area Protected through Public Ownership				Additional Area Protected through Land Use Regulation ^a									
	Surface Water		Public Park and Open Space Land		Wetlands Protected by Floodplain Zoning, Shoreland- Wetland Zoning, and Federal Wetland Regulations		Upland Areas Protected by State Administrative Rules Governing Sewer Extensions ^b		Subtotal		Primary Environmental Corridors Not Protected		Total Primary Environmental Corridors	
County	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	4,574 994 1,592 4,633 13,659 3,942 16,233	16.0 10.2 8.0 19.6 20.9 6.5 17.6	6,294 5,755 2,009 3,526 7,993 8,001 15,122	22.0 58.8 10.1 15.0 12.3 13.3 16.4	9,994 518 9,755 7,146 17,740 29,749 38,071	34.9 5.3 49.1 30.3 27.2 49.4 41.3	1,081 949 1,260 1,308 3,713 1,521 6,611	3.8 9.7 6.3 5.5 5.7 2.5 7.2	21,943 8,216 14,616 16,613 43,105 43,213 76,037	76.7 84.0 73.5 70.4 66.1 71.7 82.5	6,654 1,564 5,243 6,975 22,123 17,071 16,186	23.3 16.0 26.5 29.6 33.9 28.3 17.5	28,597 9,780 19,859 23,588 65,228 60,284 92,223	100.0 100.0 100.0 100.0 100.0 100.0 100.0
Region	45,627	15.2	48,700	16.3	112,973	37.7	16,443	5.5	223,743	74.7	75,816	26.3	299,559	100.0

⁸Excludes lands within public park and open space sites.

^bThe protection of upland corridors within planned sewer service areas is limited insofar as the statutory basis for state objections to urban encroachment into these corridors relates only to potential adverse water quality impacts.

Source: SEWRPC.

essentially natural, open use of the remaining primary environmental corridors in the Region. Primary environmental corridors are linear areas in the landscape which contain most of the best remaining elements of the natural resource base (see the description of primary environmental corridors in Chapter V). The regional land use plan recommends that the preservation of these corridors be achieved through a combination of public acquisition and land use regulation, as appropriate. While outright public acquisition provides the greatest degree of protection of environmental corridor lands. substantial protection can be achieved through public land use regulation. Many of the regulatory mechanisms described in this chapter, including general zoning, floodland zoning, shoreland-wetland zoning, State administrative rules governing sewer extensions, and wetland protection afforded by the federal Water Pollution Control Act of 1972, have a direct bearing on the protection of primary environmental corridors. In addition, public land dedication and reservation requirements in local land subdivision control ordinances provide a means for the public acquisition of primary environmental corridor lands.

The protection status of primary environmental corridors in the Region in 1985, taking into account protection through public acquisition and protection through public land use regulation, is presented in Table 118. As indicated in that table, areas encompassing about 94,300 acres, including 45,600 acres of surface water. representing 31 percent of the total primary environmental area were publicly owned and permanently protected in 1985. Through extensive joint state-local floodplain and shorelandwetland zoning and federal wetland regulation under Section 404 of the Federal Water Pollution Control Act, another 113,000 acres, or 38 percent of the total primary environmental corridor area, were effectively protected from inappropriate development. In addition, state administrative rules governing sanitary sewer extensions help to protect upland corridors located within planned sewer service areas encompassing 16,400 acres, or nearly 6 percent of all corridor lands. The statutory basis for this protection is relatively narrow, however, and relates only to potential adverse water quality impacts. In total, then, about 223,700 acres, representing about 75 percent of the 299,600 acres of primary environmental corridor lands in the Region. were fully or partially protected from inappropriate development. It should be noted that the regulatory measures explicitly taken into account in this analysis, namely, floodplain zoning, shoreland-wetland zoning, and federal wetland regulations, as well as state administrative rules governing sewer extensions, may be supplemented by the use of lowland and upland conservancy zoning districts imposed on corridor lands through county and local comprehensive zoning.

SUMMARY

This chapter has described the findings of the county and local community plans and land use regulatory ordinances inventory carried out for the base year 1985 under the continuing regional planning program. Such plans and land use regulatory ordinances are an important consideration in the formulation of a regional land use plan both practicable and feasible, since such local plans and ordinances probably represent the best available expression of community development objectives. The analyses presented in the chapter relate in part to a comparison of the new 1985 inventory of local community plans and land use regulatory ordinances to similar inventories conducted in 1964 and 1972. Changes in land use development objectives as reflected in local zoning ordinance and zoning district map changes between 1964 and 1985 were identified and quantified. In addition. analyses in the chapter identify the extent to which local communities in the Region have specifically adjusted their local plans and land use control ordinances to reflect specific regional land use plan implementation recommendations. The major inventory findings are as follows:

1. Community comprehensive, or master, plans have been prepared for 73 of the 147 local units of government in the Region in 1985. Plans for 56 of these communities were prepared concurrently with or since preparation and adoption of the initial design year 1990 regional land use plan and, thus, represent community planning efforts which have been conducted within the context of an established regional land use planning effort. Of the 73 communities for which local comprehensive, or master, plans have been prepared, 41 have formally adopted the plan by action of the local plan commission.

- 2. General zoning was in effect in each of the 82 cities and villages and in 63 of the 65 towns in the Region in 1985. Forty-two towns were under the jurisdiction of a county zoning ordinance, while 21 towns had adopted their own town zoning ordinance. General zoning in the Towns of Brighton and Bristol expired in 1984 after the Towns failed to approve a new zoning ordinance that had been adopted by Kenosha County in 1983. Except for those areas lying within the statutory shoreland zoning jurisdiction area, these two towns were unzoned in 1985, the only unzoned areas in the Region.
- 3. In addition to Kenosha County, many other local units of government have adopted new zoning ordinances or major zoning revisions since the previous Commission zoning inventory in 1972. Of particular significance are the major new zoning or rezoning actions undertaken by the Towns of Belgium, Cedarburg, Fredonia, Grafton, Port Washington, and Saukville in Ozaukee County; the Town of Norway in Racine County; the City of Delavan and the Village of Darien in Walworth County: the Village of Germantown and the Town of Richfield in Washington County: and the Town of Pewaukee in Waukesha County.
- 4. With respect to zoning for urban development, one of the most significant changes since 1964 is the reduction in residential zoning in outlying areas of the Region. Lands in residential zoning districts decreased from over 440,000 in 1964 and 1972 to 384,600 acres in 1985. Much of the reduction involved the rezoning from residential districts to appropriate exclusive agricultural and conservancy districts in accordance with regional land use plan recommendations for zoning of rural areas. Conversely, some of the reduction involved the rezoning to agricultural districts which, in addition to desirable agricultural and open space uses, also permit very low density residential development.
- 5. As a result of the reduction in the gross area zoned for residential use and the actual development of substantial amounts of residentially zoned land over time, the

incremental land area proposed for residential use under local zoning in the Region has decreased significantly, from 285,100 acres in 1964 to 256,400 acres in 1972 and, further, to 153,500 acres in 1985. In general, this suggests movement toward the more judicious allocation of land to residential use recommended under the regional land use plan. Despite the substantial reduction in the amount of land that is zoned and available for residential development, however, it is apparent that the Region is still overzoned with respect to residential use. At the rate of population growth anticipated under an intermediate regional growth scenario, it would take over 230 years to fully utilize all of the proposed residential lands.

- 6. Lands zoned for commercial use increased from 31,500 acres in 1964 to 40,100 acres in 1972 and to 41,400 acres in 1985. Between 1972 and 1985, Milwaukee, Racine, and Waukesha Counties experienced increases in commercially zoned land ranging from 400 to 2,200 acres; Kenosha, Walworth, and Washington Counties experienced decreases in commercially zoned land ranging from 700 to 1,500 acres; and Ozaukee County experienced little change in overall area zoned for commercial use. With full implementation of existing zoning district regulations, the amount of land devoted to commercial use in the Region would increase by 26,200 acres, or nearly 173 percent, over the 1985 level of 15,200 acres. The additional commercial land permitted under local zoning in 1985 was somewhat less than could have been developed under local zoning in 1972, 29,200 acres. It was somewhat greater than could have been developed under local zoning in 1964, 23,500 acres. The long-standing practice of strip commercial zoning, that is, the zoning of strips of land abutting arterial streets and highways for commercial use, is still prevalent in the Region. Such zoning is generally undesirable insofar as it tends to destroy aesthetic values along arterial streets; to create traffic hazards and congestion; and to promote scattered development, indiscriminate use of outdoor advertising, and land speculation. ī
- Lands zoned for industrial use encom-7. passed a total of 75,900 acres in the Region in 1985, compared to 70,500 acres in 1964 and 83.800 acres in 1972. Between 1972 and 1985, Kenosha, Milwaukee, Ozaukee, Washington, and Waukesha Counties experienced decreases in industrially zoned land ranging from 1,000 to 2,800 acres. Racine and Walworth Counties experienced increases in industrially zoned land of 1,400 acres and 1,700 acres, respectively. With full implementation of existing zoning district regulations, the amount of land in industrial use would increase by 50,700 acres, or 201 percent, over the 1985 level of 25,200 acres. In comparison, zoning in effect in 1964 would have permitted a 53,100 acre increase in industrial land, while zoning in effect in 1972 would have permitted a 63,800 acre increase. Despite the reduction in industrially zoned land since 1972, the Region remains overzoned for industrial use.
- The amount of land zoned for agricultural 8. use decreased significantly, by 154,000 acres, or 16 percent, from 984,600 acres in 1972 to 830,600 acres in 1985. While some of this decrease is due to rezoning to residential and other urban districts, much of the decrease is attributable to other factors. As a result of the increase in floodland zoning, large areas of farmland zoned for agricultural use in 1972, and in many cases still included in basic agricultural districts under general zoning ordinances in 1985, are identified as zoned conservancy under the 1985 zoning inventory. In certain other farming areas, wetland and woodland tracts, previously included in agricultural zoning districts, have been rezoned into more appropriate lowland and upland conservancy districts as part of local zoning refinements. In addition, large areas of farmland in the Towns of Brighton and Bristol in Kenosha County, formerly zoned for agricultural use, were unzoned in 1985.
- 9. Progress has been made with respect to the protection of prime agricultural land through the application of exclusive agricultural zoning. By 1985, exclusive agricultural zoning establishing a minimum parcel size of 35 acres served to protect

about 374,600 acres, or 56 percent of all prime agricultural lands in the Region. The largest concentrations of prime agricultural lands that have been protected through exclusive agricultural zoning occur in Walworth County, western Racine and Kenosha Counties, and Ozaukee County.

- 10. One of the problems with regard to agricultural zoning identified under the previous zoning inventories was the widespread use of agricultural districts which, in addition to agricultural and open space uses, also permit low density residential development. Despite an increase in such zoning in certain areas, there has been a significant reduction in this type of zoning for the Region overall. In 1972, about 833,000 acres, or about 85 percent of the total of 984,600 acres of land in agricultural zoning districts in the Region, permitted residential development on lots less than five acres in size. Owing to the increased use of exclusive agricultural zoning and other changes in agricultural zoning district regulations since 1972, the amount of agriculturally zoned land permitting residential development on lots smaller than five acres has decreased to 291,700 acres, or about 35 percent of all agriculturally zoned land in the Region in 1985.
- 11. There has been a substantial increase in the amount of land in conservancy zoning districts in the Region since 1972. Land in conservancy districts rose from 86,600 acres in 1972 to 260,100 acres in 1985, an increase of 173,500 acres, or 200 percent. Much of the new conservancy zoning since 1972 has been in the form of special floodland and shoreland-wetland zoning. In addition, many wetland and woodland areas lying outside floodland and shoreland areas were placed in appropriate lowland and upland conservancy districts under local zoning ordinances.
- 12. In 1985, county and local subdivision control ordinances were in effect in over 2,612 square miles, or 97 percent of the total area of the Region. The only areas of the Region not subject to a subdivision control ordinance were the Village of Chenequa in Waukesha County, the Vil-

lage of West Milwaukee in Milwaukee County, and the portions of the Towns of Belgium, Grafton, and Port Washington in Ozaukee County that are not subject to the Ozaukee County shoreland subdivision control ordinance.

- 13. In 1985, a total of 45 cities, villages, and towns in the Region reported the existence of a formally adopted official map. Two counties, Milwaukee and Waukesha, reported the existence of county highway width maps. Together, these maps applied to about 827 square miles, or 31 percent of the total area of the Region. The official map remains an important but underutilized means for reserving land for future public use.
- 14. All counties in the Region except Milwaukee County have adopted private sewage system ordinances governing septic tank sewage disposal systems, mound systems, and holding tanks, as recommended in the adopted regional land use plan and as now required under Wisconsin Statutes. The Cities of Franklin and Oak Creek, the only civil divisions in Milwaukee County having significant amounts of land not served by public sanitary sewers, have also adopted private sewage system ordinances.
- 15. A increasing number of governmental units, recognizing the problems attendant to construction site erosion, have adopted regulations requiring the control of erosion during the development process. The adoption of such regulations, it should be noted, is recommended in the regional water quality management plan. Thirteen cities, 13 villages, four towns, and two counties, Walworth County and Washington County, in the Region had adopted construction site erosion control ordinances by June 1990.
- 16. In addition to local land use controls, certain state and federal regulatory programs with a direct bearing on land use development in the Region have emerged since 1972. State administrative rules requiring that all proposed sanitary sewer extensions be in conformance with existing areawide water quality management plans contribute to the orderly expansion of urban areas and help to ensure the
preservation of primary environmental corridors. The federal wetland regulatory program administered by the U. S. Army Corps of Engineers under Section 404 of the Federal Water Pollution Control Act of 1972 provides additional protection for wetland areas, particularly those located within primary environmental corridors.

17. The regional land use plan recommends the protection of primary environmental corridors through a combination of public acquisition and public land use regulation. While outright acquisition provides the greatest assurance of long-term preservation, many of the regulatory measures described in this chapter, including general zoning, floodland zoning, shorelandwetland zoning, state administrative rules governing sewer extensions, and the federal wetland regulatory program, serve to protect primary environmental corridor lands from urban encroachment. Areas encompassing 94,300 acres, including 45,600 acres of surface water, representing 31 percent of the total primary environmental corridor area were publicly owned and permanently protected in 1985. Through joint state-local floodplain and shoreland-wetland zoning and federal wetland regulation, another 113,000 acres. or 38 percent of the total primary environmental corridor area, were protected from inappropriate development. In addition, state administrative rules governing sanitary sewer extensions help to protect upland corridors located within planned sewer service areas, which encompass 16,400 acres, or nearly 6 percent of all corridor lands. The statutory basis for this protection is relatively narrow, however, and relates only to potential adverse water quality impacts. In total, then, about 223,700 acres, representing about 75 percent of the 299,600 acres of primary environmental corridor lands in the Region, were fully or partially protected from inappropriate development. It should be noted that the aforementioned regulatory measures may be supplemented by the use of lowland and upland conservancy zoning districts imposed on corridor lands through county and local comprehensive zoning.

Taken together, the foregoing inventory findings and analyses revealed that there has been significant progress in the Region since 1964 in adjusting community plans and land use regulatory ordinances to reflect the more rational regional development pattern recommended under the adopted regional land use plan. This progress is most evident in the reduction in residential zoning in outlying rural towns in the Region; in the increased application of floodland zoning and other conservancy zoning to protect important elements of the natural resource base. particularly the regional primary environmental corridors; and in the increased application of exclusive agricultural zoning to protect prime agricultural lands and the attendant reduction in the use of "nominal" agricultural districts which allow low density residential development in addition to agricultural and open space use.

At the same time, it should be recognized that much still needs to be accomplished in terms of adjusting local plans and land use regulatory ordinances in accordance with regional development objectives.

First, continued efforts are needed to bring the amount of land allocated to residential. commercial, and industrial uses under local zoning more into accord with actual demand. Despite the decrease in the amount of land zoned and available for residential, commercial, and industrial use since 1972, the Region remains overzoned for these uses. With full implementation of existing zoning district regulations, the land area devoted to commercial use in the Region would more than double, the land area devoted to industrial use would triple, and the land area devoted to residential use would increase by about two-thirds. As previously indicated, at the rates of population and employment growth anticipated under the intermediate regional growth scenario, it would take about 200 years to fully utilize all of the proposed additional commercial land, about 215 years to fully utilize all of the proposed additional industrial land, and about 230 years to fully utilize all of the proposed additional residential land. Overzoning for urban uses can lead to premature development, creating scattered, incomplete neighborhoods far removed from existing urban service areas, and may generate serious and costly environmental problems.

Second, strip commercial zoning, that is, the zoning of strips of land abutting arterial streets

and highways for commercial use, remains widespread in the Region. Such zoning is generally undesirable insofar as it tends to destroy aesthetic values along major arterials; to create traffic hazards and congestion: and to promote scattered development, indiscriminate use of outdoor advertising, and land speculation. As an alternative to strip commercial development, the Commission recommends that commercial development occur in planned neighborhood, community, and regional commercial centers providing adequate off-street parking and good access to the arterial street and highway system and mass transit system. Commercial zoning should be used to reserve lands for such planned commercial centers in accordance with anticipated future needs.

Third, despite a substantial reduction since 1972, many areas of the Region remain in agricultural zoning districts which permit residential development on lots less than five acres in size. Residential development on lots smaller than five acres in rural areas is generally inconsistent with, and may be disruptive to, agricultural use in such areas, and contributes to an urban sprawl pattern of development. Continued efforts are needed to replace "nominal" agricultural zoning districts which allow low density residential development with exclusive agricultural zoning.

Fourth, while most lowland areas within the primary environmental corridors have been effectively protected from incompatible urban development, many upland areas remain vulnerable to urban encroachment. Some protection of upland corridor lands is afforded by state administrative rules governing sanitary sewer extensions, although the statutory basis for such protection is limited to water quality concerns, and some protection is afforded by upland conservancy zoning and rural estate zoning adopted as part of county and local comprehensive zoning. Continued efforts are necessary to provide for the permanent protection of all the remaining upland corridor areas.

While much remains to be accomplished, the actions already taken by local units of government in terms of adjusting land use plans and land use regulatory ordinances to implement key recommendations of the regional land use plan are truly significant. The extensive changes effected by local units of government to date support the continued adherence to the overall development framework recommended in the regional land use plan.

Chapter VIII

ANTICIPATED REGIONAL GROWTH AND CHANGE

In any planning effort, forecasts are required of those future events and conditions which are outside the scope of the plan but which will affect plan design and implementation. In the preparation of a land use plan, in particular, the future demand for land and natural resources which the plan must seek to accommodate depends primarily upon future population and economic activity levels. Control of changes in population and economic activity levels lies largely outside the scope of governmental activity and outside the scope of the physical planning process. Future population and economic activity levels must, therefore, be forecast.

In more than two decades of long-range land use and related facility planning, the Commission has undertaken a number of studies of population and economic activity. The majority of these studies have been carried out within the context of the traditional approach to long-range, areawide systems planning. The traditional practice has been to prepare a number of projections of possible future population and economic activity levels, selecting from this range one set of forecast population and economic activity levels believed to be most likely to represent future conditions. The selected forecasts are then utilized in the development, test, and evaluation of alternative land use and supporting facility plans. This traditional approach was followed in the preparation of the first- and secondgeneration regional land use plans.

The traditional approach to planning works well in periods of socioeconomic stability, when historic trends can be anticipated to continue relatively unchanged over the plan design period. However, during periods of major change in social and economic conditions, when there is uncertainty as to whether historic trends will continue, an alternative to this traditional approach may be required. Surveillance activities carried out under the continuing regional planning program point to increasing uncertainty with regard to future social and economic conditions in southeastern Wisconsin. To deal with this uncertainty, the Commission has adopted an "alternative futures" approach to areawide, systems level planning. This approach

involves the postulation of alternative future growth scenarios for the Region and the preparation of related projections of population and employment, thereby providing a broader basis for plan design and evaluation.

Information regarding the possible future population and economic activity levels in the Region through the year 2010, developed by the Commission under the alternative futures approach, is presented in SEWRPC Technical Report No. 10 (2nd Edition), The Economy of Southeastern Wisconsin, 1984; and SEWRPC Technical Report No. 11 (2nd Edition), The Population of Southeastern Wisconsin, 1984. This chapter brings forward from those two reports information regarding possible future population and economic activity levels which has a direct bearing on the preparation of a new regional land use plan. The first section of this chapter describes in a qualitative manner the regional growth scenarios postulated by the Commission in conjunction with the alternative futures planning approach. Subsequent sections set forth the projections of population, households, employment, and personal income which have been developed for each scenario. Also presented in this chapter are estimated future land use requirements associated with the projected population and economic activity levels in the Region.

ALTERNATIVE FUTURE GROWTH SCENARIOS

Under the alternative futures approach, three alternative future growth scenarios were postulated for southeastern Wisconsin. The sets of conditions postulated for each "future" are intended to represent consistent, reasonable scenarios of future changes in resident population and economic activity levels in the Region through the year 2010. Two scenarios, the "highgrowth" scenario and the "low-growth" scenario, are intended to represent reasonable extremes, while the third scenario, the "intermediategrowth" scenario, is intended to represent a likely future. The general trends in resident population and economic activity levels envisioned under the respective scenarios are herein described.¹

Economic Growth Scenarios

Among the many uncertainties surrounding future economic conditions in the Region, two appeared to be particularly pertinent as the Commission attempted to prepare long-range economic forecasts. The first uncertainty pertains to the relative strength of the manufacturing sector, historically the dominant sector of the regional economy, but one which has declined over the past two decades. The second uncertainty pertains to the long-term impacts of the recession of 1979 to 1983, a recession which lasted longer and was more severe within the Region than any recession since the Great Depression. Because that recession did not display a pattern typical of a normal business cycle, it could not be assumed that the ensuing recovery would be typical, and the possibility of major structural changes in the regional economy could not be dismissed. The alternative economic growth scenarios described herein embody varying assumptions regarding the ability of the regional economy, particularly the manufacturing sector, to recover from the 1979 to 1983 recession and to compete effectively again with other regions of the nation and the world.

The economic changes that may be expected under a high-growth scenario represent a return to the type of growth that has historically occurred in the regional economy. Under this scenario, there would be no long-term damage to the regional economy as a result of the 1979 to 1983 recession, and the economic recovery of the Region would be strong after 1985, with longterm growth rates recovering to levels at or slightly below national averages. This growth would be expected to result from the identification and exploitation of strengths in the regional economy, such as labor availability, a good vocational-technical educational system, land availability, and a high-quality infrastructure of railway, highway, seaport, airport, and sewerage and water systems. In addition, the traditional manufacturing interests that make up the foundation of the regional economy would be successful in reducing production costs and increasing productivity through the application of advanced technologies to traditional manufacturing processes, thereby improving their competitive position. The trade and service sectors would, under this scenario, continue to grow at rapid rates as they have over the past several decades.

Under the intermediate-growth scenario, the recovery of the regional economy from the 1979 to 1983 recession would be delayed and would be initially weaker than the national recovery as the heavy industrial and manufacturing concerns that dominate the regional economy continue to close unprofitable plants and limit operations in the streamlining efforts necessary for survival during poor economic conditions. Under this scenario, the changes occurring during this contraction of the manufacturing employment group would ultimately lead to a stronger, though initially smaller, regional manufacturing economy as more efficient factory operations allow employers to expand and modernize existing plants. Employment in retail and wholesale trade would again experience employment increases as the economy rebounds, as would the services sectors that have seen such rapid growth recently at both the regional and national levels.

The economic conditions that may be expected under a low-growth scenario represent a departure from long-term trends under which the Region was able to maintain or increase its relative share of national employment. Under the low-growth scenario, the recovery of the regional economy from the 1979 to 1983 recession would be a lengthy one, with regional employment remaining depressed. Over the long term, the Region would experience a continuation or even an acceleration of a trend first observed in the 1970s, when southeastern Wisconsin began to experience a decline in its share of total national employment. This departure from historic trends is based on an assumed inability of area manufacturers to modernize

¹The "high-growth," "intermediate-growth," and "low-growth" scenarios as described in this chapter are equivalent to the "optimistic," "intermediate," and "pessimistic" regional growth scenarios, respectively, described in SEWRPC Technical Report No. 10 (2nd Edition), <u>The Economy of Southeastern Wisconsin</u>, 1984, and SEWRPC Technical Report No. 11 (2nd Edition), <u>The Population of Southeastern Wisconsin</u>, 1984.

Figure 48 HISTORICAL AND PROJECTED

HISTORICAL AND PROJECTED WHITE TOTAL FERTILITY RATE FOR THE REGION: 1960-2010



Source: U. S. Bureau of the Census and SEWRPC.

their aging physical capital stock, resulting in declining productivity, and the continued erosion of product markets. Increased foreign competition in manufacturing industries and the continued migration of manufacturing employment to other regions of the United States would more than offset any employment gains that could be expected in such possible growth sectors as wholesale trade, retail trade, medical and other professional services, or finance, insurance, and real estate. Under this scenario, the lack of industrial expansion or rejuvenation could be expected to hold total employment levels in the Region at or slightly below their 1980 levels through the year 2010.

Population Growth Scenarios

The population of an area is constantly changing as a result of births, deaths, and the migration of persons into or out of the area. Area population projections may be prepared through explicit consideration of these components of population change. The process of developing alternative population growth scenarios for southeastern Wisconsin involved a review of critical social and economic factors that could be



LOW-GROWTH

INTERMEDIATE-GROWTH

Source: U. S. Bureau of the Census and SEWRPC. expected to impact on mortality, fertility, and migration rates through the year 2010 and the establishment of a reasonable range of values

REPLACEMENT FERTILITY

BIRTHS

2,000

1,000

establishment of a reasonable range of values for each component of population change. Each of the three population growth scenarios developed by the Commission reflects a combination of assumed fertility, mortality, and migration rates selected from the range of possible values. The assumed combinations of fertility, mortality, and migration rates were ultimately used to project the probable size of the population of the Region under a range of possible future conditions.

Among the population growth scenarios, the highest fertility rates were assumed for the highgrowth scenario and the lowest fertility rates for the low-growth scenario (see Figures 47 and 48). The overall range between the low and high fertility rates was relatively narrow, a joint product of changing societal preferences regarding family size, the increased availability of family planning, and the effectiveness of birth control. The narrow range only slightly diminishes the crucial nature of the assumed rates, however, because the differences in the rates are

PROJECTED LEVELS OF NET MIGRATION FOR THE REGION UNDER HIGH-GROWTH, INTERMEDIATE-GROWTH, AND LOW-GROWTH FUTURE ECONOMIC CONDITIONS



Source: SEWRPC.

compounded over the course of several generations. With regard to the other determinant of natural increase in population, mortality rates, it should be noted that the same set of mortality rates was assumed for each population growth scenario.

The rates of migration assumed under the highgrowth, intermediate-growth, and low-growth scenarios were logically linked to anticipated economic conditions, taking into account the number of jobs, unemployment rate, rate of dual job holding, and labor force participation rates envisioned under the corresponding economic growth scenarios. Significant net in-migration of population, was postulated under the highgrowth scenario as a result of the assumed strong recovery from the 1979 to 1983 recession and the assumed ability of the regional economy to compete with other areas (see Figure 49). Under the intermediate-growth scenario, it was assumed that the net out-migration experienced in the Region during the 1970s would gradually diminish in response to gradually improving economic conditions and that net in-migration of population into the Region would begin after the

year 2000. Under the low-growth scenario, it was assumed that significant out-migration of population would occur over the entire 1980 to 2010 projection period in response to a stagnating regional economy, with the highest rates of outmigration anticipated during the 1980s.

The varying assumptions regarding rates of natural increase and net migration described above lead to significantly different scenarios of population change in the Region. A substantial increase, 31 percent, in the regional population between 1980 and 2010 is envisioned under the high-growth scenario, while a relatively modest population increase, 6 percent, is envisioned under the intermediate-growth scenario. A decrease in the regional population of about 14 percent is envisioned under the low-growth scenario.

Accompanying the changes in the size of the population would be changes in the number. size, and type of households. Under each growth scenario, the number of households would increase and the average household size would decrease, although the rates of change in the number of households and average household size would vary considerably for the three scenarios. The high-growth scenario assumes that "traditional" patterns of household composition will exist between 1980 and 2010, and that households consisting of a husband, wife, and children will constitute the dominant type, although the average number of children in the households will be lower than in the past. Under this scenario, the average household size in the Region would decrease from about 2.8 in 1980 to about 2.6 in 2010. The intermediate-growth scenario assumes that "traditional" patterns of household composition will be less dominant and that single-parent families and singleperson households will be more prevalent than under the high-growth scenario. The historic increase in single-parent and single-person households would, however, be moderated under this scenario. The average household size in the Region would decrease from about 2.8 in 1980 to about 2.4 in 2010. The low-growth scenario assumes that husband-wife households will continue to decrease as a proportion of total households, and that single-parent and singleperson households will continue to increase as a proportion of total households as they have done historically. Under this scenario, the average household size in the Region would decrease from about 2.8 in 1980 to about 2.1 in 2010.

POPULATION LEVELS IN THE REGION BY COUNTY: ACTUAL 1980 AND PROJECTED 1990, 2000, AND 2010

	Population							
			Projected Change 1980-2010					
County	1980	Scenario	1990	2000	2010	Number	Percent	
Kenosha	123,100	High-growth Intermediate-growth Low-growth	135,700 117,300 109,900	152,900 118,000 105,200	166,800 123,300 101,800	43,700 200 -21,300	35.5 0.2 -17.3	
Milwaukee	965,000	High-growth Intermediate-growth Low-growth	964,900 924,300 861,700	991,900 892,200 831,800	1,009,800 911,300 818,100	44,800 -53,700 -146,900	4.6 -5.6 -15.2	
Ozaukee	67,000	High-growth Intermediate-growth Low-growth	84,000 69,700 60,500	106,200 75,000 58,800	139,000 81,900 57,700	72,000 14,900 -9,300	107.5 22.2 -13.9	
Racine	173,100	High-growth Intermediate-growth Low-growth	188,400 165,200 152,900	206,000 166,000 146,800	224,700 171,800 139,600	51,600 -1,300 -33,500	29.8 -0.8 -19.4	
Walworth	71,500	High-growth Intermediate-growth Low-growth	85,600 78,200 66,900	106,200 85,600 65,000	129,700 89,900 63,700	58,200 18,400 -7,800	81.4 25.7 -10.9	
Washington	84,900	High-growth Intermediate-growth Low-growth	114,300 97,500 78,000	135,900 109,500 75,800	164,400 116,000 74,400	79,500 31,100 -10,500	93.6 36.6 -12.4	
Waukesha	280,200	High-growth Intermediate-growth Low-growth	353,800 302,000 267,700	424,800 336,000 264,400	481,700 378,000 261,800	201,500 97,800 -18,400	71.9 34.9 -6.6	
Region	1,764,800	High-growth Intermediate-growth Low-growth	1,926,700 1,754,200 1,597,600	2,123,900 1,782,300 1,547,800	2,316,100 1,872,200 1,517,100	551,300 107,400 -247,700	31.2 6.1 -14.0	

Source: U. S. Bureau of the Census and SEWRPC.

POPULATION PROJECTIONS

Commission population projections for the Region and the constituent counties under the three regional growth scenarios described above are set forth in Table 119. The projected distribution of the population among the counties in the Region under the three growth scenarios is also shown in Figure 50 and on Map 54. Under a high-growth scenario, the resident population of the Region would increase by about 551,300 persons, or 31 percent, from 1,764,800 persons in 1980 to 2,316,100 persons in the year 2010. Under this scenario, Waukesha County could be expected to gain about 201,500 persons, an increase of 72 percent over the 30-year projection period. The other six counties in the Region would experience smaller, but nevertheless significant, population increases, ranging from about 43,700 person in Kenosha County to about 79,500 persons in Washington County.

Under the intermediate-growth scenario, the regional population would be expected to increase by about 107,400 persons, or about 6 percent, to a level of 1,872,200 in the year 2010.

Waukesha County would also experience the largest absolute population increase, 97,800 persons, under this scenario. Ozaukee, Walworth, and Washington Counties would gain 14,900, 18,400, and 31,100 persons, respectively. The population levels of Kenosha and Racine Counties would not change significantly. The population of Milwaukee County would decrease by about 53,700 persons over the 30 year projection period, decreasing from 965,000 persons in 1980 to just under 900,000 persons in the year 2000, and then increasing to about 911,300 in the year 2010.

The low-growth scenario envisions a year 2010 population of 1,517,100, a decrease of 247,700 persons, or 14 percent, from the 1980 level. Each county in the Region would experience a population decrease under this scenario, ranging from about 7,800 persons in Walworth County to about 146,900 persons in Milwaukee County. The substantial loss of population in Milwaukee County would account for 59 percent of the overall loss projected for the Region under this scenario.

It should be noted that since 1980 the actual population level of the Region has most closely approximated the level anticipated under the intermediate-growth scenario (see Figure 51). Recently released data from the 1990 United States Census of Population and Housing indicate that the resident population of the Region stood at 1,810,400 persons in 1990, 3 percent, or 56,200 persons, greater than the level of 1,754,200 anticipated under the intermediategrowth scenario. The 1990 resident population was about 212,800 persons, or 13 percent, greater than the level of 1,597,600 envisioned under the low-growth scenario, and about 116,300 persons, or 6 percent, less than the level of 1,926,700 projected under the high-growth scenario. Actual population levels are compared with projected population levels by county in Figures 52 through 58.

HOUSEHOLD PROJECTIONS

Changes in the number of households have important implications for long-range land use and public facilities planning since it is the household which creates much of the demand for the various land uses and the various public facilities and services. The projections of the number of households in the Region under the

Figure 50

POPULATION LEVELS IN THE REGION BY COUNTY: ACTUAL AND PROJECTED: 1950-2010



Source: U. S. Bureau of the Census and SEWRPC.

high-growth, intermediate-growth, and lowgrowth scenarios are set forth in Table 120. The projected changes in the distribution of households among counties in the Region is shown in Figure 59 and on Map 55. As will become apparent, the anticipated changes in the number of households do not necessarily parallel the anticipated changes in total population under the respective scenarios, a result of the assumed changes in household types and related changes in household size, previously described.

As indicated in Table 120, under the high-growth scenario, the number of households in the Region would increase by 224,700, or about 36 percent, from about 628,000 in 1980 to about 852,700 in 2010. The projected relative increase of 36 percent is slightly greater than the increase in the total population of about 31 percent projected under this scenario. As might be



The resident population of the Region would be expected to increase from about 1,765,000 persons in 1980 to about 2,316,000 persons by the year 2010 under the high-growth scenario and to about 1,872,000 persons by the year 2010 under the intermediate-growth scenario. Under the low-growth scenario, the resident population of the Region would be expected to decrease to a level of about 1,517,000 persons by the year 2010. As shown above, these changes would be expected to be accompanied by changes in the relative distribution of population within the Region. The intermediategrowth and high-growth scenarios, in particular, envision the continued decentralization of population from Milwaukee County to the outlying counties in the Region, with Waukesha County anticipated to experience the greatest increase in the relative share of total regional population between 1980 and 2010. 271

ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR THE REGION: 1950-2010



Source: Wisconsin Department of Administration, U. S. Bureau of the Census, and SEWRPC.

Figure 52

ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR KENOSHA COUNTY: 1950-2010



Source: Wisconsin Department of Administration, U. S. Bureau of the Census, and SEWRPC.

Figure 53



ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR MILWAUKEE COUNTY: 1950-2010

Source: Wisconsin Department of Administration, U. S. Bureau of the Census, and SEWRPC.

Figure 54

ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR OZAUKEE COUNTY: 1950-2010



Source: Wisconsin Department of Administration, U. S. Bureau of the Census, and SEWRPC.

Figure 55

ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR RACINE COUNTY: 1950-2010



Source: Wisconsin Department of Administration, U. S. Bureau of the Census, and SEWRPC.

Figure 56



ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR WALWORTH COUNTY: 1950-2010





ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR WASHINGTON COUNTY: 1950-2010

Source: Wisconsin Department of Administration, U. S. Bureau of the Census, and SEWRPC.

Figure 58

ACTUAL AND ALTERNATIVE FUTURE POPULATION LEVELS FOR WAUKESHA COUNTY: 1950-2010



Source: Wisconsin Department of Administration, U. S. Bureau of the Census, and SEWRPC.

expected, Waukesha County, which has the largest projected absolute increase in total population, would have the largest absolute increase in households between 1980 and 2010, about 73,200. For the other six counties, the increases would range from about 18,300 in Kenosha to about 33,400 in Milwaukee.

Under the intermediate-growth scenario, the number of households in the Region would increase by about 140,600, or 22 percent, to a level of about 768,600 in the year 2010. The projected 22 percent increase in households is significantly greater than the 6 percent increase in total population projected under this scenario. Among the seven counties, the increases in households would range from about 7,100 in Kenosha to about 51,700 in Waukesha.

Under the low-growth scenario, the number of households would increase by about 73,900, or about 12 percent, to about 701,900 in the year 2010. This is in contrast to a projected 14 percent decrease in the total regional population between 1980 and 2010, and is a result of the assumed increase in smaller households, particularly single-person and single-parent households. Under this scenario, the increase in households would be about 37,300 in Milwaukee County, about 19,700 in Waukesha County, and under 5,000 in Kenosha, Ozaukee, Racine, Walworth and Washington Counties.

As shown in Figure 60, the actual increase in the number of households in the Region since 1980 has been between the levels anticipated under the high-growth and intermediate-growth scenarios. The number of households in the Region in 1990 was anticipated to be 692,900 under the high-growth scenario, 653,900 under the intermediate-growth scenario, and 615,100 under the low-growth scenario. Recently released data from the 1990 Federal Census of Population and Housing indicate that the number of households in the Region was 676,100 in 1990, about 16,800 households, or 2 percent, below the level envisioned under the high-growth scenario. The actual number of households exceeded the levels anticipated under the intermediate-growth and lowgrowth scenarios by 22,200, or 3 percent, and by 61,000, or 10 percent, respectively. Actual household levels are compared with projected household levels by county in Figures 61 to 67.

EMPLOYMENT PROJECTIONS

Commission employment projections for the Region under the three regional growth scenarios are presented in Table 121. The projected change in the distribution of employment among the counties in the Region is shown in Figure 68 and on Map 56. Under the high-growth scenario, total employment in the Region would increase by 42 percent, or 367,400 jobs, from 884,200 in 1980 to 1,251,600 in the year 2010. Each of the seven counties would experience a significant employment increase, ranging from about 24,500 jobs in Ozaukee County to 103,900 jobs in Waukesha County.

HOUSEHOLDS IN THE REGION BY COUNTY: ACTUAL 1980 AND PROJECTED 1990, 2000, AND 2010

	Households								
	Actual	Projected				Projected 1980-	Projected Change 1980-2010		
County	1980	Scenario	1990	2000	2010	Number	Percent		
Kenosha	43,100	High-growth Intermediate-growth Low-growth	48,200 43,000 41,600	55,300 45,500 43,500	61,400 50,200 46,300	18,300 7,100 3,200	42.5 16.5 7.4		
Milwaukee	363,700	High-growth Intermediate-growth Low-growth	369,300 365,900 351,300	384,200 370,000 371,100	397,100 398,900 401,000	33,400 35,200 37,300	9.2 9.7 10.3		
Ozaukee	21,800	High-growth Intermediate-growth Low-growth	27,900 23,900 21,400	35,900 27,000 22,700	48,000 31,200 24,600	26,200 9,400 2,800	120.2 43.1 12.8		
Racine	59,400	High-growth Intermediate-growth Low-growth	65,700 59,400 56,700	73,300 62,700 59,600	81,300 68,400 62,200	21,900 9,000 2,800	36.9 15.2 4.7		
Walworth	24,800	High-growth Intermediate-growth Low-growth	30,600 28,900 25,500	38,800 33,400 27,000	48,400 36,900 29,100	23,600 12,100 4,300	95.2 48.8 17.3		
Washington	26,700	High-growth Intermediate-growth Low-growth	36,700 32,200 26,600	44,400 38,300 28,200	54,800 42,800 30,500	28,100 16,100 3,800	105.2 60.3 14.2		
Waukesha	88,500	High-growth Intermediate-growth Low-growth	114,500 100,600 92,000	139,800 118,000 99,400	161,700 140,200 108,200	73,200 51,700 19,700	82.7 58.4 22.3		
Region	628,000	High-growth Intermediate-growth Low-growth	692,900 653,900 615,100	771,700 694,900 651,500	852,700 768,600 701,900	224,700 140,600 73,900	35.8 22.4 11.8		

Source: U. S. Bureau of the Census and SEWRPC.

Under the intermediate-growth scenario, employment growth would occur at a more moderate rate, about 19 percent, to about 1,051,300 jobs by the year 2010, an increase of about 167,100 jobs over 1980. Employment in Waukesha County would increase by about 68,900 jobs; the increases for the other six counties would range from about 9,700 jobs in Milwaukee County to about 29,000 jobs in Racine County.

Under the low-growth scenario, employment levels, which dropped significantly during the 1979 to 1983 depression, would stay depressed throughout the 1980s and would increase only gradually thereafter. By 2010, employment in the Region would reach 870,900, about 13,300 jobs less than the 1980 level. Milwaukee County would lose about 63,300 jobs between 1980 and 2010 under this scenario, while Waukesha would gain about 37,000 jobs. Employment changes in the other five counties would be relatively minor.

Each of the regional growth scenarios envisions continued change in the structure of the regional economy. In particular, under each of the growth scenarios, the historic dominance of manufactur-



HOUSEHOLD LEVELS IN THE REGION BY COUNTY: ACTUAL AND PROJECTED 1950-2010

Source: U. S. Bureau of the Census and SEWRPC.

ing employment in the Region would continue to decrease, while the relative share of employment in service industries would increase.² As indicated in Table 122, under the high-growth scenario, manufacturing employment would increase by 29 percent, compared to a projected increase of about 66 percent in service employment. Under the intermediate-growth scenario, manufacturing employment would increase by only 7 percent, compared to a service employment increase of about 37 percent. Under the low-growth scenario, manufacturing employment would decrease by about 13 percent, while service employment would increase by 12 percent. As a result, by the year 2010, the relative share of service employment would be nearly equal to that of manufacturing under each of the growth scenarios (see Table 123).

As shown in Figure 69, during the latter half of the 1980s, actual employment in the Region approached the levels anticipated under the high-growth scenario. The employment level was anticipated to be 987,900 jobs in 1990 under the high-growth scenario, 880,900 jobs under the intermediate-growth scenario, and 811,300 jobs under the low-growth scenario. The actual 1990 level of 990,300 jobs is about 0.2 percent above the level anticipated under the high-growth scenario, about 12 percent above the level anticipated under the intermediate-growth scenario, and about 22 percent above the level anticipated under the low-growth scenario. Actual employment levels through 1990 are compared with those projected under the three regional growth scenarios for each of the seven counties in Figures 70 through 76. In reviewing these data, it is important to recognize that employment levels are subject to short term fluctuation in response to business cycles, cycles which are apparent on the accompanying graphs. Long-term employment trends following the deep recession of 1979 to 1983 are not yet clearly defined.

PERSONAL INCOME PROJECTIONS

Changes in employment levels and in the types of jobs available may be expected to result in changes in personal income levels in the Region. Future income levels will have a direct bearing on the ability of the regional population to pursue personal preferences regarding housing types and location, recreation, and other lifestyle factors and, accordingly, may be expected to have a major impact on the evolving regional settlement pattern.

Projections of personal income levels under the three alternative regional growth scenarios are presented in this section. For each scenario, the primary income projections made were those of per capita income. Projections of aggregate personal income were made by multiplying the projected per capita income by the projected

²As presented in this chapter, manufacturing employment includes employment in manufacturing, construction, and wholesale trade. Service employment includes employment in services and finance, insurance, and real estate along with self-employed persons. Agricultural employment includes employment in agriculture, agricultural services, forestry, mining, and miscellaneous.



Between 1980 and the year 2010, the number of households in the Region would be expected to increase from about 628,000 to about 853,000 under the high-growth scenario, to about 769,000 under the intermediate-growth scenario, and to about 702,000 under the low-growth scenario. The attendant changes in the relative distribution of households within the Region envisioned under the three scenarios as shown on this map are similar to the anticipated changes in the relative distribution of population shown on Map 54. The anticipated decentralization of households from Milwaukee County to the outlying counties evident on this map, particularly under the high-growth and intermediate-growth scenarios, parallels the anticipated decentralization of population shown on Map 54.

Source: U. S. Bureau of the Census and SEWRPC.



ACTUAL AND ALTERNATIVE FUTURE HOUSEHOLD LEVELS FOR THE REGION: 1950-2010



Figure 61





Source: U. S. Bureau of the Census and SEWRPC.

Figure 62 ACTUAL AND ALTERNATIVE FUTURE HOUSEHOLD

LEVELS FOR MILWAUKEE COUNTY: 1950-2010





Figure 63

ACTUAL AND ALTERNATIVE FUTURE HOUSEHOLD LEVELS FOR OZAUKEE COUNTY: 1950-2010



Source: U. S. Bureau of the Census and SEWRPC.

Figure 64



ACTUAL AND ALTERNATIVE FUTURE HOUSEHOLD LEVELS FOR RACINE COUNTY: 1950-2010

Source: U. S. Bureau of the Census and SEWRPC.

Figure 65



ACTUAL AND ALTERNATIVE FUTURE HOUSEHOLD LEVELS FOR WALWORTH COUNTY: 1950-2010

Source: U. S. Bureau of the Census and SEWRPC.

ACTUAL AND ALTERNATIVE FUTURE HOUSEHOLD LEVELS FOR WASHINGTON COUNTY 1950-2010





Figure 67

ACTUAL AND ALTERNATIVE FUTURE HOUSEHOLD LEVELS FOR WAUKESHA COUNTY: 1950-2010



Source: U. S. Bureau of the Census and SEWRPC.

population. Projected mean household income was derived from projected aggregate income levels and the projected number of households. It should be noted that the historic and projected income data presented herein are all expressed in constant 1985 dollars.

Historic and projected personal income levels in the Region are set forth in Table 124. As indicated in that table, per capita income in the Region increased steadily, from 6,534 in 1950, to 8,725 in 1960, to 10,940 in 1970, and to 12,928 in 1980.³ As measured in constant dollars, the increase in per capita income was relatively stable during the 1950s, 1960s, and 1970s, showing average annual increases of 219, 222, and 199, respectively. The average annual percentage increase, however, decreased

Figure 68

EMPLOYMENT LEVELS IN THE REGION BY COUNTY: ACTUAL AND PROJECTED: 1950-2010



Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

in each decade, from 2.9 percent per year during the 1950s, to 2.3 percent during the 1960s, and to 1.7 percent during the 1970s. More recently, personal income levels in the Region have been

³The source of personal income data presented in this report is the U. S. Census Bureau. While income levels are generally identified by the census year in which they are collected, 1950, 1960, 1970, and 1980, it should be noted that the income figures collected in the census are for the year preceding the census, that is, 1949, 1959, 1969, and 1979, respectively. The 1985 income data presented herein are estimates developed by the Census Bureau for 1985.

EMPLOYMENT LEVELS IN THE REGION BY COUNTY ACTUAL 1980 AND PROJECTED 1990, 2000, AND 2010

	Employment							
	Actual	Projected					Projected Change 1980-2010	
County	1980	Scenario	1990	2000	2010	Number	Percent	
Kenosha	50,100	High-growth Intermediate-growth Low-growth	56,300 50,200 45,400	65,600 54,200 47,100	75,100 61,000 48,800	25,000 10,900 -1,300	49.9 21.8 -2.6	
Milwaukee	542,300	High-growth Intermediate-growth Low-growth	573,000 518,000 484,300	599,800 530,000 481,800	625,800 552,000 479,000	83,500 9,700 -63,300	15.4 1.8 -11.7	
Ozaukee	25,600	High-growth Intermediate-growth Low-growth	31,600 26,400 23,600	40,000 31,400 25,200	50,100 36,800 26,100	24,500 11,200 500	95.7 43.8 2.0	
Racine	76,100	High-growth Intermediate-growth Low-growth	94,800 81,900 72,200	114,400 91,400 75,700	137,700 105,100 78,400	61,600 29,000 2,300	80.9 38.1 3.0	
Walworth	31,100	High-growth Intermediate-growth Low-growth	40,500 34,400 30,000	51,100 40,000 32,000	62,600 47,300 34,800	31,500 16,200 3,700	101.3 52.1 11.9	
Washington	31,400	High-growth Intermediate-growth Low-growth	41,500 36,100 31,600	53,300 42,800 35,300	68,800 52,600 39,200	37,400 21,200 7,800	119.1 67.5 24.8	
Waukesha	127,600	High-growth Intermediate-growth Low-growth	150,200 133,900 124,200	186,600 161,800 143,800	231,500 196,500 164,600	103,900 68,900 37,000	81.4 54.0 29.0	
Region	884,200	High-growth Intermediate-growth Low-growth	987,900 880,900 811,300	1,110,800 951,600 840,900	1,251,600 1,051,300 870,900	367,400 167,100 -13,300	41.6 18.9 -1.5	

Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

adversely affected by the deep economic recession of 1979 to 1983. As indicated in Table 124, in 1985 per capita income in the Region stood at \$11,502, about \$1,426, or 11 percent below the 1980 level.

Under the high-growth scenario, it is envisioned that a strong recovery from the 1979 to 1983 recession would be accompanied by a significant increase in personal income levels. During the latter half of the 1980s, per capita income in the Region would recover from the reduced levels of the recession, and by 1990 would exceed the 1980 level (see Figure 77). Between 1990 and the year 2010, per capita income would increase at the relatively high rate of about 2.0 percent per year, approximately the same growth rate experienced in the Region between 1960 and 1980, a period generally characterized by favorable economic growth within the Region. Under this scenario, per capita income in the Region would rise to about \$20,700 in the year 2010, an increase of



Total employment in the Region would be expected to increase from about 884,000 jobs in 1980 to about 1,252,000 jobs by the year 2010 under the high-growth scenario and to about 1,051,000 jobs under the intermediate-growth scenario. Under the low-growth scenario, total employment would be expected to approximate 871,000 jobs by 2010, slightly below the 1980 level. As shown above, each scenario anticipates a continued decentralization of employment from Milwaukee County to the outlying counties of the Region. Milwaukee County's share of total regional employment would decrease from 61 percent in 1980 to 55 percent in the year 2010 under the low-growth scenario, to 53 percent under the intermediate-growth scenario, and to 50 percent under the high-growth scenario.

Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

EMPLOYMENT LEVELS IN THE REGION BY MAJOR INDUSTRY GROUP: ACTUAL 1980 AND PROJECTED 2010

•	Employment					
	Actual 1980	Projected	Projected Change 1980-2010			
Major Industry Group		Scenario	2010	Number	Percent	
Agriculture ^a	15,300	High-growth Intermediate-growth Low-growth	13,300 12,500 12,200	-2,000 -2,800 -3,100	-13.1 -18.3 -20.3	
Manufacturing ^b	331,100	High-growth Intermediate-growth Low-growth	426,600 353,300 288,800	95,500 22,200 -42,300	28.8 6.7 -12.8	
Retail Trade	131,900	High-growth Intermediate-growth Low-growth	190,200 162,800 133,300	58,300 30,900 1,400	44.2 23.4 1.1	
Transportation, Communication, and Utility	39,600	High-growth Intermediate-growth Low-growth	50,900 42,800 35,900	11,300 3,200 -3,700	28.5 8.1 -9.3	
Government and Education	120,700	High-growth Intermediate-growth Low-growth	163,500 143,800 126,500	42,800 23,100 5,800	35.5 19.1 4.8	
Services ^C	245,600	High-growth Intermediate-growth Low-growth	407,100 336,100 274,200	161,500 90,500 28,600	65.8 36.8 11.6	
Total	884,200	High-growth Intermediate-growth Low-growth	1,251,600 1,051,300 870,900	367,400 167,100 -13,300	41.6 18.9 -1.5	

^aIncludes agriculture, agricultural services, forestry, mining and miscellaneous.

^bIncludes manufacturing, construction, and wholesale trade.

^CIncludes services; finance, insurance, and real estate; and self-employed.

Source: Wisconsin Department of Industry, Labor and Human Relations; U. S. Bureau of Economic Analysis; and SEWRPC.

about \$7,800, or 60 percent, over 1980. The mean household income would rise by just over 54 percent, from about \$36,300 in 1980 to about \$56,100 in the year 2010 (see Figure 78).

The intermediate-growth scenario also anticipates a recovery in personal income levels during the latter half of the 1980s, although the recovery would be slower than under the highgrowth scenario. Under the intermediate-growth scenario, it is envisioned that by 1990 per capita income would recover to the 1980 level. It is further envisioned that between 1990 and 2010, per capita income would increase by about 1.0 percent per year. This represents a continuation of the trend of declining relative increases in per capita income during the 1960s and 1970s. Even at the reduced rate of growth, however, per

PERCENT DISTRIBUTION OF EMPLOYMENT BY MAJOR INDUSTRY GROUP IN THE REGION: ACTUAL 1980 AND PROJECTED 2010

		Projected: 2010			
Major Industry Group	Actual 1980	High-Growth	Intermediate-Growth	Low-Growth	
Agriculture ^a	1.7	1.1	1.2	1.4	
Manufacturing ^b	37.4	34.1	33.6	33.2	
Retail Trade	14.9	15.2	15.5	15.3	
Transportation, Communication,					
and Utility	4.5	4.1	4.1	4.1	
Government and Education	13.7	13.0	13.7	14.5	
Services ^c	27.8	32.5	31.9	31.5	
Total	100.0	100.0	100.0	100.0	

^aIncludes agriculture, agricultural services, forestry, mining, and miscellaneous.

^bIncludes manufacturing, construction, and wholesale trade.

^CIncludes services; finance, insurance, and real estate; and self-employed.

Source: Wisconsin Department of Industry, Labor and Human Relations; U. S. Bureau of Economic Analysis; and SEWRPC.

Figure 69

ACTUAL AND ALTERNATIVE FUTURE NUMBER OF AVAILABLE JOBS FOR THE REGION: 1960-2010



Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

Figure 70

ACTUAL AND ALTERNATIVE FUTURE NUMBER OF AVAILABLE JOBS FOR KENOSHA COUNTY: 1960-2010







520

480

440



Figure 72





Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

Figure 73 **ACTUAL AND ALTERNATIVE**



Relations and SEWRPC.



Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

Figure 75

ACTUAL AND ALTERNATIVE FUTURE NUMBER OF AVAILABLE JOBS FOR WASHINGTON COUNTY: 1960-2010



Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

Figure 76

ACTUAL AND ALTERNATIVE FUTURE NUMBER OF AVAILABLE JOBS FOR WAUKESHA COUNTY: 1960-2010



Source: Wisconsin Department of Industry, Labor and Human Relations and SEWRPC.

ACTUAL AND PROJECTED PERSONAL INCOME LEVELS IN THE REGION: 1950-2010

	Year	Per Capita Income	Mean Household Income
Actual Income	1950	\$ 6,534	\$22,866
	1960	8,725	29,469
	1970	10,940	35,813
	1980	12,928	36,335
	1985	11,502	31,148
Projected Income			
High-Growth Scenario	1990	\$13,900	\$38,700
	2000	17,300	47,600
	2010	20,700	56,100
Intermediate-Growth Scenario	1990	\$12,900	\$34,700
	2000	14,400	36,800
	2010	15,800	38,400
Low-Growth Scenario	1990	\$11,500	\$29,900
	2000	12,100	28,800
	2010	12,700	27,500

NOTE: All income data are presented in constant 1985 dollars.



Figure 77



ACTUAL AND PROJECTED MEAN HOUSEHOLD INCOME IN THE REGION: 1950-2010

Figure 78



Source: U. S. Bureau of the Census and SEWRPC.

capita income would increase significantly over the long term. By the year 2010, per capita income would reach \$15,800, about \$2,900, or 22 percent, above the 1980 level. Mean household income would increase somewhat, to about \$38,400, an increase of about \$2,100, or 6 percent.

As previously noted, the low-growth scenario envisions a very slow recovery from the 1979 to 1983 recession. This scenario envisions only minimal long-term growth in total employment. and a decrease in traditionally high paying manufacturing jobs in the Region. These conditions may be expected to alter the long-term trend in personal income levels in the Region. Under this scenario, it is envisioned that per capita income would remain at depressed recessionary levels until 1990 and then, between 1990 and 2010, per capita income would increase slowly, at about one half the average annual rate of increase anticipated under the intermediate-growth scenario, or about 0.5 percent. Under a low-growth scenario, then, per capita income would be expected to approximate \$12,700 in the year 2010, about the same as the 1980 level. Mean household income would approximate \$27,500 in 2010, a decrease of about 24 percent from the 1980 level.

It is interesting to compare projections of personal income prepared by the Bureau of Economic Analysis of the U. S. Department of Commerce with the personal income levels anticipated under the respective regional growth scenarios. The most recent Bureau projections were prepared in 1985 and reflect economic data available through 1983.⁴ Those projections envisioned a rapid recovery of personal income levels in the Region between 1983 and 1990. Over the long term, from 1990 through 2010, Bureau projections indicated that per capita income in the Region would increase at an average annual rate of 1.2 percent; the anticipated rate of increase is somewhat higher during the early part of this period and somewhat lower during the latter part. The projected increase of 1.2 percent per year between 1990 and 2010 is similar to that envisioned under the intermediate-growth scenario; substantially lower than the 2.0 percent envisioned under the high-growth scenario and substantially greater than the 0.5 percent envisioned under the lowgrowth scenario.

LAND USE DEMAND PROJECTIONS

Changes in the levels and distribution of population, households, and employment may be expected to generate additional demand for urban land use development in the Region. Projections of demand for the major categories of land use in the Region under the three regional growth scenarios are presented in Table 125. For the residential, governmental and institutional, recreational, and transportation, communication, and utility land use categories, the projected increases in land area between 1980 and 2010 under the three growth scenarios are based upon the anticipated increases in the number of households under the respective scenarios. For the industrial and commercial land use categories, the projected changes in land area are, for the most part, based upon the anticipated increases in related employment for each growth scenario (see footnotes in Table 125).

As indicated in Table 125, under the high-growth scenario, it is envisioned that urban lands in the Region would increase by about 159,400 acres, or 42 percent, from about 378,100 acres in 1980 to 537,500 acres in the year 2010. As a result, urban land uses would encompass about 31 percent of the total area of the Region, compared to about 22 percent in 1980. Growth in the two largest urban land use categories, residential and transportation, communication, and utility, would in combination account for about 128,700 acres, or about 81 percent of the overall increase in urban lands envisioned under the highgrowth scenario.

Under the intermediate-growth scenario, urban lands would increase by about 98,000 acres, or about 26 percent, to about 476,100 acres in the year 2010. Urban lands would then comprise nearly 28 percent of the total area of the Region.

⁴U. S. Bureau of Economic Analysis income projections for the Region are based on income projections for the Kenosha metropolitan statistical area, which consists of Kenosha County; the Racine metropolitan statistical area, which consists of Racine County; and the Milwaukee metropolitan statistical area, which consists of Milwaukee, Ozaukee, Washington, and Waukesha Counties. Bureau projections are not available for Walworth County.

PROJECTED LAND USE DEMAND IN THE REGION: 1980-2010

	Land Use						
	A - 4 - 4	Projected: 20	Projected Change 1980-2010				
Land Use Category	1980	Scenario	Acres	Acres	Percent		
Urban Residential ^a	179,831	High-growth Intermediate-growth Low-growth	268,250 235,157 208,911	88,419 55,326 29,080	49.2 30.8 16.2		
Commercial ^b	8,162	High-growth Intermediate-growth Low-growth	11,459 9,983 8,612	3,297 1,821 450	40.4 22.3 5.5		
Industrial ^b	11,171	High-growth Intermediate-growth Low-growth	20,859 15,728 13,471	9,688 4,557 2,300	86.7 40.8 20.6		
Transportation, Communication, and Utilities ⁸	117,706	High-growth Intermediate-growth Low-growth	157,950 142,887 130,941	40,244 25,181 13,235	34.2 21.4 11.2		
Governmental and Institutional ^a	17,033	High-growth Intermediate-growth Low-growth	23,122 20,843 19,036	6,089 3,810 2,003	35.7 22.4 11.8		
Recreational ^a	24,309	High-growth Intermediate-growth Low-growth	35,904 31,564 28,122	11,595 7,255 3,813	47.7 29.8 15.7		
Unused Urban ^C	19,935	High-growth Intermediate-growth Low-growth	19,935 19,935 19,935	0 0 0	0.0 0.0 0.0		
Total Urban Land	378,147	High-growth Intermediate-growth Low-growth	537,479 476,097 429,028	159,332 97,950 50,881	42.1 25.9 13.5		
Agricultural and Other Open Land	1,342,969	High-growth Intermediate-growth Low-growth	1,183,637 1,245,019 1,292,088	-159,332 -97,950 -50,881	-11.9 -7.3 -3.8		
Total	1,721,116		1,721,116				

^aFor the residential, governmental and institutional, recreational, and transportation, communication, and utility land use categories, the projected changes in land area between 1980 and 2010 under the three regional growth scenarios reflect the increases in the number of households anticipated under the respective growth scenarios. For each category, the projected increases in land area were obtained by multiplying the projected increase in households between 1980 and 2010 for each growth scenario by the historic ratio of the increase in land area to the increase in households within the Region for the period 1963 to 1980.

^bFor the industrial and commercial land use categories, the projected changes in land area are based upon anticipated increases in related employment under the respective growth scenarios and land area to employee ratios used by the Commission in systems level land use planning. The land area to employee ratios for the commercial and industrial use categories were re-evaluated under the current regional land use planning program and found to properly reflect current commercial and industrial development patterns. The projected increase in commercial land for all three scenarios was obtained by multiplying the projected increase in related employment between 1980 and 2010 by the land area to employee ratio for commercial land. For both the high-growth and intermediate-growth scenarios, the projected increase in industrial land was obtained by multiplying the projected increase in related employment between 1985 and 2010 by the land area to employee ratio for industrial land. The industrial land projection for these two scenarios was based upon the anticipated industrial employment increase from 1985 to 2010, rather than 1980 to 2010, in order to reflect the increase in industrial employment anticipated during the forecast period, following the industrial employment decline of the early 1980s. While virtually no change in industrial employment is anticipated under the low-growth scenario between 1985 and 2010, be expected to increase somewhat as a result of continuing change in the distribution of industrial activity in the Region. Accordingly, a nominal increase in industrial land, equal to about one-half of the increase in industrial land projected under the intermediate-growth scenario, or 2,300 acres, was assumed for the low-growth scenario.

^cThe amount of unused urban land was assumed constant over the projection period.

Source: SEWRPC.

The combined increase of 80,500 acres in residential land and transportation, communication, and utility land would constitute about 82 percent of the overall increase in urban lands anticipated under the intermediate-growth scenario.

A very modest increase in urban lands of about 50,900 acres, or about 14 percent, is anticipated under the low-growth scenario. Urban lands would total 429,000 acres, or about 25 percent of the Region, in the year 2010. About 83 percent of the overall increase in urban lands would consist of residential or transportation, communication, and utility land.

SUMMARY

In the preparation of a land use plan, the future demand for land and natural resources which the plan must seek to accommodate depends primarily upon future population and economic activity levels. Control of changes in population and economic activity levels lies largely outside the scope of governmental activity and outside the scope of the physical planning process. Future population and economic activity levels must, therefore, be forecast.

Surveillance activities under the continuing regional planning program point to increasing uncertainty with regard to future social and economic conditions in southeastern Wisconsin. To deal with this uncertainty, the Commission has adopted an "alternative futures" approach to systems level planning. This approach involves the postulation of alternative future growth scenarios for the Region and the preparation of related projections of population and employment, thereby providing a broader basis for plan design and evaluation.

Under the alternative futures approach, three alternative future growth scenarios were postulated for southeastern Wisconsin. The sets of conditions postulated for each "future" are intended to represent consistent, reasonable scenarios of future population change and change in economic activity in the Region through the year 2010. Two scenarios, the "highgrowth" scenario and the "low-growth" scenario, are intended to represent reasonable extremes; the third scenario, the "intermediate-growth" scenario, is intended to represent a likely future.

The economic changes that may be expected under a high-growth scenario represent a return to the types of changes that have historically occurred in the regional economy. Under this scenario, there would be no long-term damage to the regional economy as a result of the 1979 to 1983 recession, with long-term economic growth rates attaining levels at or slightly below national averages. This growth would be expected to result from the maximization of strengths in the regional economy, such as labor availability, land availability, a good vocationaltechnical educational system, and high quality infrastructure systems. Traditional manufacturing interests in the Region would improve their competitive positions, while the trade and service sectors would continue to grow at rapid rates as they have over the past several decades. Under this scenario the regional population would increase significantly, owing in part to a substantial net in-migration of population expected in response to the strong regional economy. This scenario envisions that "traditional" patterns of household composition will exist and that households consisting of a husband, wife, and children will constitute the dominant type, although the average number of children in the households would be lower than in the past.

Under the intermediate-growth scenario, the recovery of the economy from the 1979 to 1983 recession would be delayed somewhat, and would be initially weaker than the national recovery as the heavy industrial and manufacturing concerns that dominate the regional economy continue to close unprofitable plants and limit operations in streamlining efforts that are necessary for survival during poor economic conditions. The changes that would occur during this contraction of the manufacturing employment group would ultimately lead to a stronger, though initially smaller, regional manufacturing economy. Under this scenario, the net outmigration of population experienced during the 1970s would gradually diminish in response to improving economic conditions, and the Region would experience a modest increase in population between 1980 and 2010. Under this scenario, the "traditional" patterns of household composition would be less dominant and single-parent and single-person households would be more prevalent than under the high-growth scenario, although the historic increase in these household types would be moderated somewhat.

The economic conditions that may be expected under a low-growth economic scenario represent a departure from long-term trends under which the Region was able to maintain or increase its relative share of national employment. Under the low-growth scenario, the recovery of the regional economy from the 1979 to 1983 recession would be a lengthy process, with regional employment remaining depressed. Over the long term, the Region would experience a continuation or even an acceleration of a trend first observed in the 1970s, when southeastern Wisconsin began to experience a decline in its share of total national employment. This departure from long-term trends is based on an assumed inability of area manufacturers to modernize their aging physical capital stock, the erosion of product markets, and increased foreign competition in manufacturing industries. This scenario envisions a continued net out-migration of population in response to stagnating economic conditions and an overall decrease in the regional population between 1980 and 2010. Under this scenario, husband-wife families would continue to decrease as a proportion of total households, and single-parent and singleperson households would continue to increase as proportion of total households as they have done historically.

The development of the alternative regional growth scenarios was based upon explicit consideration of a number of the social and economic factors that may be expected to affect county and regional population and employment levels. These factors include birth, death, and migration rates, labor force participation rates, and the relative anticipated strengths of various sectors of the regional economy. To the extent practicable, assumptions regarding such factors were expressed quantitatively in the development of the growth scenarios. It should be recognized that there are many other factors which are not quantifiable and do not lend themselves to explicit consideration in the development of alternative growth scenarios and, particularly, in the projection of county population and employment levels. Among these factors are the quality of education, the levels and quality of public services, the quality of infrastructure systems, the quality of neighborhoods, relations between races and between socioeconomic groups, and the incidence of crime. Trends in these factors may be expected to influence the degree of centralization or decentralization of population and employment

within the Region. Thus, while these factors can be treated only implicitly in the development of the alternative future growth scenarios, they may have a significant bearing on future county population and employment levels.

A summary of changes in population, households, employment, personal income, and land use projected under the three regional growth scenarios follows.

- 1. Under the high-growth scenario, the resident population of the Region would increase by about 551,300 persons, or 31 percent, from 1,764,800 persons in 1980 to 2,316,100 person in the year 2010. The intermediate-growth scenario envisions a population increase of 107,400 persons, or 6 percent, to a level of 1,872,200 persons in 2010. Conversely, the low-growth scenario envisions a decrease in the regional population of 247,700 persons, or 14 percent, to a level of 1,517,100 persons in the year 2010.
- 2. The anticipated changes in the number of households in the Region would not necessarily parallel the anticipated changes in population levels under the respective scenarios, a result of changing household types and related changes in household size. Under the high-growth scenario, the number of households in the Region would increase by 224,700, or 36 percent, from 628,000 in 1980 to 852,700 in 2010. The projected relative increase in households of 36 percent is slightly greater than the relative increase of 31 percent in the regional population projected for the highgrowth scenario. Under the intermediategrowth scenario, the number of households would increase by 140,600, or 22 percent, to a level of 768,600 in 2010. The projected 22 percent increase in households is significantly greater than the projected increase of 6 percent in the regional population for this scenario. Under the lowgrowth scenario, the number of households would increase by 73,900, or 12 percent, to about 701,900 in the year 2010. This is in contrast to the projected 14 percent decrease in the regional population under this scenario and is a result of the anticipated increase in smaller households. particularly single-person and singleparent households.

- 3. Under the high-growth scenario, total regional employment would increase by 367,400 jobs, or 42 percent, from 884,200 jobs in 1980 to about 1,251,600 jobs in 2010. Under the intermediate-growth scenario, employment would increase by 167,100 jobs, or 19 percent, to about 1,051,300 jobs in 2010. Under the low-growth scenario, total employment would approximate 870,900 jobs in 2010, about 13,300 jobs, or about 2 percent, less than the 1980 level.
- 4. Anticipated trends in personal income vary significantly for the three regional growth scenarios. It should be noted that all historic and projected income data presented in this chapter are expressed in constant 1985 dollars. Under the highgrowth scenario, per capita income would recover rapidly from the depressed levels of the 1979 to 1983 recession and continue rising to about \$20,700 in the year 2010, an increase of about \$7,800, or 60 percent, over 1980. The intermediate-growth scenario anticipates a slower but nevertheless significant increase, with per capita income rising to about \$15,800 in the year 2010, an increase of \$2,900, or 22 percent, over 1980. Under the low-growth scenario, recovery from the depressed recessionary income levels would be very slow, with per capita income only expected to approximate \$12,700 in the year 2010, about the same as the 1980 level.
- 5. Changes in the levels and distribution of population, households, and employment may be expected to generate additional demand for urban land development in the Region. Under the high-growth scenario, urban lands, consisting of areas devoted to residential, commercial, industrial, governmental and institutional, transportation, and recreational uses, could be expected to increase by about 159,400 acres, or 42 percent, from about 378,100 acres in 1980 to 537,500 acres in 2010. Increases of 98,000 acres, or 26 percent, and 50,900 acres, or 14 percent, could be expected under the intermediate- and low-growth scenarios, respectively. By the year 2010, lands devoted to urban uses would account for about 31 percent of the total area of the Region under the high-growth scenario, nearly 28 percent under the intermediategrowth scenario, and about 25 percent under the low-growth scenario.

This chapter has described three alternative future growth scenarios for southeastern Wisconsin and presented related projections of population, employment, and land use. As a practical matter, the preparation of a regional land use plan must be targeted toward a single set of projections. It was the collective judgment of the Advisory Committee guiding the preparation of the year 2010 plan that future population and employment levels in the Region could be expected to be most closely approximated by the intermediate-growth scenario. Accordingly, the Committee recommended that the new land use plan be prepared to accommodate the population and employment forecasts attendant to that scenario. The Committee further recommended, however, that the intermediate-growth scenario forecasts be adjusted as appropriate to reflect the implications of new benchmark population and employment data, particularly data from the 1990 U.S. Census of Population and Housing, which indicated that population and employment growth in certain areas of the Region was exceeding that envisioned under the intermediate-growth scenario. Accordingly, in the preparation of the new regional land use plan, the intermediate-growth scenario forecast population and employment levels were modestly adjusted to reflect the trends indicated by the most recent data (see Chapter X).

While practical considerations dictate that the regional land use plan be targeted toward a single set of future population and economic activity levels, it would be imprudent to dismiss the possibility of future growth and change in the Region at variance with the rates assumed in the plan, given the continuing uncertainty surrounding future social and economic conditions in the Region. Accordingly, it was determined that "alternative futures" land use plans should be prepared for future conditions substantially different from those envisioned under the recommended plan and that, at a minimum, plans should be prepared for a low-growth and a high-growth scenario. Alternative futures land use plans for Southeastern Wisconsin are presented in Chapter XI of this report. They are intended to bracket the recommended year 2010 regional land use plan, establishing a range of possible future conditions with respect to land use intensity and distribution in the Region.

Finally, it should be noted that the projections provided in this chapter function as important elements of the preparation of long-range land use plans, indicating the overall scale of development which must be accommodated and providing a basis for plan evaluation. The projections should not, however, be construed as numbers to which plans must strictly adhere. In plan preparation, recommendations may be made to alter the projected course of events, particularly as they affect the distribution of population, economic activity, and urban land use, in order to bring about a more efficient, attractive, and environmentally sound settlement pattern. Simply stated, projections are intended to represent what "might be" in the absence of plans; plans recommend what should be.

Chapter IX

OBJECTIVES, PRINCIPLES, AND STANDARDS

Planning is a rational process for formulating and meeting objectives. The formulation of objectives, therefore, is an essential task which must be undertaken before plans can be prepared. The formulation of objectives for organizations whose functions are directed primarily at a single purpose or interest, and therefore, are direct and clear-cut, is a relatively easy task. The seven-county Southeastern Wisconsin Planning Region is composed, however, of many diverse and often divergent interests; consequently, the formulation of objectives for the preparation of advisory comprehensive regional development plans is a very difficult task.

Soundly conceived regional development objectives should incorporate the combined knowledge of many people who are informed about the Region and should ultimately be established by duly elected or appointed representatives legally assigned this task. This consideration is important because of the value-system implications inherent in any set of development objectives. Since the formulation of development objectives, however, is a complex task involving technical as well as value-system considerations, it is appropriate that experienced public planners initially prepare such objectives for consideration by elected governing bodies and plan commissions. At the regional level, the use of advisory committees has been, and still appears to be, the most practical and effective procedure available for involving interested and knowledgeable county and local planners in this initial formulation. Only by combining the accumulated knowledge and experience about the Region which the various advisory committee members possess can a meaningful expression of the desired direction, magnitude, and quality of future regional development be obtained.

One of the major tasks of the advisory committee in the initial regional land use planning effort, then, was to assist in the formulation of regional development objectives and supporting planning principles and standards. As part of the second regional land use planning effort, the objectives, principles, and standards adopted in the initial regional land use plan were reviewed by the second advisory committee and by the Regional Planning Commission. In that review, careful consideration was given to the degree of attainment of each of the objectives since their initial adoption, as well as to both adverse and favorable public reaction to plan implementation proposals. The objectives adopted under the initial regional land use planning effort were subsequently readopted with only minor modification. Under the current regional land use planning effort, careful review of the regional development objectives and supporting principles and standards was again deemed essential to proper reevaluation of the adopted regional land use plan. This chapter sets forth the results of that review in the form of revised regional land use development objectives, principles, and standards adopted by the Commission after careful review and upon recommendations by the Commission staff and the current Advisory Committee.

BASIC CONCEPTS AND DEFINITIONS

Definitions for the term "objective" as well as for the terms "principle," "standard," "plan," "policy," and "program" were established for use as a common frame of reference in the initial land use study. The process of definition was needed because the term "objective" was subject to a wide range of interpretation and application and was closely linked to other terms often used in planning work which were equally subject to a wide range of interpretation and application. These definitions have remained valid over time and for convenience are set forth below as originally established:

- 1. Objective: a goal or end toward the attainment of which plans and policies are directed.
- 2. Principle: a fundamental, primary, or generally accepted tenet used to support objectives and prepare standards and plans.
- 3. Standard: a criterion used as a basis of comparison to determine the adequacy of plan proposals to attain objectives.
- 4. Plan: a design which seeks to achieve agreed upon objectives.

- 5. Policy: a rule or course of action used to ensure plan implementation.
- 6. Program: a coordinated series of policies and actions to carry out a plan.

Although this chapter deals with only the first three of these terms, an understanding of the interrelationship between the foregoing definitions and the basic concepts which they represent is essential to the following discussion of objectives, principles, and standards.

OBJECTIVES

Recognizing that: 1) various public and private interest groups within a Region as large and diverse as southeastern Wisconsin may have varving and at times conflicting objectives: 2) many of these objectives are of a qualitative nature and, therefore, difficult to quantify; and 3) many objectives which may be held to be important by the various interest groups within the Region may not be related in a demonstrable manner to physical development plans, the Commission identified two basic types of objectives under the first and second land use planning efforts. These are general development objectives, often referred to by other agencies as "goals," which are by their very nature either qualitative or difficult to relate directly to development plans, and specific development objectives, which can be directly related to physical development plans and at least crudely quantified. The rationale for using these two types of objectives remains valid; and, for the most part, the general and specific regional development objectives which have been adopted for use in the current land use plan reevaluation are quite similar to those formulated and adopted in the first and second regional land use planning efforts. Thus, the broad needs which the regional land use plan is to be designed to satisfy, as expressed in the form of the regional land use development objectives, have remained essentially the same.

General Objectives

The following general development objectives have been adopted by the Commission after careful review and recommendation by the Technical Coordinating and Advisory Committee on Regional Land Use Planning:

- Economic growth at a rate consistent with regional resources, including land, labor, and capital, and primary dependence on free enterprise in order to provide needed employment opportunities for the expanding labor force of the Region.
- A wide range of employment opportunities through a broad, diversified economic base.
- Conservation and protection of desirable existing residential, commercial, industrial, and agricultural development in order to maintain desirable social and economic values; renewal of obsolete and deteriorating residential, commercial, and industrial areas in the rural as well as in the urban areas of the Region; and prevention of slums and blight.
- A broad range of choice among housing designs, sizes, types, and costs, recognizing changing trends in age-group composition, income, and family living habits.
- An adequate, flexible, and balanced level of community services and facilities.
- An efficient and equitable allocation of fiscal resources within the public sector of the economy.
- An attractive and healthful physical and social environment with ample opportunities for high quality education, cultural activities, and outdoor recreation.
- Protection, wise use, and enhancement of the natural resource base.
- Development of communities having distinctive individual character, based on physical conditions, historical factors, and local desires.

The foregoing general development objectives are essentially the same as those adopted in the previous regional land use planning effort. They are proposed as goals which public policy within the Region should promote over time. They are all necessarily general but, nevertheless, provide the broad framework within which regional planning can take place and the more specific goals of the various functional elements and component parts of the Region stated and pursued. No ranking is implied by the order in which these objectives are listed. The statement of these objectives is concerned entirely with ends and not with means, and the principal emphasis of these general objectives is on those aspects of regional development which relate either to the expenditure of public funds or to the effects of government actions and regulations. With respect to these general development objectives, it was deemed sufficient to arrive at a consensus among the Advisory Committee and the Commission itself that the plan proposals do not conflict with the objectives. Such a consensus represents the most practical evaluation of the ability of plan proposals to meet the general development objectives.

Specific Development Objectives

Within the framework established by the general development objectives, a secondary set of more specific objectives can be postulated which is directly relatable to physical development plans and can be at least crudely quantified. The quantification is facilitated by complementing each specific objective with a set of quantifiable planning standards which are, in turn, directly relatable to a planning principle which supports the chosen objective. The planning principles thus augment each specific objective by asserting its inherent validity as an objective.

The specific objectives adopted for the regional land use plan are largely self-descriptive. They are concerned primarily with spatial allocation to, and distribution of, the various land uses, land use compatibility, resource protection, and accessibility. The following specific land use development objectives, listed without any implied ranking, were adopted by the Commission after careful review and recommendation by the Technical Coordinating and Advisory Committee on Regional Land use Planning:

- 1. A balanced allocation of space to the various land use categories which meets the social, physical, and economic needs of the regional population.
- 2. A spatial distribution of the various land uses which will result in a compatible arrangement of land uses.
- 3. A spatial distribution of the various land uses which maintains biodiversity and will result in the protection and wise use of the natural resources of the Region, including its soils, inland lakes and streams, ground-

water, wetlands, woodlands, prairies, and wildlife.

- 4. A spatial distribution of the various land uses which is properly related to the supporting transportation, utility, and public facility systems in order to assure the economical provision of transportation, utility, and public facility services.
- 5. The development and conservation of residential areas within a physical environment that is healthy, safe, convenient, and attractive.
- 6. The preservation, development, and redevelopment of a variety of suitable industrial and commercial sites both in terms of physical characteristics and location.
- 7. The preservation and provision of open space to enhance the total quality of the regional environment, maximize essential natural resource availability, give form and structure to urban development, and facilitate the ultimate attainment of a balanced year-round outdoor recreational program providing a full range of facilities for all age groups.
- 8. The preservation of land areas to provide for agriculture, provide a reserve or holding area for future urban and rural needs, and ensure the preservation of those rural areas which provide wildlife habitat and which are essential to shape and order urban development.

These objectives are essentially the same as the specific land use development objectives adopted in the two previous regional land use planning efforts. The only significant change pertains to Objective No. 3. That objective has been expanded to include the maintenance of "biodiversity," that is, the maintenance of the variety of different plant and animal species occurring in southeastern Wisconsin and the maintenance of the genetic variability within the populations of each of those species.

It should be noted that the foregoing land use development objectives are systems-level objectives which the regional land use plan should seek to achieve. They are concerned with the proper allocation of space to the various categories of land use and the proper arrangement of land use at the systems level of planning. While the objectives and standards include guidelines for neighborhood development and the development of commercial and industrial areas, detailed site design considerations are properly addressed at the local level of planning, and it is the function of local planning to ensure good design at individual development sites. It is in the local planning process that the ultimate responsibility lies to ensure the development of properly designed neighborhood units and properly designed commercial and industrial areas served by public utilities and having adequate parking and good access to the arterial street and transit systems.

PRINCIPLES AND STANDARDS

Complementing each of the foregoing specific land use development objectives are one or more planning principles and a set of planning standards. These are set forth in Table 126. Each set of standards is directly related to a planning principle, as well as to the objective, and serves to facilitate quantitative application of the objectives in plan design, test, and evaluation. The planning principles, moreover, support the specific objectives by asserting their validity. In the preparation of the necessary planning principles for the initial regional land use planning effort, a careful search of planning literature failed to reveal a documented set of comprehensive principles which were universally accepted as tenets basic to the physical planning process. It was necessary, therefore, to adapt such principles as could be found to the regional planning effort and then to draw upon the collective experience of the practitioners of the many technical disciplines represented on the Technical Coordinating and Advisory Committee to formulate additional principles to augment those adapted from the literature. Thus, through the combined knowledge of experienced technicians, a set of comprehensive planning principles was formulated. These principles were used as guidelines in the initial regional land use planning process. The planning principles established in the first regional land use planning effort were incorporated virtually unchanged into the second planning study as well as into the current planning effort. As part of the current effort, one additional planning principle, enumerating the important natural functions of prairies, was established under Objective No. 3.

Most of the planning standards set forth in Table 126 were incorporated without change from a set of planning standards adopted as part of the year 2000 regional land use plan. Certain of the previously adopted standards have, however, been modified; certain other standards have been deleted; and certain new standards have been added. Substantive changes to the previously adopted planning standards are described below.

Objective No. 1, Standard No.4

Standard No. 4 under Objective No. 1, which is concerned with the proper allocation of land to commercial use, was revised to take into account the changing nature of commercial development, including the increase in the development of office complexes, within the Region. Under the revised standard, different incremental land requirements have been established for retail and service uses and for office uses.

Objective No. 3, Standard Nos. 3a and 3b

As revised, Standard No. 3a under Objective No. 3 provides that all wetlands adjacent to streams or lakes, all wetlands within areas with special wildlife or other natural values, and all wetlands having an area of five acres or more, lowered from 50 acres, should not be allocated to any urban development except limited recreation and should not be drained or filled. The revised standard would provide for the preservation of the vast majority of wetlands in the Region having significant ecological value.¹ In addition, the revised standard indicates that county and local units of government may choose to preserve all wetlands.

A new standard, Standard No. 3b, was added under Objective No. 3, providing that open lands surrounding particularly important wetlands, including wetlands adjacent to streams or lakes, wetlands having special wildlife or other natural

¹It is estimated that of the total wetland area of 169,000 acres in the Region in 1985, about 95 percent, or 160,500 acres, consisted of wetlands five acres or greater in area, while about 5 percent, or 8,500 acres, consisted of wetlands less than five acres in area.

values, and wetlands having an area in excess of 50 acres, should be kept in open use such as agriculture or limited recreation. The new standard is intended to provide adequate buffering of such wetlands from the potentially adverse impacts of intensive urban development.

Objective No. 3, Standard No. 5a

A new standard was added concerning the preservation of prairies in southeastern Wisconsin. Prairies are defined as open, generally treeless areas which are dominated by native grasses. Prairies have important natural value, providing unique opportunities for certain scientific, educational, and recreational pursuits. Once widespread in southeastern Wisconsin, prairies are now extremely limited in area. Standard No. 5a under Objective No. 3 provides that all remaining native prairies representative of the presettlement vegetation should be maintained in a natural condition and be made available for research and educational use.

Objective No. 3, Standard No. 6b

A new standard, Standard No. 6b, was added under Objective No. 3, indicating that wildlife populations should be maintained in balance with the holding capacity of the land.

Objective No. 4, Standard

Nos. 8a, 8b, 8c, and 8d

At the time of the preparation of the firstgeneration, design year 1990, regional land use plan, conventional onsite soil absorption sewage disposal systems, or "septic tank systems," and holding tanks were the primary means for onsite sewage disposal. Soil conditions served to constrain the use of septic tank systems, particularly with increased state regulation and the advent of county sanitary codes. As indicated in Chapter V, however, alternative onsite soil absorption sewage disposal systems have now been designed and approved for use under more limiting soil conditions than those for which conventional systems would be acceptable. Because of the prospect of widespread use of onsite sewage disposal systems made possible through changing technology and because of the adverse impacts often associated with such systems, it was determined that the proper use of such systems should be addressed in the land use development standards. Four planning standards were added under Objective No. 4 as general guidelines for the use of such systems in the Region.

Standard No. 8a indicates that onsite sewage disposal systems should be utilized only in areas covered by soils which are suitable for the system being considered. Soil conditions are a key consideration in siting and designing soil absorption sewage disposal systems. Installation of such systems in areas covered by soils unable to accommodate those systems can lead to surface and groundwater pollution, create public health problems, and result in an overall deterioration of development conditions, with costly remedial actions needed.

Standard No. 8b indicates the type of development for which the use of onsite sewage disposals systems has been deemed appropriate. This standard calls for the use of onsite sewage disposal systems on a limited, rather than widespread, basis, in an effort to minimize potential adverse environmental and developmental impacts. Specifically, Standard No. 8b indicates that the use of onsite sewage disposal facilities should be limited to the following types of development: rural residential development; suburban-density residential development, limited, however, to areas already committed to such use; and urban land uses which may be required in unsewered areas, such as transportation-related businesses, agriculture-related businesses, communication facilities, utility installations, and park and recreation sites.

Standard No. 8c establishes a hierarchy, or order of preference, for the use of the various types of onsite sewage disposal systems. A range of technologies now exists for onsite sewage storage, treatment, and disposal. These include conventional onsite disposal systems, that is, inground systems which rely on the gravity distribution of effluent to the soil; alternative onsite disposal systems, that is, systems other than conventional systems, which typically rely on the pressurized distribution of effluent, including above-ground mound systems and shallow in-ground pressure distribution systems; and holding tanks. Standard No. 8c indicates that new development in unsewered areas should be designed to be served by conventional onsite soil absorption sewage disposal systems and that alternative sewage disposal systems should only be utilized for remedial purposes as replacement for failing conventional systems or on lots or parcels of record that cannot support conventional systems. Standard No. 8c further indicates that holding tanks should be used only

as a last resort as a replacement for conventional or alternative systems, because of their susceptibility to misuse and abuse.

The preference for the use of conventional onsite disposal systems over alternative systems indicated in Standard No. 8c is based in part upon the additional maintenance required for the proper operation of the alternative systems. The recommended limited use of alternative systems is also based in part upon land use planning considerations. In this respect, the limited use of such systems is considered to be important to the avoidance of further widespread scattered urban development in rural areas.

Finally, Standard No. 8d indicates that new urban development served by onsite sewage disposal systems in planned sewer service areas should be discouraged and that, where permitted, such development should be designed so that the public and private costs of conversion to public sanitary sewer service are minimized.

Objective No. 5, Standard No. 4

A new standard, Standard No. 4, was added under Objective No. 5 indicating that efforts directed at the conservation and renewal of existing residential areas should be undertaken on a neighborhood basis and should seek to preserve those cultural features which contribute to the promotion of neighborhood identity within the larger urban complex.

Objective No. 6, Standard Nos. 1, 2, and 3

An important element of the adopted year 2000 regional land use plan is the development and maintenance of a system of major commercial and industrial centers in the Region. As noted in Chapter III, there have been changes in the development and redevelopment practices for commercial and industrial use since the preparation of the year 2000 plan. New types of economic activity centers have emerged, and there has also been an increase of commercial and industrial development in mixed use settings. An "industrial" area may now include not only manufacturing and wholesaling facilities but a much wider range of uses including offices. service operations, and research facilities, as well as areas of open space. A "commercial" area may include not only retail operations, but a range of service and office uses as well. The changing nature of economic activity centers required a reevaluation and revision of plan

concepts and related planning standards regarding major commercial and industrial centers.

Under the standards adopted as part of the year 2000 plan, major commercial centers were identified as areas primarily associated with the sale of shoppers' goods, typically anchored by at least two full-line department stores and encompassing numerous other retail stores. Since the preparation of that plan, significant changes in the nature of commercial development have occurred both nationally and within the Region. As already noted, a growing number of commercial centers accommodate not only retail activities, but a range of service and office uses as well. Large shopping areas, including manufacturers' outlet centers, have been developed without traditional full-line department stores as anchors. In addition, office parks, or office complexes accommodating employment in a wide range of industries, have emerged as an entirely new form of development.

As part of the current regional land use plan reevaluation and revision, the concept of major commercial center has been broadened to take into account office-type development as well as retail and service uses. Two types of major commercial centers, major retail centers and major office centers, have been defined based upon the level and types of employment accommodated. To qualify as major retail center, a site must accommodate at least 2,000 retail jobs. To qualify as a major office center, a site must accommodate at least 3,500 office and servicerelated jobs. While classification of commercial areas in this manner is useful for areawide, systems-level land use planning insofar as it provides an indication of the scale of development and the predominant type of activity, it must be recognized that many sites would accommodate a mixture of retail, service, and office uses.

The standards pertaining to major retail center requirements set forth in Table 126 incorporate, as appropriate, the major commercial center requirements from the previously adopted plan regarding access to transportation systems, the provision of public facilities, and proper adaptation to soil conditions (see Standard Nos. 2a through 2g). Certain requirements from the previously adopted plan have, however, been deleted, including a population accessibility standard, a minimum site area standard, and a standard requiring that such centers include at least two general sales and service department stores. The additional desirable site development standards for major retail centers, Standard Nos. 2h through 2k, are generally similar to those adopted for major commercial centers under the previous plan. It should be noted in this regard that a previously adopted standard calling for the provision of off-street parking for at least 5,000 cars has been replaced by a standard calling for the provision of adequate off-street parking.

Standards pertaining to requirements for major office centers and additional desirable site development standards for major office centers similar to those established for major retail and service centers have been added as Standard Nos. 3a through 3l.

Under the proposed standards, major industrial centers have been defined as industrial areas which accommodate at least 3,500 industrial jobs. Under the year 2000 plan, it should be noted, major industrial centers were identified on the basis of employment levels and the areal extent of industrial land use, having been defined as areas accommodating at least 3,500 industryrelated jobs or encompassing a gross site area of 320 acres. The monitoring of development conditions in the Region since the preparation of the year 2000 plan indicates that industrial employment levels alone provide a sound basis for the identification of major industrial centers. Moreover, this single criterion appears to be the best means for the classification of industrial areas, given the current trend toward a broader mixture of uses at industrial sites.

The standards set forth in Table 126 incorporate. as appropriate, major industrial center requirements regarding access to transportation systems, the provision of public facilities, and proper adaptation to soil conditions from the previously adopted plan (see Standard Nos. 1a through 1i). The minimum site area standard has been deleted, and certain minor adjustments have been made to take into account the changing nature of industrial development. For example, the requirement of direct access to railway facilities, which would apply to traditional industrial sites, oriented to heavy industry, has been made dependent upon the nature of the industries located in the area. Certain additional additional desirable site development guidelines have been added (see Standards Nos. 1j through 1n).

Objective No. 8, Standard No. 1

Standard No. 1 under Objective No. 8 provides for the preservation of prime agricultural lands in the Region. The initial regional land use plan set forth a generalized delineation of prime agricultural lands along with a recommendation that actual areas to be protected through appropriate agricultural zoning be determined locally. Considered in the original identification of prime agricultural lands were soil productivity, the size of the individual farms, the size and extent of the combined area being farmed, and other factors. It should be noted that only large blocks of farmland, concentrated areas of at least five square miles, were included in the original delineation. The Commission recognized that in local refinements of the original delineation, it may be desirable to modify the criteria used to identify which agricultural lands ought to be preserved.

Farmland preservation plans have now been completed for and adopted by Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties. Those plans resulted in a refinement of the agricultural land preservation recommendations of the regional land use plan, including refinement of the criteria used to identify prime farming areas. In identifying prime agricultural lands, the counties included blocks of agricultural land considerably smaller in size than initially recommended by the Commission, areas as small as 100 acres. Most of the county plans were accomplished within the context of the "important farmlands" classification of soils promulgated by the U.S. Soil Conservation Service. In an effort to incorporate the county farmland preservation planning standards into the regional land plan, prime agricultural lands have now been defined as agricultural lands in farms which meet the following criteria: 1) the farm unit must be at least 35 acres in area; 2) at least 50 percent of the farm unit must be covered by soils which meet U.S. Soil Conservation Service standards for national prime farmland or farmland of statewide importance; and 3) the farm unit should be located in a block of farmland at least 100 acres in size.

OVERRIDING CONSIDERATIONS

In applying the planning standards and in preparing the regional land use plan, several overriding considerations must be recognized. First, it must be recognized that it is unlikely that any one plan proposal can meet all of the standards completely; the extent to which each standard is met, exceeded, or violated must serve as a measure of the ability of the plan proposal to achieve the specific objectives which the given standard complements.

Second, it must be recognized that some objectives may be complementary. Thus, the achievement of one objective may support the achievement of other objectives. For example, the concentration of new urban residential development within planning units served by public sanitary sewers, water supply service, and other urban services and facilities, as called for in Standard No. 1 under Objective No. 2, is consistent with and would support the protection of the natural resources of the Region, as called for under Objective No. 3. Conversely, some objectives may be conflicting, requiring reconciliation through compromise. For example, the preservation of agricultural and other open space lands as called for under Objective Nos. 7 and 8 must be reconciled with the required allocation of land to the various urban uses, as called for in Objective No. 1, in the plan design process.

Third, it must be recognized that the standards must be very judiciously applied to areas or facilities which are already partially or fully developed, since such application may require extensive renewal or reconstruction programs. In this respect it should be particularly noted that the land use standards which are concerned with natural resource protection, use, or development or with neighborhood and community development relate primarily to those areas of the Region where the resource base has not as yet been significantly deteriorated, depleted, or destroyed and where neighborhood and community development has not yet been significantly disrupted. In areas where such disruption, deterioration, depletion, or destruction has already occurred, application of the standards may make it necessary to inaugurate programs which would restore neighborhoods and the resource base to a higher level of both quality and quantity.²

²Such programs are specifically recommended for surface water resources in the adopted comprehensive watershed plans and in the regional water quality management plan; for air resources in the regional air quality attainment and maintenance plan; and for certain recreational resources in the regional park and open space plan.
LAND USE DEVELOPMENT OBJECTIVES, PRINCIPLES, AND STANDARDS

OBJECTIVE NO. 1

A balanced allocation of space to the various land use categories which meets the social, physical, and economic needs of the regional population.

PRINCIPLE

The planned supply of land set aside for any given use should approximate the known and anticipated demand for that use.

STANDARDS

1. For each additional 100 dwelling units to be accommodated within the Region at each residential density, the following minimum amounts of residential land should be set aside:

Residential Density Category	Net Area ^a (acres per 100 dwelling units)	Gross Area ^b (acres per 100 dwelling units)
High-Density Urban ^C	8	13
Medium-Density Urban ^c	23	32
Low-Density Urban ^C	83	109
Suburban ^d	167	204
Rural ^d	500	588

2. For each additional 1,000 persons to be accommodated within the Region, the following minimum amounts of public park and recreation land should be set aside.

Public Park and	Net Area ^e	Gross Area ^f
Recreation Land Category	(acres per 1,000 persons)	(acres per 1,000 persons)
Major	4 8	5 9

3. For each additional 100 industrial employees to be accommodated within the Region, the following minimum amounts of industrial land should be set aside:

Industrial Land Category	Net Area ^a (acres per 100 employees)	Gross Area ^g (acres per 100 employees)
Major and Other	7	9

4. For each additional 100 commercial employees to be accommodated within the Region, the following minimum amounts of commercial land should be set aside:

Commercial Land Category	Net Area ^a (acres per 100 employees)	Gross Area ^g (acres per 100 employees)
Retail and Service		
Major	1	3
Other	2	6
Office		
Major and Other	1	2

5. For each additional 1,000 persons to be accommodated within the Region, the following minimum amounts of governmental and institutional land should be set aside:

Government and	Net Area ^a	Gross Area ^h
Institutional Land Category	(acres per 1,000 persons)	(acres per 1,000 persons)
Major and Other	9	12

OBJECTIVE NO. 2

A spatial distribution of the various land uses which will result in a compatible arrangement of land uses.

PRINCIPLE

The proper allocation of uses to land can avoid or minimize hazards and dangers to health, safety, and welfare and maximize amenity and convenience in terms of accessibility to supporting land uses.

STANDARDS

1. Urban high-, medium-, and low-density residential uses should be located within planning units which are served with centralized public sanitary sewerage and water supply facilities and contain, within a reasonable walking distance, necessary supporting local service uses, such as neighborhood park, local commercial, and elementary school facilities, and should have reasonable access through the appropriate component of the transportation system to employment, commercial, cultural, and governmental centers and secondary school and higher educational facilities.

2. Rural and suburban-density residential uses should have reasonable access through the appropriate component of the transportation system to local service uses; employment, commercial, cultural, and governmental centers; and secondary school and higher educational facilities.

3. Industrial uses should be located to have direct access to arterial street and highway facilities and reasonable access through an appropriate component of the transportation system to residential areas and to railway, seaport, and airport facilities and should not be intermixed with commercial, residential, governmental, recreational, or institutional land uses.

4. Major commercial uses should be located in centers of concentrated activity on only one side of an arterial street and should be afforded direct access¹ to the arterial street system.

OBJECTIVE NO. 3

A spatial distribution of the various land uses which maintains biodiversity and will result in the protection and wise use of the natural resources of the Region, including its soils, inland lakes and streams, groundwater, wetlands, woodlands, prairies, and wildlife.

PRINCIPLE

The proper allocation of uses to land can assist in maintaining an ecological balance between the activities of man and the natural environment which supports him.

1. SOILS

PRINCIPLE

The proper relation of urban and rural land use development to soil types and distribution can serve to avoid many environmental problems, aid in the establishment of better regional settlement patterns, and promote the wise use of an irreplaceable resource.

STANDARDS

a. Sewered urban development, particularly for residential use, should not be located in areas covered by soils identified in the regional detailed operational soil survey as having severe limitations for such development.

b. Unsewered suburban residential development should not be located in areas covered by soils identified in the regional detailed operational soil survey as unsuitable for such development.

c. Rural development, including agricultural and rural residential development, should not be located in areas covered by soils identified in the regional detailed operational soil survey as unsuitable for such uses.

2. INLAND LAKES AND STREAMS

PRINCIPLE

Inland lakes and streams contribute to the atmospheric water supply through evaporation; provide a suitable environment for desirable and sometimes unique plant and animal life; provide the population with opportunities for certain scientific, cultural, and educational pursuits; constitute prime recreational areas; provide a desirable aesthetic setting for certain types of land use development; serve to store and convey flood waters; and provide certain water withdrawal requirements.

STANDARDS

a. A minimum of 25 percent of the perimeter or shoreline frontage of lakes having a surface area in excess of 50 acres should be maintained in a natural state.

b. Not more than 50 percent of the length of the shoreline of inland lakes having a surface area in excess of 50 acres should be allocated to urban development, except for park and outdoor recreational uses.

c. A minimum of 10 percent of the shoreline of each inland lake having a surface area in excess of 50 acres should be maintained for public uses, such as a beach area, pleasure craft marina, or park.

d. It is desirable that 25 percent of the shoreline of each inland lake having a surface area less than 50 acres be maintained in either a natural state or some low-intensity public use, such as parkland.

e. A minimum of 25 percent of both banks of all perennial streams should be maintained in a natural state.

f. Not more than 50 percent of the length of perennial streams should be allocated to urban development, except for park and outdoor recreational uses.

g. Floodlands^j should not be allocated to any urban development^k which would cause or be subject to flood damage.

h. No unauthorized structure or fill should be allowed to encroach upon and obstruct the flow of water in the perennial stream channels¹ and floodways.^m

3. WETLANDS

PRINCIPLE

Wetlandsⁿ support a wide variety of desirable and sometimes unique plant and animal life; assist in the stabilization of lake levels and stream flows; trap and store plant nutrients in runoff, thus reducing the rate of enrichment of surface waters and noxious weed and algae growth; contribute to the atmospheric oxygen supply; contribute to the atmospheric water supply; reduce stormwater runoff by providing area for floodwater impoundment and storage; trap soil particles suspended in runoff and thus reduce stream sedimentation; provide opportunities for certain scientific, educational, and recreational pursuits; and may serve as groundwater recharge and discharge areas.

STANDARD

a. All wetlands adjacent to streams or lakes, all wetlands within areas having special wildlife or other natural values, and all wetlands having an area of five acres or greater should not be allocated to any urban development except

limited recreational use and should not be drained or filled. In addition, county and local units of government may choose to preserve all wetlands.

b. Open lands surrounding particularly important wetlands, including wetlands adjacent to streams or lakes, wetlands having special wildlife or other natural values, and wetlands having an area in excess of 50 acres, should be kept in open space uses such as agriculture or limited recreation.

4. WOODLANDS

PRINCIPLE

Woodlands^o assist in maintaining unique natural relationships between plants and animals; reduce stormwater runoff; contribute to the atmospheric oxygen supply; contribute to the atmospheric water supply through transpiration; aid in reducing soil erosion and stream sedimentation; provide the resource base for the forest product industries; provide the population with opportunities for certain scientific, educational, and recreational pursuits; and provide a desirable aesthetic setting for certain types of land use development.

STANDARDS

a. A minimum of 10 percent of the land area of each watershed^p within the Region should be devoted to woodlands.

b. For demonstration and educational purposes, the woodland cover within each county should include a minimum of one 40-acre or larger woodlot devoted to each major forest type: dry, mesic, or lowland forest. In addition, the best remaining examples of the native forest vegetation types representative of the pre-settlement vegetation should be maintained in a natural condition and be made available for research and educational use.

c. A minimum regional aggregate of five acres of woodland per 1,000 population should be maintained for recreational pursuits.

5. PRAIRIES

PRINCIPLE

Prairies,^q including savannas, assist in maintaining unique natural relationships between plants and animals; reduce stormwater runoff; contribute to the atmospheric oxygen supply; contribute to the atmospheric water supply through transpiration; aid in reducing soil erosion; and provide opportunities for scientific, educational, and recreational pursuits.

STANDARD

a. All remaining native prairies representative of the presettlement vegetation should be maintained in a natural condition and be made available for research and educational use.

6. WILDLIFE

PRINCIPLE

Wildlife, when provided with a suitable habitat, will supply the population with opportunities for certain scientific, educational, and recreational pursuits; comprises an integral component of the life systems which are vital to beneficial natural processes, including the control of harmful insects and other noxious pests and the promotion of plant pollination; provides a food source; offers an economic resource for the recreation industries; and serves as an indicator of environmental health.

STANDARD

a. The most suitable habitat for wildlife, the area wherein fish, game and nongame species can best be fed, sheltered, and reproduced, is a natural habitat. Since the natural habitat for wildlife can best be achieved by preserving or maintaining in a wholesome state other resources such as water, wetlands, prairies, and woodlands, the standards for each of these other resources, if met, would ensure the preservation of a suitable wildlife habitat and population.

b. Wildlife populations should be maintained in balance with the holding capacity of the land.

OBJECTIVE NO. 4

A spatial distribution of the various land uses which is properly related to the supporting transportation, utility, and public facility systems in order to assure the economical provision of transportation, utility, and public facility services.

PRINCIPLE

The transportation and public utility facilities and the land use pattern which these facilities serve and support are mutually interdependent in that the land use pattern determines the demand for, and loadings upon, transportation and utility facilities; and these facilities, in turn, are essential to, and form a basic framework for, land use development.

STANDARDS

1. Urban development should be located and designed so as to maximize the use of existing transportation and utility systems.

2. The transportation system should be located and designed to provide access not only to all land presently devoted to urban development but to land proposed to be used for such urban development.

3. All land developed or proposed to be developed for urban medium-, high-, and low-density residential use should be located in areas serviceable by an existing or proposed public sanitary sewerage system and preferably within the gravity drainage area tributary to such systems.

4. All land developed or proposed to be developed for urban medium-, high-, and low-density residential use should be located in areas serviceable by an existing or proposed public water supply system.

5. All land developed or proposed to be developed for urban medium- and high-density residential use should be located in areas serviceable by existing or proposed primary, secondary, and tertiary mass transit facilities.

6. The transportation system should be located and designed to minimize the penetration of existing and proposed residential neighborhood units by through traffic.

7. Transportation terminal facilities, such as off-street parking, off-street truck loading, and mass transit loading facilities, should be located in close proximity to the principal land uses to which they are accessory.

8. In the absence of public sanitary sewer service, onsite sewage disposal systems should be utilized only in accordance with the following:

- a. Onsite soil absorption sewage disposal systems should be utilized only in areas covered by soils which are suitable for the system being considered.
- b. The use of onsite sewage disposal systems should be limited to the following types of development:
 - Rural residential development.
 - Suburban density residential development, limited, however, to areas already committed to such use^r.
 - Urban land uses which may be required in unsewered areas such as transportation-related businesses, agricultural related businesses, communication facilities, utility installations, and park and recreation sites.

c. Use of the various types of onsite sewage disposal systems should be in accordance with the following:

- New development in unsewered areas should be designed to be served by conventional onsite soil absorption sewage disposal systems.
- Alternative onsite soil absorption sewage disposal systems should only be utilized to remedy failing conventional
 onsite sewage disposal systems or on lots or parcels of record that cannot support conventional systems.
- Holding tanks should only be used as a last resort as a replacement for failing conventional or alternative onsite sewage disposal systems.

d. New urban development served by onsite sewage disposal systems in areas planned to receive sanitary sewer service should be discouraged. Where such development is permitted, it should be designed so that the public and private costs of conversion to public sanitary sewer service are minimized.

OBJECTIVE NO. 5

The development and conservation of residential areas within a physical environment that is healthy, safe, convenient, and attractive.

PRINCIPLE

Residential areas developed in designed neighborhood units can assist in stabilizing community property values, preserving residential amenities, and promoting efficiency in the provision of public and community service facilities; can best provide a desirable environment for family life; and can supply the population with improved levels of safety and convenience.

STANDARDS

1. Urban high-, medium-, and low-density residential development should be located in well-planned neighborhood units which are physically self-contained within clearly defined and relatively permanent isolating boundaries, such as arterial streets and highways, major park and open space reservations, or significant natural features, such as rivers, streams, or hills.

2. Urban residential neighborhood units should contain enough area to provide: housing for the population served by one elementary school and one neighborhood park; an internal street system which discourages penetration of the unit by through traffic; and all the community and commercial facilities necessary to meet the day-to-day living requirements of the family within the immediate vicinity of its dwelling unit.

3. Suburban and rural-density residential development should be located in areas where onsite soil absorption sewage disposal systems and private wells can be accommodated and access to other services and facilities can be provided through appropriate components of the transportation system at the community or regional level, thereby properly relating such development to a rural environment.

To meet the foregoing standards, land should be allocated in each urban and rural development category as follows:

		Percent of Area in Land Development Category											
Land Use Category	Urban High-Density (7.0-17.9 dwelling units per net residential acre)	Urban Medium-Density (2.3-6.9 dwelling units per net residential acre)	Urban Low-Density (0.7-2.2 dwelling units per net residential acre)	Suburban Density (0.2-0.6 dwelling units per net residential acre)	Rural Density (0.1-0.2 dwelling units per net residential acre)	Agricultural (< 0.2 dwelling units per net residential acre)							
Residential	66.0	71.0	76.5	82.0	85.0	6.0							
Streets and Utilities	25.0	23.0	20.0	18.0	15.0	4.0							
Parks and Playgrounds Public Elementary	3.5	2.5	1.5			.							
Schools	2.5	1.5	0.5	• •									
and Institutional	1.5	1.0	1.0										
Retail and Service	1.5	1.0	0.5										
Nonurban				••		90.0							
Total	100.0	100.0	100.0	100.0	100.0	100.0							

4. To the extent practicable, efforts directed at the conservation and renewal of existing residential areas should be undertaken on a neighborhood basis and should seek to preserve those cultural features which contribute to the promotion of neighborhood identity within the larger urban complex.

OBJECTIVE NO. 6

The preservation, development, and redevelopment of a variety of suitable industrial and commercial sites both in terms of physical characteristics and location.

PRINCIPLE

The production and sale of goods and services are among the principal determinants of the level of economic vitality in any society; the important activities related to these functions require areas and locations suitable to their purposes.

STANDARDS

1. Major industrial development^s should be located in planned industrial districts which meet the following standards:

- a. Direct access to the arterial street and highway system and access within two miles to the freeway system.
- b. Direct access to railway facilities, if required by the industries located within the district.
- c. Direct access to primary, secondary, and tertiary mass transit service.
- d. Access to a General Utility-Stage II airport within a maximum travel time of 30 minutes, and access to seaport facilities with a maximum travel time of 60 minutes.
- e. Available adequate water supply.
- f. Available adequate public sanitary sewer service.
- g. Available adequate stormwater drainage facilities.
- h. Available adequate power supply.
- i. Site covered by soils identified in the regional soils survey as having slight or moderate limitations for industrial development.

In addition to the above minimum standards, the following site development standards are desirable:

- j. Lands with slopes generally exceeding 6 percent may not be suitable for industrial development. Desirably, the maximum grade of any street in an industrial area should not exceed 3 percent.
- k. Provision of adequate off-street parking and loading facilities.
- I. Provision of properly located points of ingress and egress which are controlled to prevent traffic congestion on adjacent arterial streets.
- m. Provision of adequate buffer between the industrial and adjacent nonindustrial uses.
- n. Provision of adequate setbacks from major arterial streets and highways.
- 2. Major retail development^t should be concentrated in commercial centers which meet the following minimum standards:
 - a. Direct access to the arterial street system.
 - b. Direct access to the primary, secondary, and tertiary mass transit service.
 - c. Available adequate water supply.
 - d. Available adequate public sanitary sewer service.
 - e. Available adequate stormwater drainage facilities.

- f. Available adequate power supply.
- g. Site covered by soils identified in the regional soils survey as having slight or moderate limitations for commercial development.

In addition to the above minimum standards, the following site development standards are desirable:

- h. Provision of adequate off-street parking and loading facilities.
- i. Provision of properly located points of ingress and egress which are controlled to prevent traffic congestion on adjacent arterial streets.
- j. Provision of adequate buffer between the retail use and adjacent nonretail uses.
- k. Provision of adequate building setbacks from major arterial streets and highways.
- 3. Major office development^u should be concentrated in commercial centers which meet the following minimum standards:
 - a. Direct access to the arterial street system.
 - b. Direct access to primary, secondary, and tertiary mass transit service.
 - c. Available adequate water supply.
 - d. Available adequate public sanitary sewer service.
 - e. Available adequate stormwater drainage facilities.
 - f. Available adequate power supply.
 - g. Site covered by soils identified in the regional soils survey as having slight or moderate limitations for commercial development.
 - h. Access to a General Utility-Stage II airport within a maximum travel time of 30 minutes.

In addition to the above minimum standards, the following site development standards are desirable:

- i. Provision of adequate off-street parking and loading facilities.
- j. Provision of properly located points of ingress and egress which are controlled to prevent traffic congestion on adjacent arterial streets.
- k. Provision of adequate buffer between the office use and adjacent nonoffice uses.
- I. Provision of adequate building setbacks from major arterial streets and highways.
- 4. Other industrial development should be located in planned industrial districts which meet the following standards:
 - a. Direct access to the arterial street and highway system.
 - b. Direct access to mass transit facilities.
 - c. Available adequate water supply.
 - d. Available adequate public sanitary sewer service.
 - e. Available adequate stormwater drainage facilities.
 - f. Available adequate power supply.

g. Site covered by soils identified in the regional soils survey as having slight or moderate limitations for industrial development.

5. Other commercial development, which includes activities primarily associated with the sale of convenience goods and services, should be contained within the residential planning units, the total minimum area devoted to the commercial use varying with the residential density:

- a. In low-density urban areas, land devoted to local commercial centers should comprise at least 0.5 percent of the total gross neighborhood area, or about 3.2 acres per square mile of gross neighborhood area.
- b. In medium-density urban areas, land devoted to local commercial centers should comprise at least 1.0 percent of the total gross neighborhood area, or about 6.4 acres per square mile of gross neighborhood area.
- c. In high-density urban areas, land devoted to local commercial centers should comprise at least 1.5 percent of the total gross neighborhood area, or about 9.6 acres per square mile of gross neighborhood area.

OBJECTIVE NO. 7

The preservation and provision of open space^V to enhance the total quality of the regional environment, maximize essential natural resource availability, give form and structure to urban development, and facilitate the ultimate attainment of a balanced year-round outdoor recreational program providing a full range of facilities for all age groups.

PRINCIPLE

Open space is the fundamental element required for the preservation, wise use, and development of such natural resources as soil, water, woodlands, wetlands, native vegetation, and wildlife; it provides the opportunity to add to the physical, intellectual, and spiritual growth of the population; it enhances the economic and aesthetic value of certain types of development; and it is essential to outdoor recreational pursuits.

STANDARDS^W

1. Major park and recreation sites providing opportunities for a variety of resource-oriented outdoor recreational activities should be provided within a 10-mile service radius of every dwelling unit in the Region, and should have a minimum gross site area of 250 acres.

2. Other park and recreation sites should be provided within a maximum service radius of one mile of every dwelling unit in an urban area, and should have a minimum gross site area of 5 acres.

3. Areas having unique scientific, cultural, scenic, or educational value should not be allocated to any urban or agricultural land uses; adjacent surrounding areas should be retained in open space use, such as agriculture or limited recreation.

OBJECTIVE NO. 8

The preservation of land areas to provide for agriculture, provide a reserve or holding area for future urban and rural needs, and ensure the preservation of those rural areas which provide wildlife habitat and which are essential to shape and order urban development.

PRINCIPLE

Agricultural areas, in addition to providing food and fiber, can supply significant wildlife habitat; contribute to maintaining an ecological balance between plants and animals; offer locations proximal to urban centers for the production of certain food commodities which may require nearby population concentrations for an efficient production-distribution relationship; provide opportunities for agricultural and agricultural-related employment, thus supporting an important component of the economic base of the Region; and provide open spaces which give form and structure to urban development.

STANDARDS

1. To the extent possible, all prime^X agricultural lands should be preserved for agricultural use.

2. All agricultural lands surrounding adjacent high-value scientific, educational, and recreational resources should be preserved.

^aNet land use area is defined as the actual site area devoted to a given use, and consists of the ground floor site area occupied by any buildings plus the required yards and open spaces.

^bGross residential land use area is defined as the net area devoted to this use plus the area devoted to all supporting land uses, including streets, neighborhood parks and playgrounds, elementary schools, and neighborhood institutional and commercial uses, but not including freeways and expressways and other community and areawide uses.

^cAreas which are served, proposed to be served, or required to be served by public sanitary sewerage and water supply facilities and which require neighborhood facilities.

^dAreas which are not served, not proposed to be served, nor required to be served by public sanitary sewerage and water supply facilities and which do not require neighborhood facilities.

^eThis category includes areas developed for active recreation use.

^fGross public park and recreation area is defined as the net area devoted to active or intensive recreation use plus the adjacent lands devoted to supporting land uses such as roads and parking areas. This area does not include surface water, woodlands, wetlands, or other natural resources.

^gGross commercial and industrial area is defined as the net area devoted to these uses plus the area devoted to supporting land uses, such as off-street parking.

^hGross governmental and institutional area is defined as the net area devoted to governmental and institutional use plus the area devoted to supporting land uses, such as off-street parking.

¹Direct access implies adjacency or immediate proximity.

JFloodlands are herein defined as those lands inundated by a flood having a recurrence interval of 100 years where hydrologic and hydraulic engineering data are available, and as those lands inundated by the maximum flood of record where such data are not available.

^kUrban development, as used herein, refers to all land uses except agriculture, water, woodlands, wetlands, open lands, and quarries.

¹A stream channel is herein defined as that area of the floodplain lying either within legally established bulkhead lines or within sharp and pronounced banks marked by an identifiable change in flora and normally occupied by the stream under average annual high-flow conditions.

^mFloodway lands are herein defined as those designated portions of the floodlands that will safely convey the 100-year recurrence interval flood discharge with small, acceptable upstream and downstream stage increases.

ⁿWetlands are defined as areas in which the water table is at, near, or above the land surface and which are characterized by both hydric soils and by the growth of hydrophytes, such as sedges, cattails, willows, or tamaracks.

^oWoodlands are defined as those upland areas having 17 or more deciduous trees per acre each measuring at least four inches in diameter at breast height and having at least a 50 percent canopy cover. In addition, coniferous tree plantations and reforestation projects are defined as woodlands. It is also important to note that all lowland wooded areas, such as tamarack swamps, are defined as wetlands because the water table in such areas is located at, near, or above the land surface and because such areas are generally characterized by hydric soils which support hydrophitic trees and shrubs. ^PA watershed is defined as an area 25 square miles or larger in size occupied by a surface drainage system discharging all surface water runoff to a common outlet.

^qPrairies are defined as open, generally treeless areas which are dominated by native grasses. In southeastern Wisconsin, there are three types of prairies corresponding to soil moisture conditions: dry prairies, mesic prairies, and wet prairies. In addition, it is important to note that, for purposes of this report, savannas, which are defined as areas dominated by native grasses but having between one and 17 trees per acre, are classified as prairies. In southeastern Wisconsin, there are two types of savannas, oak openings and cedar glades.

^rOnsite sewage disposal systems should not accommodate new suburban residential development, but should be provided to serve only those lands already committed to such development, namely platted but currently undeveloped lots of record or lots created by certified survey maps.

^SMajor industrial development is defined as an industrial area having a minimum of 3,500 industrial employees.

^tMajor retail development is defined as a retail area having a minimum of 2,000 retail employees.

^UMajor office development is defined as an office area having a minimum of 3,500 office and service related employees.

^VOpen space is defined as land or water areas which are generally undeveloped for urban residential, commercial, or industrial uses and are or can be considered relatively permanent in character. It includes areas devoted to park and recreation uses and to large land-consuming institutional uses, as well as areas devoted to agricultural use and to resource conservation, whether publicly or privately owned.

^WIt was deemed impractical to establish spatial distribution standards for open space <u>per</u> <u>se</u>. Open spaces which are not included in the spatial distribution standards are: forest preserves and arboreta; major river valleys; lakes; zoological and botanical gardens; stadia; woodland, wetland, and wildlife areas; scientific areas; and agricultural lands whose location must be related to, and determined by, the natural resource base.

^xPrime agricultural lands are defined as agricultural lands in farms which meet the following specific criteria regarding farm size and agricultural soil capabilities: 1) the farm unit must be at least 35 acres in area, 2) at least 50 percent of the farm unit must be covered by soils which meet the U. S. Soil Conservation Service standards for national prime farmland or farmland of statewide importance, and 3) the farm units should be located in a block of farmland at least 100 acres in size.

Source: SEWRPC.

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Chapter X

RECOMMENDED YEAR 2010 REGIONAL LAND USE PLAN

INTRODUCTION

A concerted effort was made in previous regional land use planning efforts to explore and evaluate the full range of alternatives that were practically available to the Region with respect to future land use development patterns. As described in Chapter II, in the first regional land use planning effort, undertaken in 1963, four different land use plan designs were prepared and evaluated; in the second effort, undertaken in 1972, two additional alternative designs were explored. Both efforts indicated that a controlled existing trend plan, emphasizing a centralized settlement pattern, was best among the alternatives considered.

In view of the extensive work in preparing and evaluating alternative land use designs conducted under the first and second regional land use planning efforts and the conclusive nature of the findings, it was determined that additional design alternatives would not be explored in the current effort. Rather, it was determined that the basic concepts of the adopted year 2000 regional land use plan would be brought forward and incorporated into the new land use plan and that the new plan would, thus, be prepared as an update and extension to the year 2010 of the previously adopted plan. This approach was indicated in part by the likelihood that population growth within the Region may be expected to be relatively modest through the year 2010 and that, therefore, consideration of any land use plan which requires for implementation a drastic departure from existing trends is apt to be impractical. This approach was further indicated by the fact that significant progress has been made over the past two decades in the implementation of key recommendations of the adopted regional land use plan, particularly those pertaining to the preservation of environmental corridors and prime agricultural lands.

This chapter presents the recommended new design year 2010 regional land use plan for Southeastern Wisconsin. The new plan incorporates the basic concepts of the adopted design year 2000 regional land use plan. Like the adopted plan, the proposed plan recommends promotion of a relatively compact, centralized regional settlement pattern, with urban development occurring generally in concentric rings along the full periphery of, and outward from, existing urban centers in the Region. The proposed plan places heavy emphasis on the continued impact of the urban land market in determining the location, intensity, and character of future development. Like the adopted plan, the proposed plan seeks to influence the operation of the urban land market in several important ways, in order to achieve a more healthful, attractive, and efficient settlement pattern. In this regard, the proposed plan recommends that new urban development occur primarily in those areas of the Region which are covered by soils suitable for such development and in those areas which can be readily served by essential municipal facilities and services, including public sanitary sewerage, water supply, and mass transit facilities and services. The plan recommends the preservation in essentially natural, open uses of the identified environmental corridors and the preservation in agricultural and related use of most of the remaining prime agricultural lands in the Region. While incorporating the basic concepts of the adopted year 2000 regional land use plan, the recommended year 2010 land use plan takes into account changes in land use that have taken place in the Region since the adoption of the year 2000 plan; the findings and recommendations of other local, county, and regional planning efforts since completed: and forecasts of population and economic activity levels within the Region through the year 2010.

DESIGN YEAR POPULATION AND ECONOMIC ACTIVITY LEVELS

The future demand for land use and natural resources in the Region will depend primarily on the future size of the resident population and the future level of economic activity in the Region. Control of changes in population and economic activity at the regional level lies largely outside the scope of the physical planning process. Within the planning process, future population and economic activity levels can only be projected. Projections of future population and economic activity levels are thus required to establish the overall scale of growth and development which the land use plan must seek to accommodate.

Projections of future population and economic activity levels in the Region were presented in Chapter VIII of this report. As indicated in that chapter, in response to the increasing uncertainty with regard to future social and economic conditions in the Region, the Commission has adopted an "alternative futures" approach in developing projections of population and economic activity. Under this approach, three alternative future regional growth scenarios have been postulated, two intended to represent low and high extremes of possible future growth and change and the third intended to represent an intermediate future, or a future that lies between the two extremes. A set of population and employment projections was developed for each scenario.

As a practical matter, the preparation of a regional land use plan must be targeted toward a single set of population and employment projections. It was the collective judgment of the Advisory Committee guiding the preparation of the new plan that future population and employment levels within the Region would be most closely approximated by the intermediate growth scenario. Accordingly, the Committee directed that the new land use plan be prepared to accommodate the population and employment forecasts attendant to the intermediate growth scenario, subject, however, to two modifications:

The forecast regional design year 2010 1. population and employment levels were adjusted at the county level to achieve a more centralized distribution of population, employment, and attendant urban land use development within the Region. As documented in previous chapters of this report, there has been a marked decentralization of population and economic activity away from the older urban centers of the Region over the past several decades. It was determined that the new year 2010 regional land use plan, like the adopted year 2000 plan, should seek to moderate this decentralization in an effort to bring about a more compact, centralized regional settlement pattern. Promotion of such a centralized settlement pattern serves to protect the underlying and sustaining natural resource base; helps to avoid the

costly developmental and environmental problems attendant to urban sprawl; facilitates the efficient and economical provision of urban services and facilities, including mass transit, to developing urban areas; maximizes the use of existing infrastructure: and promotes the conservation and renewal of existing residential, commercial, and industrial areas. The specific adjustments made in this respect included the allocation of more population to Milwaukee County than initially forecast, with corresponding reductions in the design year population levels for Ozaukee, Walworth, Washington, and Waukesha Counties. In Kenosha and Racine Counties the planned population distribution was centralized around the Kenosha and Racine urbanized areas. The distribution of employment within the Region was similarly centralized.

2. Design year population and employment levels were adjusted in order to reflect the implications of new benchmark population and employment data, particularly data from the 1990 United States Census of Population and Housing, which indicated that population and employment growth was exceeding that envisioned under the intermediate growth scenario in certain areas of the Region. The adjustments were made to accommodate reasonable growth and development between 1990 and 2010 in areas of the Region which had grown more rapidly than expected in the past by 1990 and where additional growth is likely to occur over the next two decades. The most noteworthy adjustments were increases in the design year population levels for Kenosha and Racine Counties. The adjustment of design year population levels in the southern portion of the Region, particularly Kenosha County, was necessitated in part by a perceived "Illinois" influence, that is, workers in Northeastern Illinois increasingly seeking residences in Wisconsin, a phenomenon not anticipated in the intermediate growth scenario forecasts.

As a result of these two adjustments, the new regional land use plan was designed to accommodate a year 2010 resident population of about 1,911,000 persons, about 38,800 persons, or 2 percent, more than envisioned under the intermediate-growth forecast presented in Chapter VIII; and a total employment of about 1,095,000 jobs, about 43,700 jobs, or 4 percent, more than initially forecast.

LAND USE PLAN DESIGN METHODOLOGY

The methodology applied in the preparation of the regional land use plan was a design-oriented mapping activity concerned primarily with the spatial distribution of the various land uses within the Region, carefully relating these to existing development and to the natural resource base through application of well-established physical planning and engineering principles. While the planning techniques applied in this procedure are traditional and well established, a great deal more information about the physical features of the Region, important to plan design, was available to the current planning study than would normally be the case in such land use planning activities.

This information, summarized in a series of Commission planning and technical reports, including previous chapters of this report, includes definitive data on the following natural features of the Region: topography and drainage patterns; soils; surface waters; floodlands; wetlands; woodlands; wildlife habitat; sites having historic, scientific, and other cultural value; existing and potential park and related open space sites; and groundwater recharge areas. Particularly important with respect to the relationship of these natural features to regional development is the concept of the environmental corridor as an elongated area which encompasses elements of the natural resource base of the most significance and highest quality, including the best remaining surface waters and associated floodlands and shorelands; the best remaining woodlands, wetlands, prairies, and wildlife habitat areas; and valuable historic, scenic, scientific, and cultural sites. One of the basic concepts embodied in the design of the adopted regional land use plan was the preservation of these environmental corridors in essentially natural, open uses. This concept recognized that failure to protect these corridors from improper development would ultimately result in the loss of the best remaining potential park and related open space sites, deterioration or destruction of the best remaining wildlife habitat, further encroachment of urban development on the natural floodlands of perennial streams and watercourses, loss of water impoundment areas and reduction of groundwater recharge, loss of the largest and best remaining woodlands and wetlands, and continued deterioration of surface water quality within the Region. This important concept of preserving the primary environmental corridors of the Region was carried over into the design of the proposed year 2010 regional land use plan.

In addition to the natural resource data, the information base for the physical planning techniques also included definitive data on the extent and location of existing development within the Region, including data on the existing distribution of population and economic activity, existing land use, existing highway and transit facilities, and existing public utility facilities. The information base also included data on local proposals for future development within the Region, including data provided in local community plans and zoning ordinances and locally proposed utility service areas and system plans. In addition, the data base included information on prime agricultural areas delineated on the basis of soil capabilities and size of the farm units.

It is important to note that the information data base available for preparation of the new year 2010 regional land use plan was expanded considerably over the data base available to the previous land use planning studies. Most important, this expansion involved additional data on natural floodlands developed under the Commission's watershed planning programs, additional data pertaining to the delineation of prime agricultural lands developed in conjunction with county farmland preservation planning programs, data pertaining to future sewer service areas developed as part of local planning programs aimed at refining the sewer service area recommendations of the regional water quality management plan, additional data concerning airport system development and land use planning in and around airports developed in the preparation of the second-generation regional airport system plan, additional data concerning outdoor recreation and open space needs developed in conjunction with county and local park and open space plans prepared as refinements of the regional park and open space plan, and additional planning data made available through continuing community assistance program of the Commission, including data developed in the preparation of community-level land use plans and neighborhood development plans.

Specific Design Methodology

As noted above, the proposed year 2010 regional land use plan is conceptually similar to the adopted year 2000 land use plan. The following three guidelines, which were used in the design of the year 2000 land use plan, were also used in the design of the proposed year 2010 plan:

- 1. New urban development would emphasize medium densities and would be located in those areas of the Region readily provided with essential urban services, particularly centralized sanitary sewer, water supply, and transit services; new residential development would occur largely in planned neighborhood units.
- 2. No new urban development would be allocated to the delineated primary environmental corridors, in order to preserve the best remaining elements of the natural resource base of southeastern Wisconsin.
- 3. To the maximum extent practicable, no new urban development would be allocated to the delineated prime agricultural lands, thereby preserving highly productive lands for the continuing production of food and fiber.

The specific procedures utilized in preparing the proposed year 2010 land use plan were as follows:

- 1. A determination was made of the amount of "developable" land located within each U. S. Public Land Survey quarter section. Developable land was defined as land which, while not presently developed for urban use, was suitable and could be assumed available for such use. The developable land area was determined for each quarter section by subtracting from the quarter section total the area within the quarter section included in identified environmental corridors and floodlands, the area covered by soils having "severe" limitations for urban development even with public centralized sanitary sewers. and the areas covered by urban development as of 1985.
- 2. An identification was made of those quarter sections served by public sanitary

sewerage facilities in 1985 and those planned to be served by such facilities in the adopted regional water quality management plan and in locally prepared refinements to that plan.

3. An assignment of proposed residential density was made to each quarter section based on consideration of existing development densities in the quarter section concerned and in adjacent quarter sections, trends in densities in adjacent quarter sections, anticipated population levels, and community plans and zoning provisions, and based on consultation with county and local planners within the Region.

The density categories utilized in the plan preparation include urban high-density, with a net lot area per dwelling unit ranging from 0.06 to 0.14 acre; urban medium-density, with a net lot area per dwelling unit ranging from 0.15 to 0.44 acre; urban low-density, with a net lot area per dwelling unit ranging from 0.45 to 1.44 acres; suburban residential-density, with a net lot area per dwelling unit ranging from 1.45 to 5.00 acres; and rural residentialdensity, with a net lot area per dwelling unit exceeding 5.00 acres.

It should be noted that the standards set forth in Chapter IX of this report envision that the urban high-, medium-, and lowdensity categories of residential development will be provided with a full array of urban services, including centralized sanitary sewer and water supply services and walk-in elementary school service. The standards further envision that the suburban residential-density category will be provided with partial urban services. including solid waste collection and police, fire and rescue services, but not including walk-in elementary school or centralized sanitary sewer and water supply services. Thus, in the context of this report, the term "suburban" is utilized in its literal sense; that is, "sub-urban," indicating that a particular area of urban development is being provided with less than the full range of available urban services. This meaning of the term should not be confused with the more popular meaning used to identify civil divisions adjacent to a large central city. Taken together, the urban high-, medium-,

and low-density and the suburban residential-density categories constitute the full range of urban development envisioned in the proposed land use plan, with any development exceeding a net lot area of five acres per dwelling unit deemed by definition to constitute either rural estate or farm residential development.

4. A determination was made of the location of all proposed major regional land uses by quarter section, including major multipurpose commercial centers, major industrial centers, major state and county parks, major governmental and institutional centers, and major transportation and utility centers, including major airports and sewage treatment plants. The quarter section locations of the major regional land uses were developed in consultation with county and local planners from within the Region and took into account the existing land use pattern and supporting transportation and utility systems, the existing framework of community plans and zoning, and the recommendations of other regional plan elements, including the regional transportation system plan, the regional water quality management plan. and the regional airport system plan.

With respect to the major commercial and industrial centers, it should be noted that sufficient land was allocated to accommodate anticipated incremental employment at the respective centers in accordance with the adopted land use development standards. While the occupancy status of those major centers was not explicitly considered in the development of the plan, it was assumed that some vacancies would occur as part of the normal operation of the real estate market.

- 5. A determination was made of those quarter sections to which other new urban development should be assigned, following the three guidelines set forth above. A distribution of proposed urban development was then made to developable lands in those quarter sections identified for such development, as described below:
 - a. Urban residential development was allocated, first, to vacant lots in existing residential subdivisions located in

urban quarter sections. New residential development was then allocated to unplatted, developable land, for the most part at medium densities, in accordance with county and local plans and zoning ordinances. In certain locations, low-density and high-density residential development was allocated as warranted by county and local plans and zoning ordinances.

- b. Under the assumption that all new low-, medium-, and high-density residential development would occur in planned neighborhood units, an allocation of supporting neighborhood land uses was made to those quarter sections to which new low-, medium-, and high-density residential land was assigned. This allocation was made in accordance with the neighborhood standards set forth in Table 126 in Chapter IX of this report and included neighborhood commercial, governmental and institutional, recreational, and transportation (primarily neighborhood street) land uses.
- c. In addition to the supporting neighborhood uses, land for community-level commercial, industrial, and recreational centers was allocated based on the need for additional centers in the urbanizing areas, taking into account sites proposed for future development as community-level commercial and industrial centers in community plans and zoning ordinances.

It should be noted that in allocating urban land uses, no more than 80 percent of the developable land within a quarter section was designated for future urban development, in order both to provide flexibility to urban communities in determining the spatial distribution of new urban development and to facilitate the operation of the urban land market.

6. Residential development was allocated to rural areas, that is, lands located beyond planned urban service areas, in an amount sufficient to accommodate about 10 percent of the anticipated increase in population in the Region through the year 2010. New rural residential land was allocated to vacant platted lots in residential subdivi-

EXISTING AND PROPOSED LAND USE IN THE REGION: 1985 AND 2010 RECOMMENDED REGIONAL LAND USE PLAN

	Existing	1985	Planned Ir 1985-	acrement 2010	Total 2010	
Land Use Category	Acres	Percent of Total	Acres	Percent	Acres	Percent of Total
Urban Residential						
Urban High Density	27,797	1.6	1,817	6.5	29,614	1.7
Urban Medium Density	54,153	3.1	30,776	56.8	84,929	4.9
Urban Low Density	94,618	5.5	3,039	3.2	97,657	5.7
Suburban Density	8,035	0.5	1,344	16.7	9,379	0.6
Subtotal	184,603	10.7	36,976	20.0	221,579	12.9
Commercial	8,714	0.5	1,320	15.1	10,034	0.6
Industrial	12,080	0.7	5,186	42.9	17,266	1.0
Transportation, Communication,					1	
and Utilities ^a	120,279	7.0	14,560	12.1	134,839	7.8
Governmental and Institutional	17,240	1.0	1,042	6.0	18,282	1.1
Recreational	25,564 ^b	1.5	4,089 ^c	16.0	29,653	1.7
Unused Urban Land	19,215	1.1	-8,400	-43.7	10,815	0.6
Urban Subtotal	387,695	22.5	54,773	14.1	442,468	25.7
Rural						
Residential	d		721		721	e
Agricultural	931,956	54.1	-40,487	-4.3	891,469	51.8
Other Open Lands ^f	401,462	23.4	-15,007	-3.7	386,455	22.5
Rural Subtotal	1,333,418	77.5	-54,773	-4.1	1,278,645	74.3
Total	1,721,113	100.0	0	0.0	1,721,113	100.0

^aIncludes off-street parking areas.

^bIncludes net site area of public and nonpublic recreation sites.

^cIncludes only that net site area recommended for public recreation use.

Source: SEWRPC.

sions in rural areas as well as to unplatted, developable land at rural residential densities.

7. A plan file was prepared including for each quarter section planned acreages for the major categories of land use, planned population and household levels, and planned employment levels for the year 2010.

PLAN DESCRIPTION

As previously indicated, under the recommended land use plan for southeastern Wisconsin, the ^dIncluded in 1985 land use inventory as part of urban residential land use.

^eLess than 0.1 percent.

^fIncludes woodlands, water, wetlands, unused rural land, landfill sites, and quarries.

population of the Region may be expected to reach a level of about 1,911,000 persons by the year 2010, an increase of about 168,300 persons over the 1985 population level, while employment may be expected to reach about 1,095,000 jobs by the year 2010, an increase of 223,100 jobs over the 1985 level. The plan proposes to accommodate this growth in population and employment through the conversion of approximately 86 square miles of land from rural to urban use by the year 2010. The future land use pattern proposed by the plan is shown on Map 57 and is summarized for the Region overall in Table 127 and for the individual counties and planning analysis areas in Appendices C and D.

Map 57

RECOMMENDED LAND USE PLAN FOR THE SOUTHEASTERN WISCONSIN REGION: 2010



The recommended design year 2010 regional land use plan envisions a need to convert about 86 square miles of land from rural to urban use to accommodate an anticipated population increase of about 168,000 persons and an anticipated employment increase of about 223,000 jobs in the Region between 1985 and 2010. The plan seeks to promote a centralized regional settlement pattern, maintaining, to the extent practicable, population and employment levels of the central portions of the Kenosha, Milwaukee, and Racine urbanized areas. The plan seeks to encourage the location of new urban development only in areas which are covered by soils suitable for such use; which are not subject to special hazards such as flooding and erosion; and which can be readily provided with basic urban services and facilities, including public sanitary sewer, water supply, and mass transit services. The plan seeks to preserve all the remaining primary environmental corridors and most remaining prime agricultural lands in the Region. 317

A more detailed 2010 recommended regional land use plan map for the Region at a scale of 1 inch equals 8,000 feet is included in a pocket at the back of this report.

Residential Development and Redevelopment

The recommended land use plan proposes to meet the housing needs of the growing regional population through the maintenance of existing urban areas and, as needed, the outward expansion of those areas. The future intensity and distribution of residential development would continue to be established largely through the operation of the urban land market, guided in the public interest, however, by the required adaptation to certain physiographic and cultural features of the Region, particularly the primary environmental corridors and the sanitary sewer service areas identified in the adopted regional water quality management plan and in local refinements of that plan. The recommended land use plan would seek to discourage scattered, "leapfrog" urban development in outlying areas of the Region, both through maintenance of rural development densities in these areas, that is, average lots sizes of at least five acres for single-family housing development, and through encouragement of higher-density development in those areas of the Region that can be most readily served by essential urban services.

The recommended regional land use plan proposes to add about 37,700 acres to the existing stock of residential land within the Region in order to meet housing needs in the Region plan design year. As indicated in Table 128, under the plan, most of the required additional housing would be developed at urban residential densities, that is, at high, medium, low, or suburban densities. The bulk of the new urban residential land would consist of medium-density development, with a typical single-family lot size of onequarter acre and a typical multiple-family development averaging about 10 dwelling units per net acre. Under the plan, medium-density residential land would increase by about 30,800 acres, or 57 percent; high-density residential land would increase by 1,800 acres, or 7 percent; low-density residential land would increase by 3,000 acres, or 3 percent; and suburban-density land would increase by 1,300 acres, or 17 percent. Among the seven counties in the Region, Waukesha County would experience the largest increase in urban residential land, 13,100 acres, under the recommended land use plan (see

Table 128). For the other six counties in the Region, the proposed increase in urban residential land ranges from about 3,100 acres in Walworth County to about 4,600 acres in Kenosha County.

As further indicated in Table 128, the plan proposes a modest increase of just over 700 acres in land to be developed for rural residential use. While rural residential development by definition implies a parcel size of at least five acres for single-family housing development, frequently, particularly in woodland areas and areas of steep slope, only a small portion of the total parcel is developed as homesite and yard, the remainder being kept in a natural condition. The incremental area allocated to rural residential development under the recommended plan is based on the assumption that only one-fifth of each additional rural residential parcel would be developed as homesite and associated vard areas.

The recommended land use plan encourages the development of new urban residential land in planned neighborhoods. Insofar as possible, each unit should be bounded by arterial streets; major park, parkway, or institutional lands; bodies of water; or other natural or cultural features which serve to physically separate each unit from the surrounding units. Each unit should provide, within the overall density limitations, a full range of housing types and lot sizes;¹ a full complement of public and semi-

¹It is envisioned that most urban residential neighborhoods would include a mixture of housing types which results in an overall average density for the neighborhood that is within the recommended density range. A typical medium-density residential neighborhood would, for example, consist of a mixture of single-family, two-family, and multi-family housing, resulting in a density of 2.3 to 6.9 housing units per net residential acre. The neighborhood unit development plan should identify the areas to be allocated to various types of housing. As actual development proceeds, each development proposal should be evaluated within the context of the neighborhood unit development plan, giving due consideration to the effect of the proposed development on the overall density of the neighborhood.

EXISTING AND PROPOSED RESIDENTIAL LAND USE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

		Residential Land Use											
	Urban High Density				Ur	ban Medi	um Densi	ty	U U	Urban Low Density			
	Existing	Pla Incr 1985	anned rement 35-2010 Total		Planned Increment Existing 1985-2010 T		1 nt Increment 10 Total Existing 1985-2010 Total Existin		Existing	Pla Incr 1981	ement 5-2010	Total	
County	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)	
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	1,619 22,721 30 2,436 0 268 723	90 1,424 0 51 0 135 117	5.6 6.3 0.0 2.1 0.0 50.4 16.2	1,709 24,145 30 2,487 0 403 840	6,676 16,055 3,664 6,913 5,446 3,277 12,122	5,233 3,932 2,431 3,619 2,499 3,131 9,931	78.4 24.5 66.3 52.4 45.9 95.5 81.9	11,909 19,987 6,095 10,532 7,945 6,408 22,053	6,718 8,295 9,006 10,033 10,639 12,019 37,908	-723 -969 1,229 519 368 587 2,028	-10.8 -11.7 13.6 5.2 3.5 4.9 5.3	5,995 7,326 10,235 10,552 11,007 12,606 39,936	
Region	27,797	1,817	6.5	29,614	54,153	30,776	56.8	84,929	94,618	3,039	3.2	97,657	

					F	Residentia	I Land Us	e				
	S	Suburba	n Density		Total Urban				Rural			
	Existing	Pla Incr 1985	nned ement 5-2010	Total	Existing	Plar Incre 1985	nned oment -2010	Total	Existing	Pla Incr 198	nned ement 5-2010	Total
County	(acres)	Acres	Percent	(acres)	1985 (acres)	Acres	Percent	2010 (acres)	(acres)	Acres	Percent	2010 (acres)
Kenosha Milwaukee Ozaukee Racine Walworth Washington	307 924 994 59 395 512	21 0 43 44 185 16	6.8 0.0 4.3 74.6 46.8 3.1	328 924 1,037 103 580 528	15,320 47,995 13,694 19,441 16,480 16,076	4,621 4,387 3,703 4,233 3,052 3,869	30.2 9.1 27.0 21.8 18.5 24.1	19,941 52,382 17,397 23,674 19,532 19,945		84 74 55 99 221 68		84 74 55 99 221 68
Waukesha	4,844	1,035	21.4	5,879	55,597	13,111	23.6	68,708		120		120
Region	8,035	1,344	16.7	9,379	184,603	36,976	20.0	221,579	••	721		721

^aIncluded in 1985 land use inventory as part of urban residential land use.

Source: SEWRPC.

public facilities needed by the household within the immediate vicinity of its dwelling, such as a public elementary school, local park, and local shopping facilities; and ready access to the arterial street system as a means of access to those urban activities located outside the neighborhood unit. The internal street pattern of the planned residential development units should be designed not only to facilitate vehicular and pedestrian circulation within the unit but also to discourage penetration of the unit by through traffic. Through the use of the planned residential development unit, the recommended regional land use plan seeks to assure the long-term stability of residential areas. The need to develop an urban area as a number of recognizable cellular units, rather than as a formless mass, is partly a matter of aesthetics, partly a matter of convenience in living and traveling within the urban area, partly a matter of efficiency in organizing and supplying public facilities and services, and partly a matter of bringing the size of the area in which an individual lives into a

	Commercial Land Use ^a									
	Existi	ng 1985	Planned		Total	Total 2010				
	-	Percent	1985-2010		-	Percent				
County	County Acres of To	of Total	Acres	Percent	Acres	of Total				
Kenosha	615	7.1	227	36.9	842	8.4				
Milwaukee	3,454	39.6	261	7.6	3,715	37.0				
Ozaukee	470	5.4	77	16.4	547	5.4				
Racine	906	10.4	123	13.6	1,029	10.3				
Walworth	776	8.9	47	6.1	823	8.2				
Washington	547	6.3	66	12.1	613	6.1				
Waukesha	1,946	22.3	519	26.7	2,465	24.6				
Region	8,714	100.0	1,320	15.1	10,034	100.0				

EXISTING AND PROPOSED COMMERCIAL LAND USE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

^aExcludes related off-street parking areas.

Source: SEWRPC.

scale within which the individual can feel at home and take an active part in community affairs. The need to develop an urban area as a number of cellular units is also a matter of facilitating good design. The proper relationship of individual land subdivisions to external features of areawide concern, to existing and proposed land uses, and to other subdivisions can best be achieved within the framework of the planned residential development unit.

While this section has been concerned primarily with new residential development, the importance of conserving and enhancing existing residential areas within the Region cannot be overemphasized. Attainment of a centralized regional settlement pattern as proposed in the recommended land use plan depends on the conservation and renewal of existing residential areas. The importance of such conservation and renewal is evident in that, of the approximately 222,000 acres of urban residential land envisioned by the year 2010, 83 percent, or 185,000 acres, already existed in 1985.

To the extent practicable, efforts directed at the conservation and renewal of existing residential areas should be undertaken on a neighborhood basis and should preserve those cultural features which provide for neighborhood identity within the larger urban complex. Redevelopment and renewal efforts should maximize opportunities for the provision of living environments that are unique to the city, such as "downtown" housing and housing on or near urban waterfronts.

Commercial Development

The recommended land use plan proposes the development of approximately 1,300 acres of new commercial land within the Region, excluding related off-street parking, over the plan design period, increasing the total stock of commercial land in the Region to about 10,000 acres by the year 2010 (see Table 129). This increase would meet the area requirements of the anticipated increases in retail and service employment and the demands associated with growth and redistribution of the population within the Region. The new commercial lands would be distributed so as to make the operation of business and the provision of goods and services to the people of the Region both efficient and convenient. This is proposed to be accomplished through the development of planned, integrated commercial centers properly located with respect to the existing and proposed transportation system and residential areas, through the discouragement of strip commercial development along major streets and highways, through the encouragement of the provision of adequate off-street parking and loading facilities, and through the efficient provision of adequate utility services. The plan allocates land both for major commercial centers and local commercial use, as described below.

<u>Major Commercial Centers</u>: Under the adopted year 2000 regional land use plan, the Commission recommended the development and maintenance of a system of properly located regional commercial centers primarily intended to accommodate retail sales activity and, to a somewhat lesser extent, service activity. The planned sites under the year 2000 plan consisted of the central business districts of the larger cities in the Region, planned shopping centers, and major strip shopping districts. The year 2000 plan envisioned that, in most cases, the centers would be "anchored" by at least two full-line department stores and would encompass numerous other retail stores.

Since the preparation of the adopted year 2000 land use plan, significant changes in the nature of commercial development have occurred both nationally and within the Region. There has been an increase in commercial development in mixed use settings, with a growing number of commercial centers accommodating not only retail activities but a range of service and office uses as well. Large shopping areas, including manufacturers' outlet centers, have been developed without traditional full-line department stores as anchors. In addition, office parks, office complexes accommodating employment in a wide range of industries, have emerged as an entirely new form of development.

As part of the current regional land use plan reevaluation and revision, the concept of major commercial center has been broadened to take into account office center development as well as retail and service uses (see Chapter IX). Under the revised regional land use development objectives and standards, two types of major commercial centers, namely, major retail centers and major office centers, have been defined. To qualify as a major retail center, a site must accommodate at least 2,000 retail jobs. To qualify as a major office center, a site must accommodate at least 3,500 office and service related jobs. Classification of commercial areas in this manner is useful for areawide systems level land use planning insofar as it provides an indication of the scale of development and the predominant type of activity. It is important to recognize, however, that many sites accommodate a mixture of retail, service, and office uses. Indeed, as noted below, several major commercial sites in the Region meet both the retail and office center employment criteria.

The major commercial centers proposed under the recommended year 2010 regional land use plan are identified on Map 58 and in Table 130. The U.S. Public Land Survey quarter sections which approximate these centers are shown in Appendix E. As shown on Map 58, there were 14 major commercial centers in the Region in 1985. Seven of these existing sites have been identified as major retail centers: the Bay Shore, Capitol Court, Northridge, Southridge, and Southgate-Point Loomis shopping centers and the West Allis shopping area along STH 100, all in Milwaukee County; and the Regency Mall shopping center in Racine County. Four existing sites have been identified as major office centers, including the central business districts of the Cities of Kenosha, Racine, Waukesha, and West Bend. Three existing sites have been identified as both major office and major retail centers, including the City of Milwaukee central business district; the Mayfair commercial area in Milwaukee County; and the Bluemound Road commercial area, consisting of the Brookfield Square shopping center and other retail and office development along Bluemound Road in eastern Waukesha County.

The 14 existing major commercial centers encompassed a total of almost 1,100 acres of commercial land uses, excluding off-street parking, and accommodated about 120,700 retail and service jobs, or about 30 percent of all retail and service employment in the Region in 1985 (see Tables 131 and 132). The recommended land use plan proposes to retain all 14 existing sites as major commercial centers through the year 2010, and furthermore, proposes the expansion of certain of these centers. It is anticipated that by the year 2010, the 14 major centers would encompass more than 300 additional acres of commercial land and accommodate an additional 56,900 retail and service jobs.

In addition to providing land area for the expansion and improvement of the 14 existing major commercial centers, the plan proposes to add five new major commercial centers, including one retail center and four office centers. The proposed retail center is the the shopping area located near the intersection of IH 94 and STH 50 in Kenosha County, development of which was underway by 1985. The proposed office centers include Park Place in northwestern Milwaukee County, development of which was underway by 1985; strip office development along IH 43 in the City of Mequon, which was also under development by 1985; a new research park to be located near the Milwaukee County Institutions grounds in the City of Wauwatosa; and a new office center located near the intersection of IH 94 and CTH J in the Town of Pewaukee. Under the plan, retail and service employment at these sites would increase from 3.300 in 1985 to 21.700 in the year 2010. Commercial land use at these sites, excluding off-street parking, would increase from under 100 acres in 1985 to about 300 acres in 2010.

By the year 2010, the 19 major commercial centers proposed under the recommended land use plan would accommodate a total of 199,300 retail and service jobs, or 38 percent of all retail and service employment within the Region. These centers would encompass about 1,700 acres of commercial land, or 17 percent of all commercial land in the Region.

It should be noted that the central business districts of the largest freestanding communities in the Region, Kenosha, Racine, Waukesha, and West Bend, are included in the plan as major commercial centers because of their importance as centers of government as well as private office and service centers. For these centers, the total municipal, county, and state government employment in combination with private service employment warrants designation as major office centers. These older urban areas may be expected to continue to rank as major centers, however, only with continued urban conservation and renewal efforts.

Local Commercial Development: Under the recommended plan, almost 800 additional acres of land would be developed as neighborhood and community commercial areas between 1985 and 2010. By the year 2010, land devoted to neighborhood and community commercial use would total 8,300 acres, representing about 83 percent of all commercial land in the Region. This land would accommodate a total of 330,100 retail and service jobs, or 62 percent of all retail and service jobs in the Region in the year 2010.

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The recommended year 2010 regional land use plan envisions a total of 19 major commercial centers to serve the needs of the Region through the plan design year, including eight major retail centers, eight major office centers, and three major combined retail and office centers. Fourteen of these centers existed in 1985 and would be retained through the year 2010. Five new centers would be developed by the year 2010, including a major retail center located along IH 94 in Kenosha County and four new office centers located in the Cities of Mequon, Milwaukee, and Wauwatosa and the Town of Pewaukee. It is envisioned that by the year 2010 the 19 planned major commercial centers would accommodate a total of about 199,000 retail and service jobs, or about 38 percent of all such jobs in the Region. *Source: SEWRPC.*

Industrial Development

The recommended land use plan proposes to add by the year 2010 about 5,200 acres of industrial land in the Region, increasing the total stock of such land to almost 17,300 acres by the plan design year (see Table 133). This increase would meet the land requirements of the anticipated increases in, and redistribution of, manufacturing and wholesaling activity within the Region and would be so distributed as to protect and enhance the continued efficient operation of

SELECTED CHARACTERISTICS OF PLANNED MAJOR COMMERCIAL CENTERS IN THE REGION: 2010 RECOMMENDED LAND USE PLAN

		-	Commerc	ial Land Use ii	n Acres	Тс	tal Employme	nt
Major	Cente	er Type	Evicting	Planned	Total	Evicting	Planned	Total
Commercial Center	Retail	Office	1985	1985-2010	2010	1985	1985-2010	2010
Existing								
Kenosha CBD		x	40	5	45	4,600	700	5,300
Bay Shore	х		43	5	48	4,000	800	4,800
Capitol Court	X		25	0	25	3,400	500	3,900
Mayfair	X	Х	82	2	84	13,200	200	13,400
Milwaukee CBD	Х	X	160	7	167	82,500	30,600	113,100
Northridge	Х		61	13	74	6,100	1,300	7,400
Southgate-Point Loomis	X		41	0	41	3,400	500	3,900
Southridge	X		64	10	74	4,900	700	5,600
West Allis	X		95	.0	95	4,900	600	5,500
Racine CBD		X	51	6	57	4,700	800	5,500
Regency Mall	X		46	47	93	4,400	2,000	6,400
West Bend		Χ.	71	11	82	5,100	700	5,800
Bluemound Road	X	Х	257	230	487	17,500	19,200	36,700
Waukesha CBD		x	49	1	50	5,600	200	5,800
Subtotal			1,085	337	1,422	164,300	58,800	223,100
Proposed								
Kenosha West	X	• •	21	57	78	600	2,800	3,400
Park Place		Х	13	45	58	200	4,500	4,700
Milwaukee County								
Research Park		Х	0	44	44	10,700	4,700	15,400
Mequon		X	48	37	85	1,800	3,400	5,200
Pewaukee		X	6	38	44	300	3,400	3,700
Subtotal			88	221	309	13,600	18,800	32,400
Total			1,173	558	1,731	177,900	77,600	255,500

NOTES: To qualify as a major retail center, a site must accommodate at least 2,000 retail jobs. To qualify as a major office center, a site must accommodate at least 3,500 office and service-related jobs.

The total 1985 employment of 177,900 at the above sites includes 124,000 commercial jobs and 53,900 other jobs. The total year 2010 employment of 255,500 includes 199,300 commercial jobs and 56,200 other jobs. Commercial jobs include the retail; service; and finance, insurance, and real estate employment categories; and self-employed.

Land use and employment data are based upon aggregations of data for U. S. Public Land Survey quarter sections which approximate the major commercial centers. The specific quarter sections included in each planned major commercial center are shown in Appendix E. There is some "overlap" between certain planned major commercial and planned major industrial centers as approximated by quarter section, owing to the the mixture of land uses. For the overlapping quarter sections, all employment other than industrial related has been reported in this table.

Source: SEWRPC.

these important components of the economic base of the Region. This is proposed to be accomplished through the development of planned industrial centers properly located with respect to the existing and proposed transportation systems, through the protection and enhancement of existing industrial areas, and through the efficient provision of adequate utility services. The plan provides adequate sites for industrial development which meet the full

	Commercial Land Use ^a								
	Existi	ng 1985	Pla Incr 1985	ement 5-2010	Total	2010			
Type of Commercial Area	Acres	Percent of Total	Acres	Percent	Acres	Percent of Total			
Recommended Major Center Existing Major Center to Be Retained Proposed New Major Center	1,085 88	12.5 1.0	337 221	31.1 251.1	1,422 309	14.2 3.1			
Subtotal	1,173	13.5	558	47.6	1,731	17.3			
Recommended Local and Other	7,541	86.5	762	10.1	8,303	82.7			
Total	8,714	100.0	1,320	15.1	10,034	100.0			

EXISTING AND PROPOSED COMMERCIAL LAND USE BY TYPE OF COMMERCIAL AREA: 1985 AND 2010 RECOMMENDED LAND USE PLAN

^aExcludes related off-street parking areas.

Source: SEWRPC.

Table 132

EXISTING AND PROPOSED COMMERCIAL EMPLOYMENT BY TYPE OF COMMERCIAL AREA: 1985 AND 2010 RECOMMENDED LAND USE PLAN

		c	ommercial E	Employmen	ment ^a						
	Existing 1985		Planned Increment 1985-2010		Total 2010						
Type of Commercial Area	Number	Percent of Total	Number	Percent	Number	Percent of Total					
Recommended Major Center Existing Major Center to Be Retained Proposed New Major Center	120,700 3,300	30.0 0.8	56,900 18,400	47.1 557.6	177,600 21,700	33.5 4.1					
Subtotal	124,000	30.8	75,300	60.7	199,300	37.6					
Recommended Local and Other	278,200	69.2	51,900	18.7	330,100	62.4					
Total	402,200	100.0	127,200	31.6	529,400	100.0					

^aIncludes employment in the retail; service; and finance, insurance, and real estate employment categories; and selfemployed.

Source: SEWRPC.

		<u> </u>	Industrial	Land Use ^a			
	Existin	ng 1985	Planned Increment Tot		Total	al 2010	
County	Acres	Percent of Total	Percent 1985-2010 of Total Acres Percent		Acres	Percent of Total	
Kenosha Milwaukee	917 5,375	7.6 44.5	567 1,211	61.8 22.5	1,484 6,586	8.6 38.1	
Ozaukee	577 1,416	4.8 11.7	388 564	67.2 39.8	965 1,980	5.6 11.5	
Walworth Washington Waukasha	678 690 2.427	5.6 5.7	494 777 1 185	72.9 112.6 48.8	1,172 1,467 3,612	6.8 8.5	
Region	12,080	100.0	5,186	42.9	17,266	100.0	

EXISTING AND PROPOSED INDUSTRIAL LAND USE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

^aExcludes related off-street parking areas.

Source: SEWRPC.

array of criteria for such development, including ready accessibility to high-speed, all-weather arterial highway facilities; soils suitable for industrial development; adequate power and water supply; sanitary sewer service and stormwater drainage; reasonable access to airport and railway facilities, as appropriate; and ready access to labor supply.

Major Industrial Centers: Like the adopted year 2000 regional land use plan, the year 2010 land use plan recommends the development and maintenance of a system of properly located regional industrial centers. Major industrial centers are identified as concentrations of industrial land having industry-related employment of at least 3,500 jobs. The proposed major industrial centers range in character from older industrial complexes in central city areas, which have traditionally emphasized heavy manufacturing activity, to planned industrial parks in outlying areas of the Region. It should be noted that both nationally and within the Region, new industrial centers are increasingly characterized by a mix of uses, a mix which may include service operations, research facilities, and office facilities in addition to manufacturing and wholesaling uses. The developing industrial centers recommended under the year 2010 land

use plan may thus be expected to accommodate an increasing diversity of industrial and industrial-related uses.

The major industrial centers recommended under the year 2010 regional land use plan are identified on Map 59 and in Table 134. The generalized locations of these centers by U.S. Public Land Survey quarter sections are shown in Appendix E. As shown on Map 59, there were 22 major industrial centers in the Region in 1985. These 22 centers encompassed a total of about 5,700 acres of industrial land, excluding off-street parking, and accommodated about 167,700 industrial jobs, or 58 percent of all industrial employment in the Region in 1985 (see Tables 135 and 136). The recommended plan proposes to retain all 22 existing sites as major industrial centers through the year 2010 and, in addition, proposes the expansion of certain of these existing centers. It is anticipated that by the year 2010, the 22 existing major centers would encompass an additional 1,800 acres of industrial land and accommodate an additional 29,400 industrial jobs.

The plan recommendation to retain all of the existing major industrial centers has particular significance for those centers located in the

central areas of Milwaukee County as well as in the central areas of the Cities of Kenosha and Racine. Employment levels at certain of these older industrial centers have decreased substantially during the past two decades as a result of the general decline in heavy manufacturing activity and the overall decentralization of industrial activity within the Region. Despite past declines, the recommended plan proposes that these older industrial areas be retained as major industrial centers, with long-term employment levels at least approximating 1985 levels at most centers. These sites have ready access to regional transportation systems, are well served by existing public utility systems, and, importantly, are accessible to large segments of the regional labor force. Given current trend of decentralization of industrial activity, however, the maintenance of these central city industrial areas will require effective industrial retention and expansion efforts.

In addition to the maintenance and enhancement of the 22 existing major industrial centers, the plan proposes to add three new major industrial centers by the year 2010. The three proposed centers would be located in or near the Cities of Burlington and Hartford and the Village of Pleasant Prairie. Under the plan, it is anticipated that industrial employment at these sites would increase from 3,800 jobs in 1985 to 15,000 by the year 2010. Industrial land use at these three sites would increase from 200 acres in 1985 to 1,000 acres in 2010.

By the year 2010, the 25 major industrial centers proposed under the recommended land use plan would accommodate a total of 212,100 industrial jobs, or 58 percent of all industrial employment in the Region. These centers would encompass about 8,500 acres of industrial land, or about 49 percent of all industrial land in the Region.

As noted above, with full implementation of the industrial land development recommendations of the year 2010 land use plan, there would be a total of 25 major industrial centers in the Region, three more than were envisioned under the adopted year 2000 land use plan. The recommended year 2010 plan includes all the major industrial centers called for under the year 2000 plan, although the recommended location of the proposed industrial site in the Village of Pleasant Prairie has been adjusted under the year 2010 plan; the new location is just south

Map 59 MAJOR INDUSTRIAL CENTERS IN THE

REGION: 2010 RECOMMENDED LAND USE PLAN

LEGEND EXISTING INDUSTRIAL CENTER 1985 TO BE RETAINED WEST BEND PROPOSED NORTH HARTFORD MILWAUKEE GRANVILLE MIL WALKEE GLENDALE NORTH -MILWAUKEE PEWAUKEE WEST WAUKESHA WPS! MENOMONEE WEST NORTH MILWAUKEE-WES WAUKESHA MILWAUKEE SOUTH SOUTH WEST MILWAUKEE CUDAHY SOUTH MILWAUKEE der . RACINE EAST BURLINGTON KENOSHA PLEASANT PRAIRIE

The recommended year 2010 regional land use plan envisions a total of 25 major industrial centers to serve the needs of the Region through the plan design year. Twenty-two of these centers existed in 1985 and would be retained through the year 2010. Three new centers are proposed, including centers located in or near the Cities of Burlington and Hartford and the Village of Pleasant Prairie. It is envisioned that by the year 2010, the 25 planned major industrial centers would accommodate about 212,000 industrial jobs, or about 58 percent of all industrial jobs in the Region.

Source: SEWRPC.

and west of the originally proposed location. The three sites included under the year 2010 plan but not under the year 2000 plan include the Pewaukee and Waukesha North industrial areas, which were developed subsequent to the preparation of the year 2000 plan, and the proposed new Hartford industrial center.

Local Industrial Development: Under the recommended plan, about 2,600 additional acres of land would be developed at smaller, communitylevel industrial areas. By the year 2010, land

SELECTED CHARACTERISTICS OF PLANNED MAJOR INDUSTRIAL CENTERS IN THE REGION: 2010 RECOMMENDED LAND USE PLAN

	Industrial Land Use in Acres			Total Employment			
		Planned			Planned		
Major	Existing	Increment	Total	Existing	Increment	Total	
Industrial Center	1985	1985-2010	2010	1985	1985-2010	2010	
Existing							
Kenosha	219	-20	199	8.600	-2.500	6.100	
Cudahy-South Milwaukee	240	21	261	10,200	500	10,700	
Milwaukee-Glendale	308	32	340	12,900	1,200	14,100	
Milwaukee-Granville	530	417	947	12,700	6,600	19,300	
Milwaukee-Menomonee Valley East	357	-9	348	18,400	3,200	21,600	
Milwaukee-Menomonee Valley West	125	0	125	8,600	400	9,000	
Milwaukee-Near North	111	0	111	9,300	300	9,600	
Milwaukee-Near South	319	20	339	13,000	600	13,600	
Milwaukee-North	349	0	349	17,500	400	17,900	
Milwaukee-South	96	10	106	6,200	500	6,700	
Oak Creek	281	318	599	9,300	5,000	14,300	
West Allis-East	211	2	213	8,200	1,900	10,100	
West Allis-West	136	80	216	9,100	1,500	10,600	
West Milwaukee	355	4	359	8,900	-1,300	7,600	
Mt. Pleasant	216	144	360	5,200	2,000	7,200	
Racine-East	332	14	346	12,300	1,400	13,700	
West Bend-North	118	116	234	4,600	1,700	6,300	
Butler	596	114	710	25,500	1,500	27,000	
New Berlin	309	39	348	11,200	500	11,700	
Pewaukee	136	279	415	4,900	5,500	10,400	
Waukesha-North	103	107	210	6,300	2,700	9,000	
Waukesha-South	225	135	360	7,000	2,400	9,400	
Subtotal	5,672	1,823	7,495	229,900	36,000	265,900	
Proposed							
Pleasant Prairie	0	425	425	300	6,100	6,400	
Burlington	169	119	288	4,600	1,700	6,300	
Hartford	39	245	284	1,400	3,500	4,900	
Subtotal	208	789	997	6,300	11,300	17,600	
Total	5,880	2,612	8,492	236,200	47,300	283,500	

NOTES: To qualify as a major industrial center, a site must accommodate at least 3,500 industrial jobs.

The total 1985 employment of 236,200 at the above sites includes 171,500 industrial jobs and 64,700 other jobs. The total year 2010 employment of 283,500 includes 212,100 industrial jobs and 71,400 other jobs.

Land use and employment data are based upon aggregations of data for U. S. Public Land Survey quarter sections which approximate the major industrial centers. The specific quarter sections included in each planned major industrial center are shown in Appendix E. There is some "overlap" between certain planned major industrial and planned major commercial centers as approximated by quarter section, owing to the mixture of land uses. For the overlapping quarter sections, only the industrial related employment has been reported in this table.

EXISTING AND PROPOSED INDUSTRIAL LAND USE BY TYPE OF INDUSTRIAL AREA: 1985 AND 2010 RECOMMENDED LAND USE PLAN

	Industrial Land Use ^a							
	Existing 1985		Planned Increment 1985-2010		Total 2010			
Type of Industrial Area	Acres	Percent of Total	Acres	Percent	Acres	Percent of Total		
Recommended Major Center								
Existing Major Center to Be Retained	5,672	47.0	1,823	32.1	7,495	43.4		
Proposed New Major Center	208	1.7	789	379.3	997	5.8		
Subtotal	5,880	48.7	2,612	44.4	8,492	49.2		
Recommended Local and Other	6,200	51.3	2,574	41.5	8,774	50.8		
Total	12,080	100.0	5,186	42.9	17,266	100.0		

^aExcludes related off-street parking areas.

Source: SEWRPC.

Table 136

EXISTING AND PROPOSED INDUSTRIAL EMPLOYMENT DISTRIBUTION BY TYPE OF INDUSTRIAL AREA: 1985 AND 2010 RECOMMENDED LAND USE PLAN

		Industrial Employment ^a						
	Existing 1985		Planned Increment 1985-2010		Total 2010			
Type of Industrial Area	Number	Percent of Total	Number	Percent	Number	Percent of Total		
Recommended Major Center Existing Major Center to Be Retained Proposed New Major Center	167,700 3,800	58.2 1.3	29,400 11,200	17.5 294.7	197,100 15,000	54.1 4.1		
Subtotal	171,500	59.5	40,600	23.7	212,100	58.2		
Recommended Local and Other	116,700	40.5	35,900	30.8	152,600	41.8		
Total	288,200	100.0	76,500	26.5	364,700	100.0		

^aIncludes manufacturing and wholesaling industry employment.

Source: SEWRPC.

devoted to community-level industrial use would total 8,800 acres, representing 51 percent of all industrial land in the Region. This land would accommodate a total of 152,600 industrial jobs, or 42 percent of all industrial jobs in the Region.

Governmental and Institutional Land Use

As indicated in Table 137, the recommended land use plan proposes to add by the year 2010 about 1,000 acres of new governmental and institutional land to the existing stock of such

County	Governmental and Institutional Land Use							
	Existing 1985		Planned Increment		Total 2010			
	Acres	Percent of Total	Acres	1985-2010 Acres Percent		Percent of Total		
Kenosha	1,314	7.6	155	11.8	1,469	8.0		
Milwaukee	7,154	41.5	172	2.4	7,326	40.1		
Ozaukee	1,024	6.0	88	8.6	1,112	6.1		
Racine	1,813	10.5	96	5.3	1,909	10.4		
Walworth	1,259	7.3	75	6.0	1,334	7.3		
Washington	1,087	6.3	102	9.4	1,189	6.5		
Waukesha	3,589	20.8	354	9.9	3,943	21.6		
Region	17,240	100.0	1,042	6.0	18,282	100.0		

EXISTING AND PROPOSED GOVERNMENTAL AND INSTITUTIONAL LAND USE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

Source: SEWRPC.

land within the Region, resulting in a total of about 18,300 acres of governmental and institutional land by the plan design year. The additional governmental and institutional lands proposed under the plan would consist of neighborhood and community uses such as new schools, churches, hospitals, and nursing homes; public facilities including police and fire stations; and city, village, and town halls. Major existing governmental and institutional centers to be retained under the plan, including county seats and state and federal office buildings, medical complexes, universities, technical schools, major libraries, and major cultural centers, are shown on Map 60.² No new major governmental or institutional centers are envisioned, and additional development of existing major centers would be limited to that necessary to meet the needs of the growing population.

Transportation, Communication, and Utility Land Use

As indicated in Table 138, the recommended land use plan proposes to add approximately 14,600 acres of new transportation, communication, and utility land to the existing stock of such land within the Region. A total of about 134,800 acres of land would be devoted to transportation, communication, and utility uses by the year 2010, an increase of about 12 percent over the 1985 level. Most of the additional land would be required for rights-of-way for new or improved arterial, collector, and minor streets needed to serve new urban development or to provide adequate transportation service to existing urban development. Some of the additional land would consist of land required for planned airport expansions, as recommended in the regional airport system plan. Minor amounts of land would also be required for the planned expansion of existing, or construction of new, public sanitary sewage treatment facilities, as recommended in the regional water quality management plan. The recommended plan envisions only two new major utility centers in the Region through the plan design year: a new public sewage treatment plant serving the Village of Wales and a new peak-load electric

²With respect to major educational centers, Map 60 shows only four-year universities and public technical colleges. It should be noted that there are numerous other public and private post-secondary educational institutions in the Region.

power generation plant in the Town of Paris.³ The major transportation and utility centers envisioned under the recommended year 2010 regional land use plan, including public sewage treatment plants, major electric power generation plants, major airports, major bus and railway passenger stations, and the Milwaukee seaport, are shown on Map 61.

Open Space-Recreational Land Use

As indicated in Table 139, under the recommended land use plan, about 4,100 acres of land would be added to the existing stock of recreational land use in the Region. This represents an increase of about 16 percent over the 1985 acreage. It should be noted that the data in Table 139 pertain to "intensive use" areas, that is, land actually developed or anticipated to be developed, as outdoor recreation facility areas. It should also be noted that the additional recreational land indicated in Table 139 represents only the increase in land devoted to public recreational use. The additional recreational areas called for under the plan are based in part on neighborhood development standards, which seek to provide adequate neighborhood park land in developing areas. The recreational land use recommendations of the regional land use plan also reflect specific park site acquisition

³The adopted regional water quality management plan proposed the development of a public sanitary sewerage system to serve the Village of North Prairie by the year 2000. The plan envisioned that sewage would be treated at a new plant serving the Village. A detailed sewerage facilities plan, documented in <u>Village of North Prairie Wastewater Facility Plan</u>, Phase One, 1986; and <u>Village of North Prairie Wastewater Facility Plan</u>, Phase Two, 1989, has since concluded that the least costly alternative for sewage treatment in the Village of North Prairie is the continued reliance on onsite sewage disposal systems.

It may be expected that the approach recommended in the facilities plan will be reflected in the removal from the regional plan of the proposal for a public sanitary sewerage system in the Village of North Prairie. In anticipation of this, the year 2010 regional land use plan does not reflect public sanitary sewer service for the Village. Map 60

MAJOR GOVERNMENTAL AND INSTITUTIONAL CENTERS IN THE REGION 2010 RECOMMENDED LAND USE PLAN

LEGEND EXISTING GOVERNMENTAL OR INSTITUTIONAL CENTER 1985 TO BE RETAINED an de . MORAINE PARK MORAINE F TECHNICAL COLLEGE WASHINGTON COUNTY WEST BEND COURTHOUSE 1 OZAUKEF COUNTY 1 CEDARBURG LIBRARY 14 MILWAUKEE AREA MEQUON -UNIVERSITY OF MILWAUKEE AREA WISCONSIN-MILWAUKEE Contention of the second MEDICAL CENTER MILWAUKEE ART CENTER, MECCA, BRADLEY CENTER, MILWAUKEE WALKESHA COUNTY TECHNICAL COLLEGE REGIONAL STATE OFFICES AND MUSEUM AND CENTER \$ WAUKESHA COUNTY PERFORMING COURTHOUSE ARTS CENTER. WAUKESHA LIBRAR MILWAUKEE AREA FEDERAL AND COLLEGE STATE OFFICES AND MILWAUKEE MARQUETTE WEST ALLIS-UNIVERSITY COUNTY MILWAUKEE LIBRARY COURTHOUSE MILWAUKEE AREA TECHNICAL COLLEGE-OAK CREEK UNIVERSITY OF WISCONSIN WHITEWATER RACINE COUNTY COURTHOUSE GATEWAY TECHNICAL WALWORTH COUNTY COLLEGE -COURTHOUSE UNIVERSITY OF WISCONSIN-GATEWAY TECHNICAL COLLEGE. GATEWAY TECHNICAL . WALWORTH COUNT COLLEGE PARKSIDE -KENOSHA COUNT LAKE GENEVA * KENOSHA 3.81 KENOSHA LIBRARY LIBRARY COUNTY VISCONSIN

The map above shows the locations of the major governmental and institutional centers, including county seats, major state and federal office buildings, major medical complexes, universities, technical colleges, major public libraries, and major cultural centers, envisioned under the recommended regional land use plan through the plan design year 2010. No new major governmental or institutional centers are envisioned. Additional development at the existing major centers would be limited to that necessary to meet the needs of the growing population. *Source: SEWRPC*.

and development proposals set forth in the county park and open space plans recently prepared by the Commission for each of the seven counties in the Region.⁴

⁴The park and open space plans of the seven counties are documented in SEWRPC Community Assistance Planning Report No. 131, <u>A</u> <u>Park and Open Space Plan for Kenosha County;</u> SEWRPC Community Assistance Planning Report No. 132, <u>A Park and Open Space Plan for</u> (Footnote 4 continued on page 331)

		Transporta	tion, Communio	cation, and Utilit	y Land Use	Use					
	Existing	g 1985	Planned Increment 1985-2010		Total	2010					
		Percent			_	Percent					
County	Acres	of Total	Acres	Percent	Acres	of Total					
Kenosha	9,912	8.2	2,200	22.2	12,112	9.0					
Milwaukee	36,337	30.2	2,288	6.3	38,625	28.6					
Ozaukee	8,637	7.2	1,205	14.0	9,842	7.3					
Racine	12,973	10.8	1,523	11.7	14,496	10.8					
Walworth	14,603	12.1	1,085	7.4	15,688	11.6					
Washington	12,828	10.7	1,539	12.0	14,367	10.7					
Waukesha	24,989	20.8	4,720	18.9	29,709	22.0					
Region	120,279	100.0	14,560	12.1	134,839	100.0					

EXISTING AND PROPOSED TRANSPORTATION, COMMUNICATION, AND UTILITY LAND USE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

Source: SEWRPC.

The year 2010 regional land use plan proposes a system of 31 major parks of regional size and significance to serve the needs of the Region through the year 2010. Such parks have an area of at least 250 acres and provide opportunities for a variety of resource-oriented outdoor recreational activities. Twenty-nine of the 31 sites were recommended as major park sites under the year 2000 regional land use plan. Of the 29 previously recommended sites, only two, Sugar Creek in Walworth County and Paradise Valley in Washington County, have yet to be publicly acquired.

The year 2010 plan recognizes the development of two major parks not identified in the year 2000 plan, namely, Mitchell Park, an approxi-

(Footnote 4 continued from page 330)

Milwaukee County; SEWRPC Community Assistance Planning Report No. 133, <u>A Park and</u> <u>Open Space Plan for Ozaukee County; SEWRPC</u> Community Assistance Planning Report No. 134, <u>A Park and Open Space Plan for Racine</u> <u>County; SEWRPC Community Assistance Planning Report No. 135, <u>A Park and Open Space</u> <u>Plan for Walworth County; SEWRPC Community Assistance Planning Report No. 136, <u>A</u> <u>Park and Open Space Plan for Washington</u> <u>County; and SEWRPC Community Assistance</u> Planning Report No. 137, <u>A Park and Open</u> <u>Space Plan for Waukesha County.</u></u></u> mately 800-acre site located in the City and Town of Brookfield and an approximately 400-acre unnamed site surrounding a major lake recently created from an abandoned quarry in the Village of Pleasant Prairie. Facility development at these sites as envisioned in local site plans would qualify both sites as major parks. The development of Mitchell park would provide additional opportunities for participation in resource-oriented outdoor recreation activities in the eastern portion of Waukesha County, where substantial population growth is anticipated under the recommended land use plan. Development of the proposed site in the Village of Pleasant Prairie would improve the accessibility of many residents of the southeastern portion of Kenosha County to a major regional park site.

The recommended major park sites, along with existing major special-use outdoor recreation sites in the Region, are listed in Table 140 and shown on Map 62.

Open Space—Environmental Corridors

The most important elements of the natural resource base of the Region, including the best remaining woodlands, wetlands, prairies, wildlife habitat, surface water and associated shorelands and floodlands, and historic, scenic, and scientific sites, have been found to occur combined in linear patterns throughout the Region. These linear patterns of prime natural resource

MAJOR TRANSPORTATION AND UTILITY CENTERS IN THE REGION: 2010 RECOMMENDED LAND USE PLAN



The major transportation and utility centers envisioned under the recommended year 2010 regional land use plan are shown on this map. They include public sewage treatment plants, major electric power generation plants, major airports, major bus and railway passenger stations, and the Milwaukee seaport. The plan envisions the development of only two new major utility centers in the Region through the plan design year, a new public sewage treatment plan serving the Village of Wales and a new peak-load electric power generation plant in the Town of Paris. The plan envisions the expansion of certain of the existing major utility and transportation centers in accordance with the adopted regional water quality management and regional airport system plans. *Source: SEWRPC.*

concentrations have been termed primary environmental corridors and are described in more detail in Chapter V of this report. The preservation and protection of these environmental corridors in accordance with regional development objectives is considered essential to the maintenance of a wholesome environment within the Region and preservation of the unique cultural and natural heritage of the Region, as well as of its natural beauty.

MAJOR OUTDOOR RECREATION CENTERS IN THE REGION: 2010 RECOMMENDED LAND USE PLAN



The map above shows the major park sites and major special use outdoor recreation sites envisioned under the recommended regional land use plan. The plan proposes a total of 31 major parks to meet the needs of the Region through the year 2010. Twenty four of the sites for these parks were publicly owned and developed in 1985, while three sites had been publicly acquired for park purposes in 1985 but not yet developed. The plan envisions four new major parks at sites in the City and Town of Brookfield, in the Village of Pleasant Prairie, at the long-recommended Paradise Valley site in Washington County, and at the Sugar Creek site in Walworth County. *Source: SEWRPC.*

In 1985, primary environmental corridor lands in the Region encompassed about 299,600 acres, or 17 percent of the total area of the Region. These corridors are generally located along major stream valleys, along the Lake Michigan shoreline, around major inland lakes, and in the Kettle Moraine area of the Region. The recommended year 2010 regional land use plan, like the adopted year 2000 plan, proposes the preservation of the existing primary environmental

			Recreation	al Land Use ^a							
	Existing 1985		Planned Increment		Total 2010						
County	Acres	Percent of Total	Acres	Percent	Acres	Percent of Total					
Kenosha	2,749	10.8	415	15.1	3,164	10.7					
Milwaukee	7,206	28.2	932	12.9	8,138	27.4					
Ozaukee	1,809	7.1	272	15.0	2,081	7.0					
Racine	2,391	9.4	390	16.3	2,781	9.4					
Walworth	3,541	13.8	258	7.3	3,799	12.8					
Washington	1,874	7.3	605	32.3	2,479	8.4					
Waukesha	5,994	23.4	1,217	20.3	7,211	24.3					
Region	25,564	100.0	4,089	16.0	29,653	100.0					

EXISTING AND PROPOSED RECREATIONAL LAND USE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

^aIncludes only that land intensively used for recreational purposes.

^bIncludes only that increment which is for public recreational use.

Source: SEWRPC.

corridor lands in essentially natural, open uses. Under the plan, development within these corridors would be limited to that needed to accommodate required transportation and utility facilities, compatible outdoor recreational facilities, and, on a limited basis, rural-density residential use.

In addition to the preservation of existing primary environmental corridor lands the land use plan envisions that certain adjacent floodland areas that are currently in agricultural or other open use would be restored to a wetland condition, thereby becoming part of the environmental corridor network. These lands, which together encompass about 3,600 acres, have been recommended for county or state acquisition for open space preservation purposes under the aforementioned county park and open space plans.

The proposed environmental corridor network recommended under the year 2010 regional land use plan, including the existing corridors and the proposed additional areas, is shown on Map 57. The planned environmental corridors encompass 303,200 acres, or just under 18 percent of the total area of the Region (see Table 141).

Open Space—Agricultural and Other Open Land Use

There were approximately 1,333,400 acres, or 2,083 square miles, of open land within the Region in 1985, including almost 932,000 acres of agricultural land and almost 401,500 acres of other open lands. These rural land uses serve at least two important functions in the Region. As a land use, they provide open areas that serve to lend form and shape to urban development. provide invaluable opportunities for passive recreation, and serve to preserve, protect, and enhance certain elements of the natural resource base. As an economic activity, these lands provide employment opportunities and an important source of income in the regional economy and provide the urban areas of the Region with certain necessary agricultural, forest, and mineral products. In an urbanizing area such as southeastern Wisconsin, it may be expected that

SELECTED CHARACTERISTICS OF MAJOR PUBLIC OUTDOOR RECREATION CENTERS IN THE REGION: 2010 RECOMMENDED LAND USE PLAN

	Land Use Area in Acres							
		Gross Area ^a		· · · ·	Net Area ^b			
Major Public Outdoor Recreation Center	Existing 1985	Planned Increment 1985-2010	Total 2010	Existing 1985	Planned Increment 1985-2010	Total 2010		
Parks								
Existing		_						
Brighton Dale	360	0	360	186	0	186		
Petritying Springs	358	0	358	187	0	187		
	258	100	358	24	28	52		
	365	0	365	268	0	268		
	327	0	327	305	0	305		
Lake Michigan North	295	0	295	1/3	60	173		
Lake Michigan-South	9/1	0	415 941	192	120	255		
	312	0	312	323	120	226		
Oakwood	278	0	278	220	0	220		
Whitnall	640	ő	640	315	0	315		
Harrington Beach	636	6	642	17	64	81		
Hawthorne Hills	285	õ	285	210	0	210		
Mee-Kwon	239	õ	239 ^c	165	5	170		
Cliffside	223	315	538	69	79	148		
Johnson	357	0	357	250	0	250		
Big Foot Beach	272	57	329	69	Ő	69		
Whitewater Lake	250	0	250	86	0 · · ·	86		
Pike Lake	678	58	736	28	32	60		
Menomonee	397	0	397	159	26	185		
Minooka	297	Õ	297	105	0	105		
Mukwonago	222	0	222 ^C	141	Ō	141		
Naga-Waukee	416	157	573	222	59	281		
Ottawa Lake	220	0	220 ^c	95	0	95		
Subtotal	8,941	693	9,634	4,057	476	4,533		
Existing—Site Acquired But Not Developed								
Bender	308	127	435	0	159	159		
Ela	239	0	239 ^c	0	40	40		
Monches	194	248	442	0	32	32		
Subtotal	741	375	1,116	0	231	231		
Proposed—New Site								
Pleasant Prairie	0	370	370	0	120	120		
Sugar Creek	0	305	305	0	138	138		
Paradise Valley	0	450	450	0	89	89		
Mitchell	0	813	813	0	100	100		
Subtotal	0	1,938	1,938	0	447	447		
Subtotal Parks	9,682	3,006	12,688	4,057	1,154	5,211		
		L	and Use Ar	ea in Acres				
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		Gross Area ^a		Net Area ^b				
Major Public Outdoor Recreation Center	Existing 1985	Planned Increment 1985-2010	Total 2010	Existing 1985	Planned Increment 1985-2010	Total 2010		
Special-Use Sites Existing				4. 4.				
Bong Recreation Area	4.515	460	4,975	138	26	164		
Maier Festival Park	51	0	51	51	0	51		
Milwaukee County Stadium	102	l o	102	26	0	26		
Milwaukee County Zoo	170	Ó	170	84	9	93		
Mitchell Conservatory	61	0	61	53	0	53		
State Fair Park	214	0	214	159	0	159		
Old World Wisconsin	450	Ó	450	77	4	81		
Subtotal Special-Use Sites	5,563	460	6,023	588	39	627		
Total	15,245	3,466	18,711	4,645	1,193	5,838		

^aIncludes entire site area.

^bIncludes only that land intensively used for recreation purposes.

^cSite abuts existing parkway lands or lands recommended for parkway acquisition. The area of the site proper in conjunction with the associated parkway lands exceeds 250 acres.

Source: SEWRPC.

Table 141

PRIMARY ENVIRONMENTAL CORRIDOR AREA IN THE REGION BY COUNTY: 2010 RECOMMENDED LAND USE PLAN

County	Acres ^a	Percent of Total
Kenosha	28,900	9.5
Milwaukee	10,300	3.4
Ozaukee	19,900	6.6
Racine	23,800	7.8
Walworth	65,500	21.6
Washington	60,900	20.1
Waukesha	93,900	31.0
Region	303,200	100.0

^aThe planned environmental corridor area includes 299,600 acres within the existing primary environmental corridor configuration in the Region in 1985 and 3,600 additional acres within adjacent floodland areas that are currently in agricultural and other open use that are recommended to be restored to a wetland condition by the plan design year. Source: SEWRPC. the demands of a growing urban population will require some conversion of rural land to urban land use. Under the recommended land use plan, the expansion of urban activities into presently rural areas would result in the conversion of about 54,800 acres, or about 86 square miles of rural land, to urban land uses between 1985 and 2010 (see Table 127). This would be equivalent to an average annual rate of conversion of about 2,200 acres, or about 3.4 square miles. In addition to conversion of rural land to urban land uses, about 700 additional acres of rural land would be developed for rural estate use.

As indicated in Table 142, much of the urban expansion proposed under the recommended land use plan, 40,500 acres, would take place on lands now in agricultural use and would result in a decrease of about 4 percent in the existing stock of agricultural land within the Region. Among the seven counties, the greatest decline in agricultural land, 13,400 acres, would occur in Waukesha County. For the other six counties, the required conversion of agricultural land

		Agricultural Land Use											
		Tot	al			Prime							
	Existing	Planned li 1985-	Planned Increment 1985-2010		Existing	Planned li 1985-	Total						
County	(acres)	Acres	Percent	(acres)	(acres)	Acres	Percent	(acres)					
Kenosha	106,165	-6,057	-5.7	100,108	76,471	-2,042	-2.7	74,429					
Ozaukee	92,650	-4,072	-4.3	88,634	73,335	-1,425	-1.9	71,910					
Racine	137,196 249,705	-4,576 -3,510	-3.3 -1.4	132,620	98,626 208,941	-526 -917	-0.5 -0.4	98,100 208,024					
Washington Waukesha	168,134 156,978	-4,900 -13,356	-2.9 -8.5	163,234 143,622	108,256 103,078	-1,463 -3,886	-1.4 -3.8	106,793 99,192					
Region	931,956	-40,487	-4.3	891,469	670,058	-10,259	-1.5	659,799					

EXISTING AND PROPOSED AGRICULTURAL LAND USE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

Source: SEWRPC.

would range from about 3,500 acres in Walworth County to about 6,100 acres in Kenosha County.

While substantial amounts of general agricultural lands would be converted to urban use under the recommended land use plan in order to accommodate the spatial requirements of expanding urban areas, the recommended plan seeks to minimize the location of new urban development on prime agricultural lands. Prime agricultural lands, as the name implies, are areas particularly well suited for highly productive agricultural use. The recommended year 2010 land use plan proposes to convert to urban use only those prime agricultural lands which were already committed to urban development because of their proximity to existing and expanding concentrations of urban uses and prior commitment of heavy capital investments and utility extensions. The recommended year 2010 land use plan thus reaffirms the basic recommendations of the adopted year 2000 land use plan concerning the preservation of the remaining prime agricultural lands in the Region.

It should be noted that after the preparation of the year 2000 regional land use plan, farmland preservation planning programs were undertaken in Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties. Those plans resulted in a refinement of the criteria used to identify prime farming areas. The most significant change in this regard pertains to the

size of the farming areas to be included. In identifying prime agricultural lands, the counties included blocks of agricultural land considerably smaller in size than those initially identified under the regional land use plan, areas as small as 100 acres. As might be expected, the total prime agricultural land area identified under the county plans is significantly greater, by about 50 percent, than that included in the generalized Commission delineation set forth in the year 2000 land use plan. The delineation of prime agricultural land under the recommended year 2010 land use plan reflects the refinements provided under the county farmland preservation plans. These prime agricultural lands are shown on Map 63.⁵ The identified prime agricultural lands encompassed about 670,100 acres, or about 72 percent of all land in agricultural use in the Region in 1985.

⁵The prime agricultural lands in Washington County shown on Map 63 vary somewhat from those identified in the Washington County farmland preservation plan. Map 63 includes all the areas identified as prime agricultural land in the Washington County farmland preservation plan and those areas identified as secondary farmland in the Washington County plan which meet the criteria for prime agricultural land under the regional land use plan.



ILLINOIS

The recommended year 2010 regional land use plan proposes the preservation in agricultural use of most of the remaining prime agricultural lands in Region. Under the plan, conversion of prime agricultural lands to urban use would be limited to those areas which were already committed to urban development because of their proximity to existing and expanding concentrations of urban uses and the prior commitment of heavy capital investments and utility extensions. Under the plan about 10,300 acres, or just over 1 percent of the remaining prime agricultural lands in the Region, would be converted to urban use by the year 2010.

	Open Land Use ^a										
	Existin	g 1985	Planned I	ncrement	Total 2010						
County	Acres	Percent of Total	Acres	Percent	Acres	Percent of Total					
Kenosha	40,038	10.0	-1,560	-3.9	38,478	10.0					
Milwaukee	17,267	4.3	-2,081	-12.1	15,186	3.9					
Ozaukee	30,514	7.6	-1,204	-3.9	29,310	7.6					
Racine	40,377	10.0	-1,704	-4.2	38,673	10.0					
Walworth	81,169	20.2	-1,385	-1.7	79,784	20.6					
Washington	77,029	19.2	-1,827	-2.4	75,202	19.5					
Waukesha	115,068	28.7	-5,246	-4.6	109,822	28.4					
Region	401,462	100.0	-15,007	-3.7	386,455	100.0					

EXISTING AND PROPOSED OPEN LAND USES IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

^aIncludes woodlands, water, wetlands, unused rural land, landfill sites, and quarries.

Source: SEWRPC.

As indicated in Table 142, the recommended land use plan proposes to convert only about 10,300 acres, or just over 1 percent, of the remaining prime agricultural lands to urban use by the year 2010.

In addition to agricultural lands, there were 401,500 acres of other open land uses in the Region in 1985, including woodlands, water, wetlands, quarries, landfill sites, and unused rural land. As indicated in Table 143, under the recommended land use plan, a total of 15,000 acres, or about 4 percent of the remaining acreage of these other open lands, would be converted to urban use by the year 2010. Most of this acreage, it should be noted, would consist of unused rural lands, that is, rural open space lands, other than wetlands and woodlands, which are not used for agricultural purposes or any other specific use.

Distribution of Population and Households

Under the intermediate regional growth scenario, used as a basis for the preparation of the recommended year 2010 land use plan, the population of the Region would increase by about 168,000 persons, or about 10 percent, from about 1,743,000 persons in 1985 to about 1,911,000 persons by the year 2010. Under the recommended plan, the year 2010 regional population would be distributed among the seven counties as shown in Table 144. As indicated in Table 144, under the plan Waukesha County would gain about 78,000 persons, while Kenosha, Ozaukee, Racine, Walworth, and Washington Counties would experience population increases ranging from 12,000 to 27,000 persons. Milwaukee County would experience some population loss.

Under the recommended plan, the number of households in the Region would increase from about 644,000 in 1985 to about 774,000 by the year 2010, an overall increase of about 130,000 households, or about 20 percent. In relative terms, the number of households in the Region would continue to grow at a faster rate than the regional population. This is due in part to the anticipated continued change in household types and related changes in household sizes, including, importantly, a continued increase in the relative proportion of single-parent and singleperson households. As indicated in Table 145, under the plan, each county would experience a significant increase in the number of households between 1985 and 2010, ranging from just under 8,000 additional households in Ozaukee County to about 39,000 additional households in Waukesha County. Despite a slight decrease in population anticipated under the recommended plan

EXISTING AND PROPOSED POPULATION DISTRIBUTION IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

	1985 Pop	oulation	Planned I 1985	ncrement -2010	2010 Population		
County	Number	Percent of Total	Number	Percent	Number	Percent of Total	
Kenosha	121,100	7.0	26,800	22.1	147,900	7.7	
Milwaukee	939,600	53.9	-5,600	-0.6	934,000	48.9	
Ozaukee	67,500	3.9	12,300	18.2	79,800	4.2	
Racine	169,200	9.7	16,800	9.9	186,000	9.7	
Walworth	72,200	4.1	15,100	20.9	87,300	4.6	
Washington	87,200	5.0	24,500	28.1	111,700	5.8	
Waukesha	285,900	16.4	78,400	27.4	364,300	19.1	
Region	1,742,700	100.0	168,300	9.7	1,911,000	100.0	

Source: SEWRPC.

Table 145

EXISTING AND PROPOSED HOUSEHOLD DISTRIBUTION IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

	1985 Ho	useholds	Planned I 1985	ncrement -2010	2010 Households		
County	Number	Percent of Total	Number	Percent	Number	Percent of Total	
Kenosha	44,200	6.9	14,900	33.7	59,100	7.6	
Milwaukee	368,200	57.2	32,800	8.9	401,000	51.8	
Ozaukee	22,900	3.5	7,600	33.2	30,500	3.9	
Racine	61,200	9.5	12,700	20.8	73,900	9.6	
Walworth	25,600	4.0	10,000	39.1	35,600	4.6	
Washington	28,500	4.4	13,100	46.0	41,600	5.4	
Waukesha	93,200	14.5	39,400	42.3	132,600	17.1	
Region	643,800	100.0	130,500	20.3	774,300	100.0	

Source: SEWRPC.

as noted above, Milwaukee County would gain almost 33,000 households between 1985 and 2010, second only to Waukesha County.

As further indicated in Tables 144 and 145, under the recommended land use plan, the relative distribution of population and households among the seven counties would change somewhat, with Milwaukee and Waukesha Counties most affected. As previously indicated, under the recommended plan, the decentralization of population and households relative to Milwaukee County would be moderated, but not ended altogether. Under the plan, Milwaukee County's share of the regional population would decrease from 54 percent to 49 percent, while Waukesha County's share would increase from just over 16 percent to about 19 percent. Similarly, Milwaukee County's share of all households in the Region would decrease from

	Increment: 1985-2010										
	Urban L	and Area	Popul	ation	House	holds					
County	Acres	Percent	Number	Percent	Number	Percent					
Kenosha	7,533	23.6	26,800	22.1	14,900	33.7					
Milwaukee	6,079	5.2	-5,600	-0.6	32,800	8.9					
Ozaukee	5,165	18.9	12,300	18.2	7,600	33.2					
Racine	6,181	15.3	16,800	9.9	12,700	20.8					
Walworth	4,674	12.3	15,100	20.9	10,000	39.1					
Washington	6,659	19.8	24,500	28.1	13,100	46.0					
Waukesha	18,482	18.6	78,400	27.4	39,400	42.3					
Region	54,773	14.1	168,300	9.7	130,500	20.3					

INCREMENTAL URBAN LAND USE, POPULATION, AND HOUSEHOLDS IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

Source: SEWRPC.

57 percent to 52 percent, while Waukesha County's share would increase from just over 14 percent to about 17 percent. For each of the other five counties in the Region, the relative share of the total population and households in the Region would change by 1 percent or less.

The recommended land use plan proposes an amount of urban land use sufficient to accommodate the anticipated future population and household levels in the Region through the plan design year. The increase in the amount of urban land proposed under the recommended land use plan is compared to the anticipated increases in population and households in Table 146. In total the recommended land use plan would accommodate the approximately 10 percent increase in population and 20 percent increase in households with an approximately 14 percent increase in urban land uses.

As indicated in Table 147 and Figure 79, the population density in the developed area of the Region under the recommended land use plan would continue to decline over the planning period from the 1985 level of about 3,600 persons per square mile to a year 2010 level of about 2,800 persons per square mile, continuing the trend toward declining densities evident in the Region since 1920. The rate of decline would be reduced, however, by implementation of the plan proposals to develop the majority of new residential land within the Region at medium, instead of low, densities and to provide such development with public sanitary sewer and water supply services. In this respect the recommended year 2010 land use plan is similar to the adopted year 2000 land use plan. If this regional development objective is achieved, residential development densities will become higher than those prevalent in the more recent past. Lot sizes per dwelling unit would be reduced somewhat in order to facilitate the more economical provision of sanitary sewer and water supply service while meeting urban land market demands.

Employment Distribution

Under the intermediate regional growth scenario, the total number of jobs in the Region would increase from about 872,000 in 1985 to about 1,095,000 in the year 2010, an increase of about 223,000 acres, or 26 percent. The distribution of jobs among the seven counties in the Region anticipated under the recommended land use plan is presented in Table 148. Under the recommended plan, each county would gain a significant number of jobs between 1985 and 2010. Milwaukee County would experience the largest increase of about 85,000 jobs; employment in Waukesha County would increase by almost 59,000 jobs. Among the other five counties in the Region, planned employment increases would range from just under 12,000 jobs in Ozaukee County to almost 21,000 jobs in Kenosha County.

	Urban Rural Population Population			Area (square miles)		Persons per Square Mile			
Year	Number	Percent of Total	Number	Percent of Total	Total Population	Urban	Total	Urban	Total
1850	28,623	25.2	84,766	74.8	113,389	4	2,689	7,156	42.2
1880	139,509	50.3	137,610	49.7	277,119	18	2,689	7,751	103.1
1900	354,082	70.6	147,726	29.4	501,808	37	2,689	9,570	186.6
1920	635,376	81.1	148,305	18.9	783,681	56	2,689	11,346	291.4
1940	991,535	92.9	76,164	7.1	1,067,699	90	2,689	11,017	397.1
1950	1,179,084	95.0	61,534	5.0	1,240,618	146	2,689	8,076	461.4
1963	1,634,200	97.6	40,100	2.4	1,674,300	282	2,689	5,795	622.6
1970	1,728,946	98.5	27,137	1.5	1,756,083	338	2,689	5,115	653.1
1980	1,749,238	99.1	15,558	0.9	1,764,796	444	2,689	3,940	656.3
1985	1,730,500	99.3	12,200	0.7	1,742,700	477	2,689	3,628	648.1
2010	1,902,800	99.6	8,200	0.4	1,911,000	668	2,689	2,849	710.7

POPULATION DENSITY IN THE REGION: SELECTED YEARS, 1850-1985, AND 2010 RECOMMENDED LAND USE PLAN

Source: U. S. Bureau of the Census and SEWRPC.

As indicated in Table 148, on a relative basis, employment would increase at a faster rate in outlying counties of the Region than in Milwaukee County. While the plan seeks to centralize, to the extent practicable, employment relative to Milwaukee County, Milwaukee County's share of the total regional employment would, nevertheless, continue to decline somewhat, from just over 60 percent in 1985 to about 56 percent in 2010. Conversely, Waukesha County's share of total regional employment would increase from about 16 percent to about 18 percent. For each of the other five counties, the share of total regional employment would change by less than 1 percent between 1985 and 2010.

Public Sanitary Sewer and Water Supply Service Under the recommended land use plan, all of the proposed new urban development within the Region would be served with public sanitary sewer and water supply facilities. In addition, public sanitary sewer and water supply service would be extended to certain existing urban areas lacking these facilities in 1985. Areas of the Region which would be served with public sanitary sewer and water supply facilities under the recommended land use plan are shown on Map 64. In 1985, about 320 square miles, or about 67 percent of the total developed urban area of the Region, and about 1.51 million persons, or almost 87 percent of the resident population of the Region, were served by public sanitary sewer facilities (see Table 149). About 263 square miles, or about 55 percent of the developed area of the Region, and about 1.39 million persons, or about 80 percent of the resident population of the Region, were served

Figure 79

URBAN POPULATION DENSITY IN THE REGION: ACTUAL 1850-1985 AND 2010 RECOMMENDED LAND USE PLAN





EXISTING AND PROPOSED EMPLOYMENT DISTRIBUTION IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

:	1985 Em	ployment	Planned I 1985-	ncrement 2010	2010 Employment		
County	Number	Percent of Total	Number	Percent	Number	Percent of Total	
Kenosha	42,500	4.9	20,500	48.2	63,000	5.7	
Milwaukee	527,300	60.5	85,400	16.2	612,700	56.0	
Ozaukee	26,900	3.1	11,800	43.9	38,700	3.5	
Racine	74,500	8.5	17,600	23.6	92,100	8.4	
Walworth	28,100	3.2	12,400	44.1	40,500	3.7	
Washington	31,300	3.6	16,600	53.0	47,900	4.4	
Waukesha	141,300	16.2	58,800	41.6	200,100	18.3	
Region	871,900	100.0	223,100	25.6	1,095,000	100.0	

Source: SEWRPC.

Table 149

EXISTING AND PROPOSED DEVELOPED AREA AND POPULATION SERVED BY PUBLIC SANITARY SEWER AND WATER SUPPLY SERVICE IN THE REGION: 1985 AND 2010 RECOMMENDED LAND USE PLAN

	Existing 19	Service 85	Planned Incre	Service ment	Total Service 2010		
Area and Population	Public Sanitary Sewer	Public Water Supply	Public Sanitary Sewer	Public Water Supply	Public Sanitary Sewer	Public Water Supply	
Developed Area ^a Total Square Miles Square Miles Served Percent of Total Served	476.5 319.8 ^b 67.1	476.5 262.9 ^c 55.2	191.3 250.5	191.3 309.8 	667.8 570.3 ^d 85.4	667.8 572.7 ^d 85.8	
Population Total Population Population Served Percent of Total Served	1,742,700 1,507,800 86.5	1,742,700 1,389,700 79.7	168,300 231,300	168,300 352,800	1,911,000 1,739,100 91.0	1,911,000 1,742,500 91.2	

NOTE: Public sanitary sewer and water supply service areas presented in this table do not include lands that are located adjacent to, but outside, the Region, including 1.1 square miles of land in the Jefferson County portion of the Whitewater urban service area, 0.4 square mile of land in the Jefferson County portion of the Oconomowoc urban service area, and 0.4 square mile of land in the Dodge County portion of the Hartford urban service area.

^aBased on historic urban growth analysis; see Table 67 in Chapter VI of this report.

^bDoes not include 57.1 square miles of land served with public sanitary sewer located outside the 1985 developed urban area.

^cDoes not include 30.1 square miles of land served with public water supply located outside the 1985 developed urban area.

^dDoes not include 4.9 square miles of land to be served with public sanitary sewer and water supply service located outside the planned 2010 developed urban area.

Source: SEWRPC.



The recommended regional land use plan proposes to serve essentially all new urban development within the Region with public sanitary sewer and public water supply service. About 570 square miles, or 85 percent of the developed urban area of the Region, and about 1.74 million persons, or 91 percent of the total regional population, would be served with public sanitary sewer and water supply facilities by the year 2010. As shown above, public water supply would be provided in several outlying communities for which public sanitary sewer service is not planned. 343 Source: SEWRPC.

EXISTING AND PROPOSED DEVELOPED AREA AND POPULATION SERVED BY PUBLIC SANITARY SEWER AND WATER SUPPLY SERVICE IN THE REGION BY COUNTY: 1985 AND 2010 RECOMMENDED LAND USE PLAN

[Existing 1985										Planned 20	10	
		Public Sewer Service Public Water Supply Service								Public Sewer and Water Supply Service ⁶				
	Developed	Dev Area	eloped Served ^b	Popul Ser	ation ved	Dev Area	Developed Population Area Served ^C Served		ation ved	Developed Developed Area Served ^d		Popul Serv	ation /ed	
County	(square miles)	Square Miles	Percent of County	Number	Percent of County	Square Miles	Percent of County	Number	Percent of County	(square miles)	Square Miles	Percent of County	Number	Percent of County
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	34.7 167.1 29.7 45.0 32.8 36.6 130.6	24.9 162.2 17.0 33.7 13.8 10.9 57.3	71.8 97.1 57.2 74.9 42.1 29.8 43.9	101,800 933,100 50,700 144,300 41,200 45,400 191,300	84.1 99.3 75.1 85.3 57.1 52.1 66.9	17.6 155.1 8.1 24.2 11.5 10.6 35.8	50.7 92.8 27.3 53.8 35.1 29.0 27.4	86,700 915,000 33,800 126,500 37,100 43,900 146,700	71.6 97.4 50.1 74.8 51.4 50.3 51.3	67.5 203.5 45.2 69.2 44.7 54.0 183.7	63.5 202.0 39.5 61.3 30.9 31.0 142.1	94.1 99.3 87.4 88.6 69.1 57.4 77.4	135,300 932,500 66,400 167,300 59,100 75,100 303,400	91.5 99.8 83.2 89.9 67.7 67.2 83.3
Region	476.5	319.8	67.1	1,507,800	86.5	262.9	55.2	1,389,700	79.7	667.8	570.3	85.4	1,739,100	91.0

NOTE: Public sanitary sewer and water supply service areas presented in this table do not include lands that are located adjacent to, but outside, the Region, including 1.1 square miles of land in the Jefferson County portion of the Whitewater urban service area, 0.4 square mile of land in the Jefferson County portion of the Oconomowoc urban service area, and 0.4 square mile of land in the Dodge County portion of the Hartford urban service area.

^aBased on historic urban growth analysis; see Table 67 in Chapter VI of this report.

^bDoes not include 57.1 square miles of land served with public sanitary sewer located outside the 1985 developed urban area.

^cDoes not include 30.1 square miles of land served with public water supply located outside the 1985 developed urban area.

^dDoes not include 4.9 square miles of land to be served with public sanitary sewer and water supply service located outside the planned 2010 developed urban area.

^eDoes not include an area of 2.4 square miles and a population of 3,400 persons in those communities which, in the year 2010, would have public water supply systems but not public sanitary sewer service.

Source: SEWRPC.

by public water supply facilities. Under the recommended plan, about 570 square miles, or about 85 percent of the developed urban area, and about 1.74 million persons, or about 91 percent of the total population, would be served by public sanitary sewer facilities and public water supply facilities by the plan design year. As indicated in Table 149, public water supply service would be provided in several small communities for which public sanitary sewer service is not planned.

The developed urban area and population levels which would be served by public sanitary sewer and water supply service under the recommended plan is summarized by county in Table 150. The proportion of developed area served by sanitary sewer and water supply service by the year 2010 would range from about 57 percent in Washington County to nearly 100 percent in Milwaukee County. The proportion of the resident population so served would range from a low of about 67 percent in Walworth and Washington Counties to a high of almost 100 percent in Milwaukee County.

The recommended year 2010 land use plan is similar to the adopted 2000 land use plan in the emphasis on the provision of public sanitary sewer and water supply service. The recommended year 2010 land use plan, like the adopted year 2000 plan, seeks to discourage the development of residential areas which depend on onsite sewage disposal systems and private wells and to encourage such development served by gravity-drainage centralized sanitary sewer facilities tributary to existing sewerage systems and by public water supply systems. Implementation of the recommended land use plan along with the sanitary sewerage systems recommendations of the adopted areawide water quality management plan should serve to reduce and control the amount of untreated and partially treated domestic and industrial wastes discharged into the streams, rivers, lakes, and groundwater reservoirs of the Region; to permit a better adjustment of waste treatment and disposal facilities to the assimilation capacities of the streams and rivers; and to assure a pure supply of water to all existing and potential users within the Region.

SUMMARY

This chapter has described the recommended land use plan for southeastern Wisconsin for the year 2010. That plan incorporates the basic concepts of the year 2000 regional land use plan and updates and extends that plan to a new design year. Like year 2000 land use plan, the new year 2010 plan recommends a relatively compact, centralized regional settlement pattern, with urban development occurring generally in concentric rings along the full periphery of, and outward from, existing urban centers. The new plan places heavy emphasis on the continued impact of the urban land market on determining the location, intensity, and character of future development. Like the previous plan, the new plan seeks to influence the operation of the urban land market in several important ways, in order to achieve a more healthful, attractive, and efficient settlement pattern. In this regard, the new plan recommends that new urban development occur primarily in those areas of the Region which are covered by soils suitable for such development; which are not subject to special hazards such as flooding and shoreline erosion; and which can be readily served by essential municipal facilities and services, including public sanitary sewerage, water supply, and mass transit systems. The plan recommends the preservation in essentially natural, open uses of the identified primary environmental corridors and the preservation in agricultural and related use of most of the remaining prime agricultural lands in the Region. While incorporating the basic concepts of the adopted year 2000 regional land use plan, the recommended year 2010 land use plan takes into account changes in land use that have taken place in the Region since the adoption of the year 2000 plan; the findings and recommendations of other local, county, and regional plans since completed; and forecasts of population and economic activity levels within the Region through the year 2010, as envisioned under the intermediategrowth scenario.

The recommended plan was designed to accommodate an increase of about 168,000 persons in the resident population, an increase of 130,000 in the number of households, and an increase of about 223,000 in total regional employment between 1985 and 2010. The plan proposes to accommodate the anticipated growth in population, households, and employment by converting about 54,800 acres of land from rural to urban uses. Under the plan, the population density of the developed urban area of the Region would decrease from about 3,600 persons per square mile in 1985 to about 2,800 persons per square mile in the year 2010.

The plan envisions a total of 19 major commercial centers and 25 major industrial centers in the Region by the plan design year, including five new commercial centers and three new industrial centers. The plan further envisions a total of 31 major park sites, only two of which remained to be publicly acquired by 1990. The plan envisions the preservation of all remaining primary environmental corridor lands. Urban land development under the plan would result in the loss of about 40,500 acres of agricultural land, including 10,300 acres of prime agricultural land. By the year 2010, about 85 percent of the developed urban area of the Region, and about 91 percent of the resident population of the Region, would be provided with public sanitary sewer and water supply service.

The scale of development anticipated under the year 2010 plan is substantially less than had been envisioned under the year 2000 plan. Any comparison of the plans must, however, recognize that the year 2000 plan had a 30-year design period, while the year 2010 plan has a 25-year design period. The year 2000 plan was designed to accommodate an increase of about 463,000 persons in the resident population, about 295,000 persons more than the year 2010 plan, and an increase of about 203,000 households, about 73,000 more than the year 2010 plan. The year 2000 plan envisioned an employment increase of about 267,000 jobs, about 44,000 more than the year 2010 plan. The year 2000 plan called for the conversion of about 72,500 acres of land from rural to urban use, about 17,700 acres more than is proposed under the year 2010 plan. Under the year 2000 plan, the population density of the developed urban area of the Region would have decreased from about 5,100 persons per square mile in 1970 to about 3,800 persons per square mile in 2000. This compares to a decrease in the urban population density from 3,600 persons per square mile in 1985 to 2,800 persons per square mile in the year 2010 under the new plan, as noted above.

The year 2000 plan envisioned 29 major park sites in the Region, two fewer than the year 2010 plan; 22 major industrial centers, three fewer than the year 2010 plan; and 16 commercial centers, also three fewer than the year 2000 plan. It should be noted that under the year 2000 plan, major commercial centers were intended primarily to accommodate retail sales activity, whereas under the year 2010 plan the concept of major commercial center was broadened to take into account office type development as well.

Like the year 2010 land use plan, the year 2000 plan called for the preservation of all primary environmental corridor lands. The year 2000 plan envisioned a loss of about 8,400 acres of prime agricultural lands, slightly less than the loss of 10,300 acres envisioned under the year 2010 plan. Under the year 2000 plan, about 92 percent of the developed urban area of the Region and about 93 percent of the resident population would be provided with public sanitary sewer and water supply service by the plan design year, compared to 85 percent of the resident population as envisioned under the year 2010 plan.

The continued growth and redistribution of population and economic activity within the Region, may be expected to generate demands for land and for improved public facilities and will press heavily on the limited natural resource base. The recommended land use plan described in this chapter seeks to provide for this anticipated regional growth and development in a manner which will not only permit the efficient provision of the necessary public facilities and services but which will meet, to the extend practicable, the eight specific regional land use development objectives formulated by the Commission. The extent to which the recommended land use plan would meet the agreed upon development objectives and associated standards is indicated in Table 151 and is discussed qualitatively below.

1. Implementation of the recommended land use plan would meet the social, physical, and economic needs of the future regional population by providing a balanced allocation of space to each of the various major land use categories. The plan allocates sufficient land to each of the major land use categories to satisfy the known and anticipated demand for each use, meeting both the demands of the urban land market and approved land use plan design standards.

- 2. The recommended land use plan seeks to achieve a compatible arrangement of land uses by providing a spatial distribution of major land uses which will avoid or minimize hazards and dangers to health, safety, and welfare and would, at the same time, maximize amenity and convenience in terms of accessibility to supporting land uses.
- 3. The recommended land use plan attempts to protect and enhance the natural resource base of the Region, particularly the soil, inland lakes and streams, wetlands, woodlands, prairies, and wildlife habitat areas, and to assist in maintaining an ecological balance between the activities of man and the natural environment which supports him. The plan allocates new urban and rural development only to those areas of the Region which are covered by soils well suited to such development. In particular, the plan seeks to avoid development requiring onsite sewage disposal systems in those areas of the Region covered by soils unsuited to the utilization of such systems, thereby avoiding the intensification of existing, and the creation of new, environmental problems. The plan seeks to protect the shoreline frontage of the lakes and the perennial streams of the Region from incompatible development; to protect the floodways and floodplains of perennial streams and watercourses of the Region from urban encroachment; to protect the remaining wetland areas from destruction through improper urban or rural development; and to protect the remaining native prairies in a natural condition. The plan proposes to maintain appropriate levels of woodland cover and to maintain the remaining high value resource areas of the Region in a wholesome state in order to assure suitable habitat for the maintenance of wildlife within the Region.
- 4. The implementation of the recommended land use plan would permit a more economical provision of public utility and municipal services to future urban development. The plan recognizes the interdependence between the land use pattern and the transportation and public utility systems which serve and sustain it. It seeks to

ABILITY OF THE RECOMMENDED REGIONAL LAND USE PLAN TO MEET THE LAND USE DEVELOPMENT STANDARDS

Development Objective and Supporting Standards	Recommended Regional Land Use Plan
Objective No. 1—Balanced Allocation of Land Use	
 Residential Land Allocation High-density urban—eight net acres per 100 dwelling units Medium-density urban—23 net acres per 100 dwelling units Low-density urban—83 net acres per 100 dwelling units Suburban density—167 net acres per 100 dwelling units Rural density—500 net acres per 100 dwelling units 	Met Met Met Met Met
 2. Park and Recreation Land Allocation a. Major—five gross acres per 1,000 persons b. Local—nine gross acres per 1,000 persons 	Met Met
 Industrial Land Allocation a. Major and other—seven net acres per 100 added employees 	Met
 4. Commercial Land Allocation a. Major retail and service—one net acre per 100 added employees b. Other retail and service—two net acres per 100 added employees c. Major and other office—one net acre per 100 added employees 5. Governmental and Institutional Land Allocation 	Met Met Met
a. Major and other—nine net acres per 1,000 persons	Met
 Objective No. 2—Compatible Arrangement of Land Uses Neighborhood Units for Urban High-, Medium-, and Low-Density Residential Development Suburban and Rural Residential Land Location Industrial Land Location Major Commercial Land Location 	Met Met Met Met
Objective No. 3—Protection, Wise Use, and Development of Natural Resource Base	
1. Soils a. Sewered urban development	Met Met Met
2. Inland Lakes and Streams, and Associated Floodlands	
Major inland lakes—50 acres or more a. 25 percent of shoreline in natural state b. 50 percent of shoreline in nonurban use c. 10 percent of shoreline in public use	Could be met Could be met Could be met
Minor inland lakes—under 50 acres d. 25 percent of shoreline in natural state or low-intensity public use	Could be met
Perennial streams e. 25 percent of shoreline in natural state	Could be met Could be met
Floodlands g. No new incompatible urban development	Met Met

Table 151 (continued)

Development Objective and Supporting Standards	Recommended Regional Land Use Plan
3 Wetlands	
a Protect wetlands five acres or larger and those with	
high-resource value	Met
b Maintain open space buffer areas around particularly important wetlands	
less than 50 acres and around all wetlands 50 acres or larger	Could be met
4. Woodlands	4
a. Preserve 10 percent of watershed in woodlands	Could be met
b. Preserve at least one woodland each of three forest types per county	Could be met
c. Maintain five acres per 1,000 persons for recreation use	Met
b. Prairies	Could be mot
a. Preserve all remaining prairies	Could be met
6 Wildlife	
a Ensure preservation of suitable babitat	Met
 b. Maintain wildlife population in balance with 	
holding capacity of the land	Could be met
Objective No. 4—Properly Relate Development to	
Transportation and Utility Systems	
1. Locate Urban Development so as to Maximize Use of	
Existing Transportation and Utility Systems	Met
2. Locate Urban Development where Transportation	N dist
System Can Provide Ready Access	Met
3. Locate Urban High-, Medium-, and Low-Density	
Residential Development where Readily Serviceable	
by Public Sanitary Sewerage Facilities	Met
4. Locate Urban High-, Medium-, and Low-Density	
Residential Development where Readily Serviceable	Mat
by Public Water Supply Facilities	wier
5. Locate Urban High- and Medium-Density Residential	Portiolly mot
Development where Readily Serviceable by Mass Transit	Fartiany met
b. Minimize Penetration by Major Transportation Routes of	Could be met
Residential Neighborhood Units	Could be met
7. Locate transportation terminal Facilities	Could be met
Real Filicipal Land Uses Served Ser	
a. Locate ansite evetage on suitable soils	Met
b. Use onsite systems only for selected types of development	Met
c Use alternative systems or holding tank only	
when a conventional system fails	Met
d Minimize development served by onsite sewage disposal	
systems in planned sewer service areas	Met
Objective No. 5—Conserve and Develop Healthy, Safe,	
Convenient, and Attractive Residential Areas	
1 Januar Haber High Madium and Law Devite Devite state	
1. Locate Orban High-, Medium-, and Low-Density Residential	Could be mot
Development in Physically Self-Contained Neighborhood Units	Could be met
2. Locate Appropriate Land Uses within Neighborhood Units	
Development Property to Environment	Mat
A Conserve Evicting Residential Areas on a Neighborhood	14105
Resis Maintaining Neighborhood Identity	Could be met

Table 151 (continued)

Development Objective and Supporting Standards	Recommended Regional Land Use Plan
Objective No. 6—Preserve, Develop, and Redevelop Variety of Industrial and Commercial Sites	
 Major Industrial Sites Major Retail Sites Major Office Sites Other Industrial Sites Other Commercial Sites 	Met Met Met Met Met
Objective No. 7Preserve and Provide Open Space	<u> </u>
 Major Park Spatial Location Local Park Spatial Location Local Park Spatial Location Preserve Unique Scientific, Cultural, Scenic, or Educational Sites 	Met Could be met Could be met
Objective No. 8—Preserve Land Areas for Agricultural Uses	
 Preserve Prime Agricultural Lands Preserve Other Agricultural Land Areas Surrounding High-Value Scientific, Educational, or Recreational Sites 	Met Could be met

Source: SEWRPC.

encourage urban development in those areas of the Region which can be readily provided with gravity drainage sanitary sewer service and public water supply. It seeks to maximize the use of existing transportation and public utility facilities and to require the provision of transportation and utility services only to those areas of the Region which should be allocated to urban use.

5. The recommended land use plan seeks to provide for the development and conservation of residential areas within a physical environment that is healthy, safe, convenient, and attractive. The plan would not only promote the efficient provision of community facilities and services to residential areas but would provide for the development of stable residential areas containing a wide range of housing types, designs, and costs and would provide a most desirable environment for family life. The plan proposes to allocate new lowmedium-, and high-density residential development to planned development units which would be properly serviced by public

sanitary sewerage and water supply facilities; would contain within the immediate vicinity of each dwelling unit the full complement of public facilities needed by the family in its daily activities, such as elementary school and church, local park, and convenient shopping facilities; and would provide ready access from residential areas to the regional transportation system. The plan further proposes that existing suburban-density residential areas be provided with partial urban services, including solid waste collection and police, fire, and rescue services, but not including walk-in elementary school or centralized sanitary sewer and water supply services.

6. The recommended land use plan also attempts to ensure the provision of a variety of suitable industrial and commercial sites within the Region in terms of both physical characteristics and location. The plan proposes to meet the needs of increased commercial and industrial activity within the Region, not only through the provision of new planned industrial and commercial centers, but also through the expansion and improvement of existing commercial and industrial areas and through the provision of adequate transportation and utility services to both new and existing concentrations of economic activities.

7. Implementation of the recommended land use plan would assure the preservation and provision of enough open space land within the Region to enhance the total quality of the regional environment, lend form and structure to urban development, and facilitate attainment of a balanced outdoor recreational program providing a full range of facilities for all age groups. The plan seeks to preserve and protect the primary environmental corridors of the Region, which contain the best remaining potential park and related open space sites; the best remaining woodlands, wetlands, prairies, and wildlife habitat areas; many of the scenic, historic, scientific, and

cultural sites; and most of the surface water resources of the Region. The preservation of these environmental corridors is essential to the preservation and wise use of the natural resource base; to the enrichment of the physical, intellectual, and spiritual development of the resident population; and to the maintenance of a sound ecological balance within the Region.

8. The recommended land use plan attempts to preserve the best remaining agricultural areas within the Region for agricultural and open space uses. The maintenance of agricultural areas within an urbanizing Region serves not only to provide agricultural products to the resident population but to contribute significantly to maintaining the ecological balance, to lend form and structure to urban development, and to provide important land reserve for presently unforeseen urban and rural development needs.

Chapter XI

PLANS FOR ALTERNATIVE FUTURES

INTRODUCTION

Long-range planning for the physical development of an urbanizing region such as southeastern Wisconsin is complicated by the increasing uncertainty regarding factors which affect regional growth and development. Now, perhaps more than ever, efforts to project future socioeconomic conditions are fraught with uncertainty. As indicated in Chapter VIII, to deal with that uncertainty the Commission has incorporated an "alternative futures" approach into its regional planning program. Under this approach, three alternative regional growth scenarios have been postulated. Two of these scenarios, the high-growth and the low-growth scenarios, are intended to represent upper and lower extremes of possible future regional growth and change, while the third is intended to represent an intermediate future between the two extremes. A set of population and employment projections has been developed for each of the three scenarios (see Chapter VIII).

As a practical matter, the preparation of a regional land use plan must be targeted toward a single set of population and employment projections. The new year 2010 regional land use plan presented in Chapter X of this report is based on the intermediate scenario of growth and change in the Region. The population and employment levels which the recommended year 2010 regional land use plan would accommodate are those anticipated under an intermediategrowth scenario presented in Chapter VIII, adjusted to reflect actual growth in population and employment in excess of forecast growth in certain areas of the Region, as indicated by new benchmark data, including the 1990 United States Census of Population and Housing. The new year 2010 land use plan, like the first- and second-generation land use plans, attempts to accommodate the anticipated increases in population and economic activity by promoting a more compact, centralized regional settlement pattern, moderating to the extent practicable the current trend toward decentralization of population, employment, and attendant urban development within the Region.

In view of the continuing uncertainty surrounding future social and economic conditions in the Region, it would be imprudent to dismiss the possibility of future growth and change in the Region occurring significantly at variance with that envisioned under the recommended plan. Accordingly, under the current regional land use planning effort, a determination was made to prepare "alternative futures" land use plans. differing from the recommended year 2010 land use plan in terms of the overall scale of development to be accommodated and the distribution of such development within the Region. The alternative futures land use plans are intended to supplement the recommended year 2010 land use plan, by indicating a range of possible future conditions with respect to the level and distribution of population and economic activity and attendant land use patterns in the Region, thereby broadening the framework within which planning and decision-making regarding development and redevelopment within the Region can be carried out. Within this framework, for example, proposals for major public facilities and utilities and major private developments may be evaluated to determine how well they would perform under a range of possible future conditions. Through such sensitivity analyses more "robust" plan elements which may be expected to remain viable under greatly varying conditions can be identified.

Four alternative futures land use plans for the year 2010 have been prepared. Three of these plans envision a decentralized regional settlement pattern. The "high-growth decentralized" plan was designed to accommodate the growth in population and economic activity that could be anticipated under a high-growth scenario. The "intermediate-growth decentralized" plan and the "low-growth decentralized" plan were designed to accommodate the population and economic activity levels anticipated under the intermediate- and low-growth scenarios, respectively. The fourth plan, the "high-growth centralized" plan, was designed to accommodate population and economic activity levels anticipated under the high-growth scenario, emphasizing a centralized development pattern for the Region. As noted above, the recommended land use plan, the "intermediate-growth centralized plan," was designed to accommodate the population and economic activity levels anticipated under the intermediate growth scenario while meeting regional development objectives and standards to the maximum extent practicable. Together, the four alternative futures plans are intended to conceptually bracket the recommended design year 2010 regional land use plan. While many variations of the four alternative futures plans considered are possible, it is believed that the four alternative futures plans. in conjunction with the recommended plan. provide a good representation of the range of possible future conditions with respect to the overall scale and distribution land use development in the Region through the year 2010.

This chapter presents the four year 2010 alternative futures land use plans, the high-growth decentralized plan, intermediate-growth decentralized plan, low-growth decentralized plan, and the high-growth centralized plan, for the Southeastern Wisconsin Region. Pertinent aspects of the recommended year 2010 regional land use plan are also presented in this chapter for reference and comparison.

DESIGN YEAR POPULATION AND ECONOMIC ACTIVITY LEVELS

Year 2010 population and employment levels anticipated under the high-growth, intermediategrowth, and low-growth scenarios were presented in Chapter VIII. As noted above, the alternative futures plans were designed to accommodate the population and employment levels envisioned under those respective scenarios. Thus, the high-growth decentralized and high-growth centralized land use plans would accommodate a year 2010 resident population of about 2,316,000 persons, an increase of about 573,000 persons, or 33 percent over the 1985 level of 1,743,000. The intermediate-growth decentralized plan would accommodate a year 2010 population of about 1,872,000 persons, an increase of about 129,000 persons, or 7 percent, over the 1985 level. The low-growth decentralized plan would accommodate a year 2010 population of about 1,517,000 persons, a decrease of about 226,000 persons, or 13 percent, from the 1985 level. In comparison, the recommended land use plan would accommodate a year 2010 population

of 1,911,000 persons, an increase of about 168,000 persons, or 10 percent, over 1985.

Like the populations levels, the employment levels that would be accommodated under the alternative futures plans vary significantly. The high-growth decentralized and high-growth centralized land use plans would accommodate a total of about 1,252,000 jobs in the Region in the year 2010, an increase of about 380,000 jobs, or 44 percent over the 1985 level of about 872,000. The intermediate-growth decentralized plan would accommodate a total of about 1,051,000 jobs, about 179,000 jobs, or about 21 percent, more than existed in 1985. The lowgrowth decentralized plan would accommodate about 871,000 jobs in the year 2010, nearly the same total as existed in the Region in 1985. The recommended land use plan would accommodate a total of 1,095,000 jobs in the year 2010, an increase of 223,000 jobs, or about 26 percent, over the 1985 level.

Planned Distribution of

Population and Economic Activity

As indicated in previous chapters of this report. there has been a marked decentralization of population, employment, and related land use development away from the older urban centers of the Region over the past several decades. Three of the alternative futures land use plans, the high-growth, intermediate-growth, and lowgrowth decentralized plans, assume a continuation of this trend toward decentralization of population, employment, and urban development away from older urban centers, in favor of outlying areas. Under these three plans, the relative share of the regional population and employment located within the older urban areas of the Region would decrease significantly. The decentralized distributions of population, employment, and attendant urban development assumed under these three plans stand in marked contrast to the more centralized distribution envisioned under the recommended year 2010 regional land use plan, which seeks to moderate, to the extent practicable, the trend of decentralization of population and economic activity within the Region.

The fourth alternative futures plan, the highgrowth centralized plan, like the recommended land use plan, was designed to accommodate a centralized distribution of population and economic activity in the Region. The high-growth centralized plan emphasizes the maintenance and enhancement of population and employment levels of the older, large metropolitan areas of the Region. Similar in concept to the recommended plan, the high-growth centralized plan differs from the recommended land use plan primarily in the greater population and employment levels which it would accommodate.

PLAN DESIGN

The methodology applied in the preparation of the alternative futures land use plans, like that of the recommended plan, was a design-oriented mapping activity concerned primarily with the spatial distribution of the various land uses in the Region needed to accommodate the anticipated population and economic activity levels. While the alternative futures plans differ from the recommended land use plan in the scale and distribution of population and economic activity. and, accordingly, in the amount of and location of new urban development, the alternative futures plans incorporate certain key normative aspects of the recommended plan. Specifically, the following design guidelines, used in the preparation of the recommended plan, were also used in the preparation of the alternative futures plans:

- 1. New urban development would emphasize medium densities and would, for the most part, be located in areas of the Region provided with centralized sanitary sewer and water supply services.
- 2. No new urban development would be allocated to the delineated primary environmental corridors, thereby preserving the best remaining elements of the natural resource base of the Region.
- 3. To the maximum extent practicable, no new urban development would be allocated to the delineated prime agricultural lands, thereby preserving highly productive lands for the continuing production of food and fiber.

The alternative futures plans, like the recommended plan, would preserve virtually all remaining primary environmental corridors in the Region. The alternative futures plans, like the recommended plan, also emphasize the provision of basic public utilities and services to new urban development and the preservation of prime agricultural lands; however, the alternative futures plans differ from one another, and from the recommended plan, in the extent to which these objectives can be met, owing to differences in the scale and distribution of development to be accommodated.

It is important to recognize that the "decentralization" of population and economic activity under the high-growth, intermediate-growth, and low-growth decentralized plans was accommodated within the framework of the aforementioned plan design guidelines. Each of these plans envision the decentralization of population and economic activity on a county basis, with Milwaukee County continuing to lose population and employment to Ozaukee, Walworth, Washington, and Waukesha Counties: and the decentralization of population and employment away from the Kenosha and Racine urbanized areas to outlying areas of Kenosha and Racine Counties. While thus emphasizing decentralization of population and economic activity on a county basis, each of these plans envisions that the new urban development occurring in the outlying counties and outlying areas of Kenosha and Racine Counties would be concentrated in and around existing urban centers of those counties and be provided with basic urban services and facilities from and by those centers. These plans thus represent controlled decentralization and do not represent uncontrolled urban sprawl.

PLAN DESCRIPTION

The land use patterns envisioned under the highgrowth decentralized, high-growth centralized, intermediate-growth decentralized, and lowgrowth decentralized alternative futures land use plans are shown on Maps 65, 66, 67, and 68, respectively. The future land use pattern proposed under the recommended year 2010 regional land use plan is shown on Map 57 in Chapter X. The balance of this chapter provides a comparative description of the alternative futures plans and the recommended year 2010 regional land use plan.

Land Use

Future changes in the major categories of land use in the Region anticipated under the alternative futures plans and the recommended year 2010 land use plan are presented in Table 152. Of particular importance in a comparison of the plans is the anticipated change in urban land

HIGH-GROWTH DECENTRALIZED PLAN FOR THE SOUTHEASTERN WISCONSIN REGION: 2010



The high-growth decentralized plan envisions a relatively high rate of growth in population and economic activity in the Region and a continuation of the trend observed over the past several decades toward decentralization of population, employment, and attendant urban development away from the older urban cities of the Region. The plan envisions the conversion of about 110,000 acres, or 172 square miles, of land from rural to urban use in order to accommodate the growth and redistribution of population and economic activity in the Region through the year 2010. Under this plan, the resident population of the Region would increase substantially, to about 2,316,000 persons by the year 2010, an increase of about 573,000 persons, or 33 percent, over 1985. Employment within the Region would also increase substantially, to a level of about 1,252,000 jobs by the year 2010, an increase of 380,000 jobs, or 44 percent, over 1985. Under the plan much of the proposed new urban development would occur in outlying areas of the Region.

Source: SEWRPC.

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HIGH-GROWTH CENTRALIZED PLAN FOR THE SOUTHEASTERN WISCONSIN REGION: 2010



The high-growth centralized land use envisions a relatively high rate of growth in population and economic activity along with a moderation of the past trends toward decentralization of population and economic activity along with a moderation of the past trends toward decentralization of population and economic activity within the Region. Under this plan, about 86,000 acres, or 134 square miles, of land would be converted from rural to urban use between 1985 and the year 2010. Like the high-growth decentralized plan, this plan would accommodate an increase of about 573,000 persons, or 33 percent, in the resident population of the Region and an increase of 380,000, or 44 percent, in total employment. In contrast to the high-growth decentralized plan, however, this plan emphasizes the maintenance and enhancement of the population and employment levels of the older, large urban centers of the Region and would result in a more centralized distribution of population and economic activity in the Region.

INTERMEDIATE-GROWTH DECENTRALIZED PLAN FOR THE SOUTHEASTERN WISCONSIN REGION: 2010



The intermediate-growth decentralized plan envisions a moderate increase in population and economic activity within the Region along with a continuation of the trend toward the decentralization of population, employment, and attendant urban development away from the older urban cities in favor of outlying areas. The intermediate-growth decentralized plan envisions the conversion of 67,000 acres, or 105 square miles, of land from rural to urban use in the Region between 1985 and the year 2010. Under this plan, the resident population of the Region would increase by about 129,000 persons, or about 7 percent, to a level of 1,872,000 by the year 2010, while total employment would increase by 179,000 jobs, or about 21 percent, to a level of 1,051,000.

Source: SEWRPC. 356

LOW-GROWTH DECENTRALIZED PLAN FOR THE SOUTHEASTERN WISCONSIN REGION: 2010



The low-growth decentralized plan envisions a declining regional population and stagnating economic activity along with the continued decentralization of population and economic activity away from the older urban areas of the Region. The low-growth decentralized plan would accommodate a plan design year 2010 population of about 1,517,000 persons, a decrease of 226,000 persons, or about 13 percent, from the 1985 level, and total regional employment of 871,000 jobs, about the same as the 1985 level. Despite the anticipated decrease in population, the number of households would increase by about 32,000, or by about 5 percent, as household sizes continue to decrease. The plan envisions the conversion of about 33,000 acres, or 51 square miles, of land from rural to urban use to accommodate the continued redistribution of population and employment and the *Source: SEWNRPC*.

		_			-	_										
		Reco	mmende	d Plan	۱ Dec	.ow-Grow	th Plan	Inter Dec	mediate-G centralized	arowth Plan	H Dece	igh-Grow entralized	th Plan	H Cei	ligh-Grow ntralized F	th Plan
	Existing	Planı Incren 1985-:	ned nent 2010	Total 2010	Pland Increm 1985-:	ned nent 2010	Total	Plan Incre 1985-	ned ment 2010	Total	Plann Incren 1985-2	ned nent 2010	Total	Planı Incren 1985-2	ned nent 2010	Total
Land Use Category	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Urban Land Use																
Residential	184,603	36,976	20.0	221,579	19,170	10.4	203,773	43,927	23.8	228,530	72,269	39.1	256,872	56,960	30.9	241,563
Commercial	8,714	1,320	15.1	10,034	739	8.5	9,453	1,581	18.1	10,295	2,317	26.6	11,031	1,852	21.3	10,566
Industrial	12,080	5,186	42.9	17,266	4,005	33.2	16,085	6,650	55.0	18,730	9,586	79.4	21,666	9.041	74.8	21,121
Transportation,											-					
Communication.			ł				Į i				1. A.	ļ	ļ			
and Utilities ^a	120,279	14,560	12.1	134.839	8,994	7.5	129,273	16.947	14.1	137.226	27,736	23.1	148.015	22.377	18.6	142.656
Governmental and	-	-					-						-,			
Institutional	17,240	1,042	6.0	18,282	591	3.4	17,831	1,168	6.8	18,408	2.019	11.7	19,259	1.639	9.5	18,879
Recreational	25,564 ^b	4,089 ^C	16.0	29,653	3,783 ⁰	14.8	29,347	4.359 ^c	17.1	29,923	5.551 ^c	21.7	31,115	4.943 ^c	19.3	30,507
Unused Urban Land	19,215	-8,400	-43.7	10,815	-4,496	-23.4	14,719	-7,363	-38.3	11,852	-9,239	-48.1	9,976	-10,835	-56.4	8,380
				1								1				
Subtotal	387,695	54,773	14.1	442,468	32,786	8.5	420,481	67,269	17.4	454,964	110,239	28.4	497,934	85,977	22.2	473,672
Rural Land Use																
Residential	d	721		721	246		246	1.368		1.368	1.368		1.368	738		738
Agricultural	931.956	-40.487	-4.3	891.469	-24.763	-2.7	907,193	-52,123	-5.6	879.833	-90.242	-9.7	841 714	-67 863	-7.3	864.093
Other Open Lands ^e	401,462	-15.007	-3.7	386,455	-8.269	-2.1	393,193	-16.514	-4.1	384,948	-21.365	-5.3	380.097	-18.852	-4.7	382.610
	,				-,					00 .,= .0		0.0				
Subtotal	1,333,418	-54,773	-4.1	1,278,645	-32,786	-2.5	1,300,632	-67,269	-5.0	1,266,149	-110,239	-8.3	1,223,179	-85,977	-6.4	1,247,441
Total	1,721,113	0	0.0	1,721,113	0	0.0	1,721,113	0	0.0	1,721,113	0	0.0	1,721,113	0	0.0	1,721,113

EXISTING AND PROPOSED LAND USE IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

⁸Includes off-street parking areas.

^bIncludes net site area of public and nonpublic recreation sites.

^CIncludes only that net site area recommended for public recreation use.

^dIncluded in 1985 land use inventory as part of urban residential land use.

^eIncludes woodlands, water, wetlands, unused rural land, landfill sites, and quarries.

Source: SEWRPC.

Figure 80



EXISTING AND PROPOSED URBAN LAND USE IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

Source: SEWRPC.

uses. As indicated in Table 152, under the highgrowth decentralized plan, urban lands, consisting of residential, commercial, industrial, governmental and institutional, transportation, and recreational uses, plus unused urban lands, would increase by about 110,000 acres, or about 28 percent, from about 388,000 acres in 1985 to about 498,000 acres by the year 2010. Urban lands would increase by about 86,000 acres, or 22 percent, under the high-growth centralized plan; by about 67,000 acres, or about 17 percent, under the intermediate-growth decentralized plan; and by about 33,000 acres, or about 9 percent, under the low-growth decentralized plan. Under the recommended year 2010 land use plan, urban lands would increase by about 55,000 acres, or about 14 percent. The amounts of urban land envisioned under the alternative futures plans and the recommended plan are set forth by county on Figure 80 and in Table 153.

Major Centers

Because of the differences in the level and distribution of population and employment accommodated, the alternative futures plans differ from each other and the recommended year 2010 regional land use plan in terms of the number and location of planned major commercial and industrial centers. The major commercial and industrial center proposals of the alternative futures plans and also those of the recommended plan are described herein.

It should be noted that the proposals of the alternative futures plans with respect to the other major activity centers, that is, the major governmental and institutional, major transportation and utility, and major recreational centers, are the same as those of the recommended land use plan. The proposed major governmental and institutional, major transportation and

utility, and major recreational centers are shown on Maps 60, 61, and 62, respectively, in Chapter X of this report. It is believed that the number and distribution of such centers envisioned under the recommended plan would generally serve well under each of the alternative futures, although the required capacities of the facilities at these centers may be expected to differ somewhat. Detailed plan proposals for these centers, particularly, the transportation and utility centers and the recreational centers. in the context of a high-growth decentralized scenario, an intermediate-growth decentralized scenario, a low-growth decentralized scenario. and a high-growth centralized scenario can be formulated properly only through related functional planning programs.

Major Commercial Centers: As part of the regional land use plan reevaluation and revision, two types of major commercial centers, major retail centers and major office centers, have been identified. As indicated in Chapter IX. to qualify as a major retail center, a site must accommodate at least 2,000 retail jobs. To qualify as a major office center, a site must accommodate at least 3,500 office and servicerelated jobs. It should be understood that this classification is intended only to provide an indication of the scale of development and the predominant type of activity and that many sites accommodate a mixture of retail, service, and office uses. There were 14 major commercial centers in the Region in 1985, including seven retail centers, four office centers, and three centers identified as both retail and office centers (see Table 154). The major commercial centers envisioned under the alternative futures land use plans and the recommended year 2010 land use plan are shown on Map 69 and listed in Table 154.

The high-growth decentralized plan envisions a total of 24 major commercial centers in the Region in the year 2010. The plan envisions the retention of the 14 existing major centers and the addition of 10 new centers, including four retail centers and six office centers. As shown on Map 69, a number of the proposed new sites would be located in outlying areas of the Region.

The other high-growth plan, the high-growth centralized plan, envisions a total of 21 major commercial centers. That plan envisions the retention of the 14 existing major centers and the addition of seven new centers, including two retail centers and five office centers, by the year 2010.

1

The intermediate-growth decentralized plan envisions a total of 18 major commercial centers. The plan envisions the retention of 12 of the 14 existing major centers and the addition of six new centers, including one retail center and five office centers. Under the intermediate-growth decentralized plan, with the continued decrease in population and employment levels in the central portion of Milwaukee County, two existing major centers, the Capitol Court shopping center and the Southgate-Point Loomis shopping center, would decline in importance and no longer function as major commercial centers. They would, however, continue to serve as community-level commercial centers.

The low-growth decentralized plan envisions a total of 16 major commercial centers. This plan envisions the retention of 12 of the 14 existing major centers and the addition of four new centers, including one retail center and three office centers. This plan, like the intermediategrowth decentralized plan, envisions that two existing centers in Milwaukee County, Capitol Court and Southgate-Point Loomis, would decline in importance and cease functioning as major commercial centers.

As described in Chapter X, the recommended year 2010 regional land use plan envisions a total of 19 major commercial centers in the Region by the year 2010. The plan envisions that all 14 existing centers will be retained and calls for the five new major commercial centers, including one retail and four office centers (see Table 154).

<u>Major Industrial Centers</u>: Major industrial centers are identified as concentrations of industrial land having industry-related employment of at least 3,500 jobs. There were 22 such centers in the Region in 1985, ranging from older industrial complexes in central city areas to planned industrial parks in outlying areas. The major industrial centers envisioned under the alternative futures plans and the recommended year 2010 regional land use plan are shown on Map 70 and listed in Table 155.

The high-growth decentralized plan envisions a total of 33 major industrial centers in the Region

EXISTING AND PROPOSED URBAN LAND USE IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

	· 、							Urban L	and Use ^a							
		Red	commended	Plan	De	Low-Growt centralized	h Plan	Inte De	rmediate-Gi centralized	rowth Plan	H Dec	ligh-Growtl entralized F	n Plan	C	High-Growi entralized P	th Ilan
	Existing 1985	Plar Incre 1985	nned ement -2010	Total 2010	Plar Incre 1985	nned ment -2010	Total 2010	Plar Incre 1985	nned ment -2010	Total 2010	Plan Increi 1985-	ned nent 2010	Total 2010	Plar Incre 1985	nned ment -2010	Total 2010
County	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	31,971 116,795 27,292 40,340 38,082 33,670 99,545	7,533 6,079 5,165 6,181 4,674 6,659 18,482	23.6 5.2 18.9 15.3 12.3 19.8 18.6	39,504 122,874 32,457 46,521 42,756 40,329 118,027	2,739 3,767 4,126 1,762 2,744 4,582 13,066	8.6 3.2 15.1 4.4 7.2 13.6 13.1	34,710 120,562 31,418 42,102 40,826 38,252 112,611	3,997 5,653 6,773 4,746 6,512 11,610 27,978	12.5 4.8 24.8 11.8 17.1 34.5 28.1	35,968 122,448 34,065 45,086 44,594 45,280 127,523	9,430 6,379 13,926 10,430 12,134 18,637 39,303	29.5 5.5 51.0 25.9 31.9 55.4 39.5	41,401 123,174 41,218 50,770 50,216 52,307 138,848	9,013 12,650 7,466 9,747 7,061 11,741 28,299	28.2 10.8 27.4 24.2 18.5 34.9 28.4	40,984 129,445 34,758 50,087 45,143 45,411 127,844
Region	387,695	54,773	14.1	442,468	32,786	8.5	420,481	67,269	17.4	454,964	110,239	28.4	497,934	85,977	22.2	473,672

^aUrban land uses include residential; commercial; industrial; transportation, communication, and utility; governmental and institutional; and recreational land uses and unused urban lands.

Source: SEWRPC.

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EXISTING AND PROPOSED MAJOR COMMERCIAL CENTERS IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

		_						<u>.</u>					
		Exi 19	sting 985	Recom Plan:	mended 2010	Low-(Decen Plan:	Growth tralized 2010	Intermedia Decen Plan:	ate-Growth traiized 2010	High-C Decent Plan:	Growth tralized 2010	High-(Centr Plan:	Growth alized 2010
County	Major Commercial Center	Retail	Office	Retail	Office	Retail	Office	Retail	Office	Retail	Office	Retail	Office
Kenosha	Kenosha CBD Kenosha-Southwest Kenosha-West	 	× 	 X	x 	 X	x 	 X	× ×	 X	× ×	 X	X X
Milwaukee	Bay Shore Capitol Court Mayfair Milwaukee CBD Milwaukee County Research Park Northridge Oak Creek Park Place Southgate-Point Loomis Southridge West Allis	× × × × × ×	× × ×	× × × × ·- × × ×		x x x x x x	 X X X X	x x x x x x		× × × × × × × × × × × × × × × × × × ×		× × × × × × × × × × ×	× × × × × × × × × × × × × × × × × × ×
Özaukee	Mequon				×		×		×		x		x
Racine	Racine CBD	 X	x	 X	x 	 X	x 	 X	× 	 × ×	× 	 X	X
Walworth	Delavan	÷-								×		· · ·	
Washington	West Bend		×		x	•••	×		×	'	x		×
Waukesha	Bluemound Road Oconomowoc Pewaukee Waukesha CBD	x 	x x	×	x x x x	× 	x x	×	× 	× 	X X X X	×	X X X

NOTE: To qualify as a major retail center, a site must accommodate at least 2,000 retail jobs. To qualify as a major office center, a site must accommodate at least 3,500 office and service-related jobs.

Source: SEWRPC.

by the year 2010. The plan envisions the retention of all 22 existing major industrial centers and the addition of 11 new centers. Many of the new sites envisioned under the plan are located in outlying areas of the Region (see Map 70).

The high-growth centralized plan envisions a total of 27 major industrial centers in the Region. The plan envisions the retention of all 22 existing major industrial centers and the addition of five new centers. The high-growth centralized plan proposes fewer new major industrial centers in outlying areas of the Region than the high-growth decentralized plan (see Map 70).

The intermediate-growth decentralized plan envisions a total of 22 major industrial centers. The plan envisions the retention of 18 of the 22 existing centers and the addition of four new centers. Under this plan, four existing centers, Kenosha, Milwaukee-South, West Allis-East, and West Milwaukee, would experience substantial employment losses and cease functioning as major industrial centers.

The low-growth decentralized plan envisions a total of 17 major industrial centers. The plan envisions the retention of 14 of the 22 existing major industrial centers and the addition of three new centers. Under the plan, eight existing centers, Kenosha, Cudahy-South Milwaukee, Milwaukee-Glendale, Milwaukee-Menomonee Valley West, Milwaukee-Near North, Milwaukee-South, West Allis-East, and West Milwaukee, would decline in importance and cease functioning as major centers.

As indicated in Chapter X, the recommended year 2010 regional land use plan calls for a total of 25 major industrial centers by the plan design year. The plan envisions that all 22 existing major centers would be retained and envisions three new major centers.



This map shows the locations of the major commercial centers envisioned under the alternative futures land use plans and the recommended year 2010 regional land use plan. Such sites include major retail centers accommodating retail employment of at least 2,000 jobs and major office centers accommodating office and service related employment of at least 3,500 jobs. Twenty-four major commercial centers are envisioned under the high-growth decentralized plan compared to 21 centers under the high-growth centralized plan, 18 centers under the intermediate-growth decentralized plan, and 16 centers under the low-growth decentralized plan. The recommended regional land use plan envisions 19 major commercial centers in the Region by the year 2010.

Source: SEWRPC.

EXISTING AND PROPOSED MAJOR INDUSTRIAL CENTERS IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

County	Major Industrial Center	Existing 1985	Recommended Plan: 2010	Low-Growth Decentralized Plan: 2010	Intermediate-Growth Decentralized Plan: 2010	High-Growth Decentralized Plan: 2010	High-Growth Centralized Plan: 2010
<u> </u>	· · · · · · · · · · · · · · · · · · ·		·				
Kenosha	Kenosha	X	X			X	X
-			<u>^</u>	<u>^</u>		<u>^</u>	^
Milwaukee	Cudahy-South Milwaukee	x	×		×	x	×
Į	Franklin					x	X
	Milwaukee-Glendale	X X	x		x	x	x
	Milwaukee-Granville	X	x	x	x	x	x
	Milwaukee-Menomonee Valley East	X	x	x	x	X	2 X
	Milwaukee-Menomonee Valley West	(X	x	·	x	x	x '
	Milwaukee-Near North	x	x		x	x	x
	Milwaukee-Near South	x	x	x	x	x) x
	Milwaukee-North	x	x	x	x	x	x
	Milwaukee-South	x	x			x	x
	Oak Creek	X	x	x	X	x	x
	West Allis-East	×	x			x	x
	West Allis-West	x	x	x	x	l x	l x
	West Milwaukee	×	X			×	×
Ozaukee	Grafton					x	
Racine	Burlington		×	×	X	×	×
	Mt. Pleasant	X	x	x	x	x	x
	Racine-East	x	X	X	X	x	x
	Racine-West					×	
Walworth	Delavan					×	
	Elkhorn				×	×	×
Washington	Hartford	••	×	x	x	×	x
	Jackson					x	
	West Bend-North	×	x	x	X	x	x
	West Bend-South					×	••
Waukesha	Butler	x	×	×	x	x	x
	New Berlin	x	X	×	x	×	x I
	Oconomowoc					x	
	Pewaukee	x	x	X	x	x	X
	Waukesha-North	X I	X	x	x X	x	x
	Waukesha-South	×	L X	x	×	x	x

NOTE: To qualify as a major industrial center, a site must accommodate at least 3,500 industrial jobs.

Source: SEWRPC.

Primary Environmental Corridors

In the design of the alternative futures land use plans, as in the in the design of the recommended regional land use plan, no new urban development was allocated to the delineated primary environmental corridors. Primary environmental corridors are linear areas in the landscape containing concentrations of the most important remaining elements of the natural resource base. Such corridors encompassed about 299,600 acres, or about 17 percent of the total area of the Region in 1985. A more detailed description of the primary environmental corridors in the Region and the importance of preserving these corridors is presented in Chapter V. Under the alternative plans and under the recommended regional land use plan, development within these corridors would be limited to that needed to accommodate required transportation and utility facilities, compatible outdoor recreational facilities, and, on a limited basis, rural density residential use.

In addition to the preservation of existing primary environmental corridor lands, the alternative futures plans, like the recommended land use plan, envision that certain adjacent floodland areas that are currently in agricultural



Shown on this map are the locations of the major industrial centers envisioned under the alternative futures land use plans and the recommended year 2010 regional land use plan. Major industrial centers are defined as concentrations of industrial land having industrial related employment of at least 3,500 jobs. The high-growth decentralized plan envisions a total of 33 major industrial centers compared to 27 centers under the high-growth centralized plan; and 17 centers under the low-growth decentralized plan. The recommended regional land use plan envisions a total of 25 major industrial centers in the plan design year 2010. Source: SEWRPC.

or other open use would be restored to a wetland condition, thereby becoming part of the environmental network. These lands, which together encompass about 3,600 acres, have been recommended for county or state acquisition for open space preservation purposes under county park and open space plans. Under each of the alternative futures plans and under the recommended plan, then, the proposed environmental corridor network, including the existing corridors and the proposed additional areas, would encompass about 303,200 acres, or just under 18 percent of the total area of the Region (see Table 156).

Prime Agricultural Lands

As previously indicated in Table 152, under each of the alternative futures plans, substantial amounts of agricultural land would be converted to urban use to accommodate the spatial requirements of expanding urban areas. In the design of the alternative futures plans, however, an attempt was made to minimize the loss of prime agricultural lands, lands particularly well suited to agricultural use, while accommodating the required urban development.

The anticipated losses of prime agricultural land under the alternative futures plans and under the recommended regional land use plan are indicated in Table 157. As indicated in that table, from 1985 to 2010, the high-growth decentralized plan envisions the loss of about 34,900 acres, or about 5 percent of the remaining prime agricultural lands within the Region; the highgrowth centralized plan envisions a loss of 20,400 acres, or 3 percent; the intermediategrowth decentralized plan envisions a loss of about 17,500 acres, or just under 3 percent; and the low-growth decentralized plan envisions a loss of 6,700 acres, or about 1 percent. In comparison, the recommended regional land use plan envisions a loss of about 10,300 acres, or just over 1 percent.

Public Sanitary Sewer and Water Supply Service

Under the alternative futures plans, as under the recommended land use plan, all the proposed new urban development within the Region would be served with public sanitary sewer and water supply facilities. In addition, under each plan, public sanitary sewer and water supply service would be extended to certain existing urban areas lacking these facilities in 1985. In 1985, about 320 square miles, or about 67 percent of the

Table 156

PRIMARY ENVIRONMENTAL CORRIDOR AREA IN THE REGION BY COUNTY: 2010 RECOMMENDED LAND USE PLAN AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

County	Acres ^a	Percent of Total
Kenosha	28,900	9.5
Milwaukee	10,300	3.4
Ozaukee	19,900	6.6
Racine	23,800	7.8
Walworth	65,500	21.6
Washington	60,900	20.1
Waukesha	93,900	31.0
Region	303,200	100.0

^aThe planned environmental corridor area includes 299,600 acres within the existing primary environmental corridor configuration in the Region in 1985 and 3,600 additional acres within adjacent floodland areas that are currently in agricultural and other open use that are recommended to be restored to a wetland condition by the plan design year.

Source: SEWRPC.

total developed urban area of the Region, and about 1.51 million persons, or almost 87 percent of the total resident population of the Region, were served by public sanitary sewer facilities. About 263 square miles, or about 55 percent of the developed area of the Region, and about 1.39 million persons, or about 80 percent of the total resident population of the Region, were served by public water supply facilities.

As indicated in Table 158, among the alternative futures plans, the high-growth decentralized plan envisions the greatest expansion of sanitary sewer and water supply service. Under that plan, about 734 square miles, or about 91 percent of the developed urban area, and about 2.17 million persons, or about 94 percent of the resident population of the Region, would be served with public sanitary sewer and public water supply facilities by the plan design year. As further indicated in Table 158, under the high-growth centralized plan, about 653 square miles, or 88 percent of the developed area of the Region, and about 2.14 million persons, or about 92 percent of the resident population, would be

EXISTING AND PROPOSED PRIME AGRICULTURAL LAND IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

								Prime Agric	ultural Lan	d						
		Rec	ommended	Plan	De	Low-Growt	h Plan	Inter Dec	mediate-Gr centralized l	rowth Plan	Dec	High-Growt centralized	h Plan	Ce	High-Growt antralized Pi	h Ian
	Existing	Plan Incre 1985-	ment 2010	Total 2010	Plar Incre 1985	nned ment -2010	Total 2010	Plar Incre 1985	med ment 2010	Total 2010	Plan Incre 1985	med ment 2010	Total	Plar Incre 1985	med ment 2010	Total 2010
County	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	76,471 1,351 73,335 98,626 208,941 108,256 103,078	-2,042 0 -1,425 -526 -917 -1,463 -3,886	-2.7 0.0 -1.9 -0.5 -0.4 -1.4 -3.8	74,429 1,351 71,910 98,100 208,024 106,793 99,192	-694 0 -1,130 -207 -688 -1,120 -2,829	-0.9 0.0 -1.5 -0.2 -0.3 -1.0 -2.7	75,777 1,351 72,205 98,419 208,253 107,136 100,249	-1,091 0 -2,105 -537 -1,496 -2,951 -9,292	-1.4 0.0 -2.9 -0.5 -0.7 -2.7 -9.0	75,380 1,351 71,230 98,089 207,445 105,305 93,786	-3,019 0 -5,987 -1,552 -4,366 -5,690 -14,326	-3.9 0.0 -8.2 -1.6 -2.1 -5.3 -13.9	73,452 1,351 67,348 97,074 204,575 102,566 88,752	-2,979 0 -2,273 -1,189 -1,821 -2,945 -9,187	-3.9 0.0 -3.1 -1.2 -0.9 -2.7 -8.9	73,492 1,351 71,062 97,437 207,120 105,311 93,891
Region	670,058	-10,259	-1.5	659,799	-6,668	-1.0	663,390	-17,472	-2.6	652,586	-34,940	-5.2	635,118	-20,394	-3.0	649,664

Source: SEWRPC.

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Table 158

AREA AND POPULATION SERVED BY PUBLIC SANITARY SEWER AND WATER SUPPLY SERVICE IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

	Existing 19	Service 185	Recomme 20	inded Plan	Low-G Decentra 20	browth lized Plan 10	Intermedia Decentra 20	ite-Growth lized Plan 10	High-C Decentra 20	Growth lized Plan 10	High-C Centrali 20	Browth zed Plan 10
Area and Population	Public Sanitary Sewer	Public Water Supply										
Developed Area Total Square Miles ^a Square Miles Served Percent of Total Served	476.5 319.8 ^b 67.1	476.5 262.9 ^c 55.2	667.8 570.3 ^d 85.4	667.8 572.7 ^d 85.8	582.2 490.5 ^d 84.2	582.2 492.8 ^d 84.6	708.1 617.4 ^d 87.2	708.1 620.7 ^d 87.7	804.7 734.2 ⁶ 91.2	804.7 734.5 ⁸ 91.3	740.5 653.2 ^d 88.2	740.5 656.2 ^d 88.6
Population Total Population Population Served Percent of Total Served	1,742,700 1,507,800 86.5	1,742,700 1,389,700 79.7	1,911,000 1,739,100 91.0	1,911,000 1,742,500 91.2	1,517,100 1,365,800 90.0	1,517,100 1,369,000 90.2	1,872,200 1,700,800 90.8	1,872,200 1,706,500 91.1	2,316,100 2,172,300 93.8	2,316,100 2,172,700 93.8	2,316,100 2,136,700 92.3	2,316,100 2,141,800 92.5

NOTE: Public sanitary sewer and water supply service areas presented in this table do not include lands that are located adjacent to, but outside, the Region, including 1.1 square miles of land in the Jefferson County portion of the Whitewater urban service area, 0.4 square mile of land in the Jefferson County portion of the Oconomowoc urban service area, and 0.4 square mile of land in the Dodge County portion of the Hartford urban service area.

^aBased on historic urban growth; see Table 67 in Chapter VI of this report.

^bDoes not include 57.1 square miles of land served with public sanitary sewer located outside the 1985 developed urban area.

^CDoes not include 30.1 square miles of land served with public water supply located outside the 1985 developed urban area.

^dDoes not include 4.9 square miles of land to be served with public sanitary sewer and water supply service located outside the planned 2010 developed urban area.

^eDoes not include 6.2 square miles of land to be served with public sanitary sewer and water supply service located outside the planned 2010 developed urban area. Source: SEWRPC. Figure 81





Source: SEWRPC.

served by public sanitary sewer and water supply facilities by the plan design year. Under the intermediate-growth decentralized plan, about 617 square miles, or about 87 percent of the developed urban area of the Region, and about 1.70 million persons, or about 91 percent of the resident population, would be served with public sanitary sewer and water supply facilities. Under the low-growth decentralized plan, about 491 square miles, or 84 percent of the developed urban area, and about 1.37 million persons, or about 90 percent of the resident population, would be so served. As indicated in Table 158, under each of the alternative futures plans, public water supply service would be provided within several small communities for which public sanitary sewer service is not planned.

The recommended regional land use plan envisions that about 570 square miles, or about 85 percent of the developed area of the Region, and about 1.74 million persons, or about 91 percent of the total resident population of the Region, would be served with public sanitary sewer and water supply facilities by the year 2010. Under the recommended plan, public water supply service would also be provided within several small communities for which public sanitary sewer service is not planned.

Distribution of Population and Households

Population levels for the Region and the constituent counties anticipated under the alternative futures plans and the recommended year 2010 land use plan are presented in Table 159 and Figure 81. Under both the high-growth decentralized and high-growth centralized plans, the resident population of the Region would increase by about 573,000 persons, or about 33 percent, from about 1,743,000 persons in 1985 to about 2,316,000 persons in the year 2010. The two high-growth plans differ significantly,

EXISTING AND PROPOSED POPULATION IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

															_	
					· · · · -			Popula	ition	i.						
		Rec	ommended	l Plan	Dec	ow-Growt	h Pian	Inter Dec	mediate-G entralized	rowth Plan	De	High-Grow centralized	rth Plan	C	High-Grow entralized f	th Plan .
	Eviation	Plan Increr 1985-	ned ment 2010	Total	Planr Incren 1985-2	ned nent 2010	Tatal	Planı Incren 1985-:	ned nent 2010	Tetal	Plan Increi 1985-	ned ment 2010	Total	Plan Increi 1985-	ned ment 2010	Total
County	1985	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010
Kenosha	121,100	26,800	22.1	147,900	-19,300	-15.9	101,800	2,200	1.8	123,300	45,700	37.7	166,800	45,700	37.7	166,800
Milwaukee	939,600	-5,600	-0.6	934,000	-193,500	-20.6	746,100	-108,500	-11.5	831,100	-18,700	-2.0	920,900	159,200	16.9	1,098,800
Ozaukee	67,500	12,300	18.2	79,800	100	0.1	67,600	25,500	37.8	93,000	83,800	124.1	151,300	38,900	57.6	106,400
Racine	169,200	16,800	9.9	186,000	-29,600	-17.5	139,600	2,600	1.5	171,800	55,500	32.8	224,700	55,500	32.8	224,700
Walworth	72,200	15,100	20.9	87,300	-2,100	-2.9	70,100	24,800	34.3	97,000	65,400	90.6	137,600	36,600	50.7	108,800
Washington	87,200	24,500	28.1	111,700	3,900	4.5	91,100	47,400	54.4	134,600	97,800	112.2	185,000	61,800	70.9	149,000
Waukesha	285,900	78,400	27.4	364,300	14,900	5.2	300,800	135,500	47.4	421,400	243,900	85.3	529,800	175,700	61.5	461,600
Region	1,742,700	168,300	9.7	1,911,000	-225,600	-12.9	1,517,100	129,500	7.4	1,872,200	573,400	32.9	2,316,100	573,400	32.9	2,316,100

Source: SEWRPC.

	1	Percentage Distribution of Population within the Region											
County	Existing 1985	Recommended Plan: 2010	Low-Growth Decentralized Plan: 2010	Intermediate-Growth Decentralized Plan: 2010	High-Growth Decentralized Plan: 2010	High-Growth Centralized Plan: 2010							
Kenosha	7.0	7.7	6.7	6.6	7.2	7.2							
Milwaukee	53.9	48.9	49.2	44.4	39.8	47.5							
Ozaukee	3.9	4.2	4.5	4.9	6.5	4.6							
Racine	9.7	9.7	9.2	9.2	9.7	9.7							
Walworth	4.1	4.6	4.6	5.2	5.9	4.7							
Washington	5.0	5.8	6.0	7.2	8.0	6.4							
Waukesha	16.4	19.1	19.8	22.5	22.9	19.9							
Region	100.0	-100.0	100.0	100.0	100.0	100.0							

PERCENTAGE DISTRIBUTION OF POPULATION IN THE REGION BY COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

Source: SEWRPC.

however, in terms of the distribution of the anticipated growth. Under the high-growth decentralized plan, each county in the Region except Milwaukee County would experience significant population growth between 1985 and 2010, with the increases ranging from about 46,000 persons in Kenosha County to about 244,000 persons in Waukesha County. Milwaukee County would experience a decrease of about 19,000 persons during that time. Under the highgrowth centralized plan, each county in the Region would experience significant growth, with the increases ranging from 37,000 persons in Walworth County to 176,000 persons in Waukesha County, Under this plan, Milwaukee County would experience the second largest increase, about 159,000 persons, between 1985 and 2010.

Under the intermediate-growth decentralized plan, the resident population of the Region would increase by about 129,000 persons, or by just over 7 percent, to a level of about 1,872,000 persons by the year 2010. Among the seven counties, Waukesha County would experience the largest absolute increase in population, about 136,000 persons. Ozaukee, Walworth, and Washington Counties would experience population increases of 26,000, 25,000, and 47,000 persons, respectively. Kenosha and Racine Counties would experience slight increases in population, while Milwaukee County would experience a substantial decrease in population of more than 108,000 persons. Under the low-growth decentralized plan, the resident population of the Region would decline to a level of about 1,517,000 persons by the year 2010, a loss of about 226,000 persons, or about 13 percent, from the 1985 level. Most of the anticipated population loss would occur in Kenosha, Milwaukee, Racine Counties. Walworth County would be expected to experience a modest decrease of about 2,000 persons, while Ozaukee County would experience virtually no population change. Washington and Waukesha Counties would experience increases in population of about 4,000 persons and 15,000 persons, respectively.

As further indicated in Table 159, under the recommended year 2010 regional land use plan, the resident population of the Region would increase to about 1,911,000 persons by the year 2010, an increase of about 168,000 persons, or about 10 percent, above the 1985 level. Waukesha County would gain about 78,000 persons, while Kenosha, Ozaukee, Racine, Walworth, and Washington Counties would experience increases of about 12,000 to 27,000 persons. Milwaukee County would experience a population loss of about 6,000 persons, or less than 1 percent.

The changes in population anticipated under the alternative futures plans and the recommended land use plan would significantly alter the relative distribution of population among the counties within the Region (see Table 160). The greatest change in this respect would occur in Milwaukee and Waukesha Counties. Between
1985 and 2010, Milwaukee County's share of the regional population would decrease from about 54 percent to about 49 percent under the lowgrowth decentralized plan, to about 48 percent under the high-growth centralized plan, to about 44 percent under the intermediate-growth decentralized plan, and to about 40 percent under the high-growth decentralized plan. Under the recommended land use plan. Milwaukee County would account for about 49 percent of the regional population in 2010. Conversely, Waukesha County's share of the regional population would increase from about 16 percent in 1985 to about 20 percent under the low-growth decentralized and high-growth centralized plans, to about 22 percent under the intermediate-growth decentralized plan, and to about 23 percent under the high-growth decentralized plan. Under the recommended plan, Waukesha County would account for about 19 percent of the regional population in 2010.

Similar information regarding the number and distribution of households in the Region anticipated under the alternative futures plans and the recommended land use plan is presented in Table 161 and Figure 82. As indicated in Table 161, between 1985 and 2010 the number of households in the Region would increase by about 202,600, or about 32 percent, to about 846,400 under the high-growth decentralized plan; by about 212,500 households, or about 33 percent, to about 856,300 under the highgrowth centralized plan; by about 109,000, or about 17 percent, to about 752,800 under the intermediate-growth decentralized plan; and by 32,300, or about 5 percent, to 676,100 under the low-growth decentralized plan.¹ Under the

recommended plan, the number of households in the Region would increase by 130,500, or 20 percent, to about 774,300 in the year 2010. Differences in relative rates of growth in population and households, particularly evident for the intermediate-growth decentralized plan, lowgrowth decentralized plan, and recommended plan, are attributable, for the most part, to anticipated changes in household types and related changes in household sizes, including a continued increase in the relative proportion of single-parent and single-person households.

The change in the relative distribution of households among the seven counties envisioned under the alternative futures plans and the recommended plan is indicated in Table 162. These changes generally parallel the anticipated changes in the relative distribution of the population described above, with Milwaukee and Waukesha Counties being the most affected.

The population density of the developed urban area of the Region would continue to decline under each of the alternative futures plans as well as under the recommended plan. As indicated in Table 163, between 1985 and 2010 the urban population density would decrease from about 3,600 persons per square mile to about 3,100 persons per square mile under the highgrowth centralized plan, to about 2,900 persons per square mile under the high-growth decentralized plan, and to about 2,600 persons per square mile under the intermediate-growth decentralized and low-growth decentralized plans. Under the recommended year 2010 regional land use plan, the urban population density would be about 2,800 persons per square mile in the year 2010.

Employment Distribution

Employment levels anticipated under the alternative futures plans and the recommended land use plan are presented by county in Table 164 and Figure 83. Under both the high-growth decentralized and high-growth centralized plans, total employment in the Region would increase by 380,000 jobs, or about 44 percent, from about 872,000 jobs in 1985 to about 1,252,000 jobs by the year 2010. Under the high-growth decentralized plan, Waukesha County would experience the largest absolute increase in employment, about 116,000 jobs, with the other six counties in the Region experiencing increases ranging from 27,000 jobs in Walworth County to 95,000 jobs in Milwaukee County. Under the high-growth

¹The number of households anticipated under the high-growth centralized plan differs from that anticipated under the high-growth decentralized plan even though the plans are based on the same design year regional population level. This situation is due to the differences in the anticipated distribution of population under the respective plans combined with anticipated differences in household size within the Region. The high-growth decentralized plan envisions fewer households than the high-growth centralized plan because it envisions higher population levels in outlying areas, where household sizes are typically larger, and lower population levels in older urban areas, where household sizes are typically smaller.

Table 161

EXISTING AND PROPOSED HOUSEHOLDS IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

				_							_	_				
		Households														
	Recommended Plan				Low-Growth Decentralized Plan			Intermediate-Growth Decentralized Plan				ligh-Growt	h Plan	High-Growth Centralized Plan		
	Existing	Plan Incre 1985-	ned ment 2010	Total	Plan Incre 1985-	ined ment 2010		Planned Increment 1985-2010		Total	Planned Increment 1985-2010		Total	Planned Increment 1985-2010		Total
County	1985	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	44,200 368,200 22,900 61,200 25,600 28,500 93,200	14,900 32,800 7,600 12,700 10,000 13,100 39,400	33.7 8.9 33.2 20.8 39.1 46.0 42.3	59,100 401,000 30,500 73,900 35,600 41,600 132,600	3,300 -21,600 5,600 1,700 5,700 8,900 28,700	7.5 -5.9 24.5 2.8 22.3 31.2 30.8	47,500 346,600 28,500 62,900 31,300 37,400 121,900	5,700 -13,600 12,700 7,700 13,900 21,600 61,000	12.9 -3.7 55.5 12.6 54.3 75.8 65.5	49,900 354,600 35,600 68,900 39,500 50,100 154,200	17,100 -9,000 29,800 20,500 26,200 34,000 84,000	38.7 -2.4 130.1 33.5 102.3 119.3 90.1	61,300 359,200 52,700 81,700 51,800 62,500 177,200	17,500 62,400 14,100 20,900 14,700 21,800 61,100	39.6 16.9 61.6 34.2 57.4 76.5 65.6	61,700 430,600 37,000 82,100 40,300 50,300 154,300
Region	643,800	130,500	20.3	774,300	32,300	5.0	676,100	109,000	16.9	752,800	202,600	31.5	846,400	212,500	33.0	856,300

Source: SEWRPC.

Figure 82



EXISTING AND PROPOSED HOUSEHOLDS IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

Source: SEWRPC.

centralized plan, Milwaukee County would experience the largest absolute gain in employment, 135,000 jobs, while the other six counties would experience increases ranging from 18,000 in Walworth County to 90,000 in Waukesha County.

Under the intermediate-growth decentralized plan, total employment within the Region would increase to about 1,051,000 jobs by the year 2010, an increase of about 179,000 jobs, or about 21 percent, over 1985. Under that plan, Milwaukee County would experience a modest increase in employment of about 5,000 jobs, or about 1 percent. The other six counties in the Region would experience larger employment increases ranging from about 15,000 jobs in Walworth County to about 79,000 jobs in Waukesha County. Under the low-growth decentralized plan, total employment within the Region in the year 2010 would be about the same as in 1985, although the distribution of jobs in the Region would continue to change. Among the seven counties the largest absolute changes anticipated under the low-growth decentralized plan would be an increase of about 41,000 jobs in Waukesha County and a decrease of about 77,000 jobs in Milwaukee County.

Under the recommended plan, total employment would approximate 1,095,000 jobs in the year 2010, with each county gaining a significant number of jobs. The largest increase, about 85,000 jobs, would occur in Milwaukee County, followed by an increase of about 59,000 jobs in Waukesha County. Among the other five counties in the Region, the anticipated employment

Table 162

PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN THE REGION BY COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

	Percentage Distribution of Households within the Region														
County	Existing 1985	Recommended Plan: 2010	Low-Growth Decentralized Plan: 2010	Intermediate-Growth Decentralized Plan: 2010	High-Growth Decentralized Plan: 2010	High-Growth Centralized Plan: 2010									
Kenosha	6.9	7.6	7.0	6.6	7.3	7.2									
Milwaukee	57.2	51.8	51.3	47.1	42.4	50.3									
Ozaukee	3.5	3.9	4.2	4.7	6.2	4.3									
Racine	9.5	9.6	9.3	9.2	9.7	9.6									
Walworth	4.0	4.6	4.6	5.2	6.1	4.7									
Washington	4.4	5.4	5.6	6.7	7.4	5.9									
Waukesha	14.5	17.1	18.0	20.5	20.9	18.0									
Region	100.0	100.0	100.0	100.0	100.0	100.0									

Source: SEWRPC.

Table 163

POPULATION DENSITY IN THE REGION: SELECTED YEARS 1850-1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

	Urba Popula	in tion	Ru Popula	ral ation ^a		Ar (square	ea e miles)	Persons per Square Mile	
Condition	Number	Percent of Total	Number	Percent Jumber of Total		Urban	Total	Urban	Total
Actual									
1850	28,623	25.2	84,766	74.8	113,389	4	2,689	7,156	42
1880	139,509	50.3	137,610	49.7	277,119	18	2,689	7,751	103
1900	354,082	70.6	147,726	29.4	501,808	37	2,689	9,570	187
1920	635,376	81.1	148,305	18.9	783,681	56	2,689	11,346	291
1940	991,535	92.9	76,164	7.1	1,067,699	90	2,689	11,017	397
1950	1,179,084	95.0	61,534	5.0	1,240,618	146	2,689	8,076	461
1963	1,634,200	97.6	40,100	2.4	1,674,300	282	2,689	5,795	623
1970	1,728,946	98.5	27,137	1.5	1,756,083	338	2,689	5,115	653
1980	1,749,238	99.1	15,558	0.9	1,764,796	444	2,689	3,940	656
1985	1,730,500	99.3	12,200	0.7	1,742,700	477	2,689	3,628	648
Planned									-
Low-Growth		}					1		
Decentralized: 2010	1,508,000	99.4	9,100	0.6	1,517,100	582	2,689	2,591	564
Intermediate-Growth							l		
Decentralized: 2010	1,865,400	99.6	6,800	0.4	1,872,200	708	2,689	2,635	696
High-Growth							ļ		
Decentralized: 2010	2,310,000	99.7	6,100	0.3	2,316,100	805	2,689	2,870	861
High-Growth									
Centralized: 2010	2,309,300	99.7	6,800	0.3	2,316,100	741	2,689	3,116	861
Recommended: 2010	1,902,800	99.6	8,200	0.4	1,911,000	668	2,689	2,849	711

^aThe rural population has been divided into rural farm and rural nonfarm by the U. S Bureau of the Census since 1930. The rural population shown on this table for the years 1850 to 1920 includes the total rural population as enumerated by the Census Bureau. The rural population for 1940 and after includes the rural farm population only, the rural nonfarm population being included in the urban population.

Source: U. S. Bureau of the Census and SEWRPC.

Table 164	
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EXISTING AND PROPOSED EMPLOYMENT IN THE REGION: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

								Emp	loyment							
		Recommended Plan			Low-Growth Decentralized Plan			Intermediate-Growth Decentralized Plan			De	High-Grow centralized	th Plan	High-Growth Centralized Plan		
	Planned Increment 1985-2010		Planned Increment 1985-2010		Planned Increment 1985-2010		Planned Increment 1985-2010			Planned Increment 1985-2010		T I				
County	1985	Number	Percent	Total 2010	Number	Percent	Total 2010	Number	Percent	Total 2010	Number	Percent	Total 2010	Number	Percent	2010
Kenosha Milwaukee Ozaukee Racine Walworth Washington Waukesha	42,500 527,300 26,900 74,500 28,100 31,300 141,300	20,500 85,400 11,800 17,600 12,400 16,600 58,800	48.2 16.2 43.9 23.6 44.1 53.0 41.6	63,000 612,700 38,700 92,100 40,500 47,900 200,100	7,900 -76,500 8,900 1,200 6,700 9,700 41,100	18.6 -14.5 33.1 1.6 23.8 31.0 29.1	50,400 450,800 35,800 75,700 34,800 41,000 182,400	23,200 4,800 17,400 19,100 14,600 21,400 78,900	54.6 0.9 64.7 25.6 52.0 68.4 55.8	65,700 532,100 44,300 93,600 42,700 52,700 220,200	38,300 94,900 29,900 38,100 27,400 34,800 116,300	90.1 18.0 111.2 51.1 97.5 111.2 82.3	80,800 622,200 56,800 112,600 55,500 66,100 257,600	46,400 135,300 20,400 43,500 18,300 25,600 90,200	109.2 25.7 75.8 58.4 65.1 81.8 63.8	88,900 662,600 47,300 118,000 46,400 56,900 231,500
Region	871,900	223,100	25.6	1,095,000	-1,000	-0.1	870,900	179,400	20.6	1,051,300	379,700	43.5	1,251,600	379,700	43.5	1,251,600

Source: SEWRPC.

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Figure 83





Source: SEWRPC.

increases would range from just under 12,000 jobs in Ozaukee County to about 21,000 jobs in Kenosha County.

The relative distribution of jobs among the seven counties in the Region called for under the alternative futures plans and the recommended land use plan is indicated in Table 165. As indicated in that table, between 1985 and 2010, Milwaukee County's share of the total regional employment would decrease from about 60 percent to about 53 percent under the highgrowth centralized plan; to about 52 percent under the low-growth decentralized plan; to about 51 percent under the intermediate-growth decentralized plan; and to about 50 percent under the high-growth decentralized plan. Under the recommended plan, Milwaukee County would account for about 56 percent of the total regional employment. Waukesha County's share of the total regional employment would increase from about 16 percent in 1985 to about 19 percent by the year 2010 under the high-growth centralized plan; and to about 21 percent under the lowgrowth decentralized, the intermediate-growth decentralized, and the high-growth decentralized plans. Under the recommended plan, Waukesha County would account for 18 percent of the total regional employment in the year 2010. The other five counties would maintain or experience modest increases in their shares of total regional employment under the respective plans.

SUMMARY

This chapter has presented four "alternatives futures" land use plans for the southeastern Wisconsin Region, all for the design year 2010. These alternative futures plans were prepared to help deal with the increasing uncertainty in the

Table 165

	Percentage Distribution of Employment within the Region													
County	Existing 1985	Recommended Plan: 2010	Low-Growth Decentralized Plan: 2010	Intermediate-Growth Decentralized Plan: 2010	High-Growth Decentralized Plan: 2010	High-Growth Centralized Plan: 2010								
Kenosha	4.9	5.7	5.8	6.3	6.5	7.1								
Milwaukee	60.5	56.0	51.8	50.6	49.7	52.9								
Ozaukee	3.1	3.5	4.1	4.2	4.5	3.8								
Racine	8.5	8.4	8.7	8.9	9.0	9.4								
Walworth	3.2	3.7	4.0	4.1	4.4	3.7								
Washington	3.6	4.4	4.7	5.0	5.3	4.6								
Waukesha	16.2	18.3	20.9	20.9	20.6	18.5								
Region	100.0	100.0	100.0	100.0	100.0	100.0								

PERCENTAGE DISTRIBUTION OF EMPLOYMENT IN THE REGION BY COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

Source: SEWRPC.

factors which affect growth and development in the Region. The alternatives are intended to supplement the recommended design year 2010 regional land use plan, providing a range of possible future conditions with respect to the level and distribution of population and economic activity and attendant land use patterns in the Region, thereby broadening the framework within which planning and decisionmaking regarding development and redevelopment within the Region can be carried out.

The recommended design year 2010 land use plan set forth in Chapter X is based on an intermediate scenario of growth and change. The regional population and employment levels which the recommended year 2010 land use plan would accommodate are those anticipated under an intermediate growth scenario, as presented in Chapter VIII, adjusted to reflect actual growth in population and employment in excess of forecast growth in certain areas of the Region, as indicated by new benchmark data, including the 1990 United States Census of Population and Housing. The recommended plan, like the firstand second-generation regional land use plans, attempts to accommodate the anticipated increases in population and economic activity by promoting a compact, centralized regional settlement pattern, moderating, to the extent practicable, the current trend toward decentralization of population, employment, and attendant urban development within the Region.

Three of the alternative futures plans envision a decentralized regional settlement pattern. One such plan, the "high-growth decentralized" plan, was developed to accommodate the future population and economic activity levels that could be anticipated under a high-growth scenario. The other two plans, the "intermediate-growth decentralized" plan and the "low-growth decentralized" plan were developed to accommodate the population and economic activity levels that could be anticipated under intermediate- and low-growth scenarios, respectively. The fourth plan, the "high-growth centralized" plan, was designed to accommodate population and economic activity levels anticipated under a highgrowth scenario, emphasizing a centralized development pattern for the Region.

While the alternative futures plans differ from the recommended land use plan in the scale and distribution of population and economic activity, and, accordingly, in the amount and location of new urban development, the alternative futures plans incorporate certain key normative aspects of the recommended plan. Thus, like the recommended plan, the alternative futures plans envision that new urban development would emphasize medium densities and would, for the most part, be located in areas of the Region provided with centralized sanitary sewer and water supply services, that no new urban development would be allocated to the delineated primary environmental corridors, and that the conversion of prime agricultural lands to urban use would be minimized. A brief overview of each of the alternative futures plans follows.

1. The high-growth decentralized plan was designed to accommodate an increase of about 573,000 persons, or about 33 percent, in the resident population of the Region and an increase of about 380,000 jobs, or about 44 percent, in employment between 1985 and 2010, with much of the population and employment growth occurring in outlying areas of the Region. The plan proposes to accommodate the anticipated growth and redistribution of population and economic activity by converting about 110,000 acres of land from rural to urban uses. Under the plan, the population density of the developed urban area of the Region would decrease from about 3,600 persons per square mile in 1985 to about 2,900 persons per square mile by the year 2010.

The plan envisions a total of 24 major commercial centers in the year 2010 through the retention of all 14 existing centers and the addition of 10 new centers. The plan also envisions a total of 33 major industrial centers through the retention of all 22 existing centers and the development of 11 new centers.

The plan envisions the preservation of all remaining primary environmental corridor lands. Urban land development under the plan would result in the loss of about 90,200 acres of agricultural land, including about 34,900 acres of prime agricultural land. By the year 2010, about 91 percent of the developed urban area of the Region and about 94 percent of the resident population of the Region would be provided with public sanitary sewer and water supply service.

2. Like the high-growth decentralized plan, the high-growth centralized plan was designed to accommodate an increase of about 573,000 persons, or about 33 percent, in the resident population of the Region and an increase of about 380,000 jobs, or about 44 percent, in employment between 1985 and 2010. In comparison to the highgrowth decentralized plan, the highgrowth centralized plan envisions a much more centralized distribution of population and employment, particularly through the maintenance of population and employment levels in the older central portions of the large metropolitan areas of the Region. The high-growth centralized plan proposes to accommodate the anticipated growth and redistribution of population and economic activity by converting approximately 86,000 acres of land from rural to urban uses. Under the plan, the overall population density of the developed urban area of the Region would decrease to about 3,100 persons per square mile by the vear 2010.

The plan envisions a total of 21 major commercial centers in the Region in the year 2010 through the retention of all 14 existing centers and the addition of seven new centers. The plan also envisions a total of 27 major industrial centers through the retention of all 22 existing centers and the addition of five new centers.

The plan envisions the preservation of all remaining primary environmental corridors in the Region. Urban development envisioned under the plan would result in the conversion of 67,900 acres of agricultural land, including about 20,400 acres of prime agricultural land. By the year 2010, about 88 percent of the developed urban area of the Region and 92 percent of the resident population would be provided with public sanitary sewer and water supply service.

3. The intermediate-growth decentralized plan was designed to accommodate an increase of about 129,000 persons, or just over 7 percent, in the resident population of the Region and an increase of about 179,000 jobs, or about 21 percent, in total regional employment between 1985 and 2010. Much of the anticipated growth in population and employment would occur in outlying areas of the Region, with Milwaukee County experiencing a population loss of almost 109,000 persons during the planning period. The plan proposes to accommodate the anticipated growth and redistribution of population and economic activity by converting about 67,000 acres of land from rural to urban uses. Under the plan, the population density of the developed urban area of the Region would decrease to about 2,600 persons per square mile by the year 2010.

The plan envisions a total of 18 major commercial centers in the Region in the year 2010 through the retention of 12 of the 14 existing major centers and the addition of six new centers. The plan also envisions a total of 22 major industrial centers by the year 2010 through the retention of 18 of the 22 existing centers and the addition of four new centers. Under the plan, two existing major commercial centers located in the central portion of Milwaukee County and four existing major industrial centers, three located in the central portion of Milwaukee County and one located in the City of Kenosha, would decline in importance and cease functioning as major centers.

The plan envisions the preservation of all remaining primary environmental corridors in the Region. Urban development envisioned under the plan would result in the conversion of 52,100 acres of agricultural land, including 17,500 acres of prime agricultural land to urban use. By the year 2010, about 87 percent of the developed urban area of the Region and about 91 percent of the resident population of the Region would be provided with public sanitary sewer and water supply service.

4. The low-growth decentralized plan would accommodate a plan design year 2010 population of about 1,517,000 persons, a decrease of 226,000 persons, or about 13 percent, from the 1985 level, and total regional employment of 871,000 jobs, about the same as the 1985 level. The continued redistribution of population and employment would, nevertheless, require the conversion of about 33,000 acres of open land from rural to urban use. Under the plan the population density of the developed urban area of the Region would decrease to about 2,600 persons per square mile by the year 2010.

The plan envisions a total of 16 major commercial centers in the Region by the year 2010 through the retention of 12 of the 14 existing major centers and the addition of four new centers. The plan also envisions a total of 17 major industrial centers through the retention of 14 of the 22 existing major centers and the addition of three new centers. Under the plan, two existing major commercial centers located in the central portion of Milwaukee County and eight existing major industrial centers, including seven located in the central portion of Milwaukee County and one located in the City of Kenosha, would decline in importance and no longer function as major centers.

The plan envisions the preservation of all remaining primary environmental corridors in the Region. Urban land development envisioned under the plan would result in the loss of about 24,800 acres of agricultural land, including about 6,700 acres of prime agricultural land. By the year 2010, about 84 percent of the total developed urban area of the Region and about 90 percent of the resident population would be provided with public sanitary sewer and water supply service.

Together, the four alternative futures land use plans herein presented are intended to conceptually bracket the new recommended design year 2010 regional land use plan. While many variations of the four alternative futures plans are possible, it is believed that the four alternative futures plans, in conjunction with the recommended plan, provide a reasonable representation of the full range of possible future conditions with respect to the overall scale and distribution of land use development in the Region to the year 2010.

As noted above, the alternative futures land use plans are intended to supplement the recommended plan, broadening the framework within which planning and decision-making for the physical development of the Region can be carried out. Within this framework, for example, proposals for major public facilities and utilities and major private developments may be evaluated to determine how well they would perform under a range of possible future conditions. Through such sensitivity analyses, more "robust" plan elements which may be expected to remain viable under greatly varying conditions can be identified. (This page intentionally left blank)

Chapter XII

PLAN IMPLEMENTATION

INTRODUCTION

The recommended regional land use plan described in Chapter X of this report provides a design for the attainment of the specific regional land use development objectives set forth in Chapter IX of this report. The recommended land use plan comprises the most basic element of a comprehensive plan for the physical development of the Region. The plan provides recommendations with respect to the amount, spatial distribution, and general arrangements of the various land uses required to serve the needs of anticipated future population and economic activity levels within the Region while protecting the underlying and sustaining natural resource base. In a practical sense, however, the plan is not complete until the steps required to implement the plan, that is, to convert the plan into action policies and programs, are specified.

This chapter is, therefore, presented as a guide for use in the implementation of the recommended land use plan. It outlines the actions which must be taken by the various levels and agencies of government concerned if the recommended land use plan is to be carried out fully. Those units and agencies of government which have plan adoption and plan implementation powers germane to the recommended regional land use plan are identified, necessary formal plan adoption actions are specified, and specific implementation actions are recommended. In addition, financial and technical assistance programs available to such units and agencies of government in implementation of the regional land use plan are briefly described.

The plan implementation recommendations are, to the maximum extent possible, based upon, and related to, existing governmental programs and are predicated upon existing enabling legislation. Because of the ever-present possibility of unforeseen changes in economic conditions, state and federal legislation, case law decisions, governmental organizations, and fiscal policies, it is not possible to declare once and for all time exactly how a process as complex as regional plan implementation should be administered and financed. In the continuing regional planning process it will, therefore, be necessary to update periodically not only the land use plan itself and the data and forecasts on which the plan is based but also the recommendations for plan implementation.

It is important to note that the regional land use plan for the year 2010 represents an extension and refinement of both the first-generation, design year 1990, and second-generation, design vear 2000, regional land use plans. As described in previous chapters of this report, much has been accomplished with respect to implementation of the first- and second-generation regional land use plans in terms of the creation of local planning and plan implementation agencies, the application of public land use and utility regulatory devices, and the investment of capital in public utilities and facilities. The plan implementation recommendations set forth herein are similar to those of the previous plans and have been modified only to the extent necessary to reflect changes in state and federal law and governmental organization and to reflect the revisions embodied in the third-generation. design year 2010, regional land use plan.

It should also be noted that since the adoption of the initial, design year 1990, regional land use plan, the Commission has carried out a number of planning programs which have refined and detailed the concepts embodied in that plan for subareas of the Region. Examples of such plan refinements include the comprehensive plans for the Fox, Kinnickinnic, Menomonee, Milwaukee, Oak Creek, Pike, and Root River watersheds. Moreover, the Commission has also completed and adopted a variety of plans which extend and refine the overall regional plan within certain other functional areas. In this regard, the Commission has completed a regional park and open space plan, a regional housing plan, a regional water quality management plan, a regional air quality attainment and maintenance plan, a regional airport system plan, and a regional library system plan. Each of these regional plan elements includes specific recommendations concerning the manner in which it may be implemented; these plan implementation recommendations complement and supplement the plan implementation measures set forth in this chapter.

Of particular importance to regional land use plan implementation is the regional water quality management plan. Not only is the regional land use plan actually an element of the regional water quality management plan, but the latter plan includes detailed sanitary sewer service area plans attendant to each public sewage treatment facility in the Region. These detailed sewer service area plans identify the planned extent of urban service limits in a manner consistent with the regional land use plan. These plans also identify in significant detail the location and extent of the primary environmental corridors, designating such corridors as areas into which sanitary sewer service should not be extended in support of intensive urban development. The detailed sewer service area plans are adopted by the local units of government concerned and by the Regional Planning Commission and the Wisconsin Department of Natural Resources (DNR) as amendments to the regional water quality management plan and become the basis for the review and approval of proposed sanitary sewer extensions by the Wisconsin Department of Natural Resources.

BASIC PRINCIPLES AND CONCEPTS

It is important to recognize that plan implementation measures must grow out of adopted plans. Thus, action policies and programs must not only be preceded by plan adoption, but also must emphasize the most important and essential elements of the plan and those areas of action which will have the greatest impact on guiding and shaping development in accordance with the recommended plan. This is particularly important in planning for the orderly and economical development of a large urban region. The task is so highly complex that care must be taken not to become lost in plan implementation detail, the effects of which may be meaningless at the regional scale. Two major criteria should be used to determine which plan elements are truly regional in character or influence and are. therefore, essential to the attainment of regional development objectives: 1) the importance of the plan elements to the wise and judicious use of the underlying and sustaining natural resource base, and 2) the importance of plan elements to the functional relationships existing between land use and the demand for major utility, recreational, and transportation facilities. Plan elements identified on the basis of these two criteria should become the primary focus for regional plan implementation activities.

Thus, regional land use plan implementation should focus on those aspects of land development and redevelopment which, through either their individual or their aggregate effects, are regional in scope and not only interact strongly with the need for major utility, recreation, and transportation facilities, but also exert a heavy demand upon the limited natural resource base. These include large land-consuming uses such as agriculture; regional park and related open space reservation; and, because of the demand which they exert upon public works facilities, residential uses, and major commercial and industrial centers. The location and intensity of residential development within the Region must be carefully related to logical sanitary sewerage facility service areas and to soil capabilities if the intensification of existing and the creation of new environmental problems is to be avoided. Local commercial and service uses, local institutional and governmental uses, and local park and recreation areas need not receive explicit attention in regional land use plan implementation. These uses are implicitly provided for in the regional plans as integral components of residential neighborhoods and urban communities, the planning and development of which are primarily of local concern and properly subject to local planning and control.

Thus, the regional land use plan will be largely achieved if the primary environmental corridors and prime agricultural lands of the Region are protected from incompatible urban development, recognizing, however, that certain prime agricultural lands are by virtue of their location at the margins of existing developed areas recommended for conversion to urban use, if the major regional park and recreation areas are acquired for public use, if future residential development within the Region approximates the density and spatial distribution patterns recommended by the regional plan, and if the major commercial and industrial centers approximate the general scale and spatial location recommended by the plan.

There are three main areas through which regional plan implementation may be achieved, and these parallel the three functions of the Regional Planning Commission: areawide research or inventory, preparation of a framework of long-range plans for the physical development of the Region, and provision of a center for the coordination of planning and plan implementation activities. All require a receptive attitude and, preferably, active planning and plan implementation programs at the local, county, and state levels of government.

A great deal can be achieved with respect to guiding areawide development along better lines simply through the task of collecting, analyzing, and disseminating basic planning and engineering data on a continuing, uniform, areawide basis. Experience within the Region to date has shown that if this important inventory function is properly carried out, the resulting information will be used and acted upon by local, county, and state units and agencies of government and by private investors. If these same data were used as a primary input into the regional plan preparation, their utilization in arriving at public and private development decisions on a day-to-day basis will tend to contribute toward implementation of the regional plans.

With respect to plan preparation, it is essential that the regional plan, although confined to those functional elements having areawide significance, be prepared in sufficient depth and detail to provide a sound basis for plan implementation. Implementation will further require the development of very close working relationships between the Commission, the seven counties, the general-purpose local units of government, such special-purpose agencies as the Milwaukee Metropolitan Sewerage District, and certain state agencies, particularly the Wisconsin Departments of Natural Resources and Transportation.

Finally, it will be highly desirable, although not essential, to achieve an even finer degree of plan implementation than would be attainable through concern with the major plan elements alone through the Commission function of serving as a center for the coordination of local, areawide, state, and federal planning and plan implementation activities within the Region. The Commission community assistance program, which actively assists local municipalities in the preparation of plans and plan implementation devices, is an important factor in this respect and will make possible the close integration of regional and local plans, adjusting the details of the latter to the broad framework of the former.

Planning Districts

The Commission regional planning program provides for the establishment of planning districts within the Region for carrying the regional planning programs into the greater depth and detail necessary for sound plan preparation and implementation. These districts are of two basic types. The boundaries of the first type are delineated on a basis of topography or topographically related development problems. Examples of such districts include the Fox, Kinnickinnic, Menomonee, Milwaukee, Oak Creek, Pike, and Root River watersheds, for which detailed watershed planning programs have been completed by the Commission. The boundaries of the second type of planning district are delineated on the basis of particularly intensive urban development and common development problems. Examples of such districts are the Kenosha Urban Planning District and the Racine Urban Planning District,¹ for which detailed comprehensive plans based on the 1990 regional land use and transportation plans have been completed and formally adopted by the Commission and for which integrated sanitary sewerage and water supply system plans are under preparation by the Commission on behalf of the county and local units of government concerned, and the IH 94 South Freeway Corridor,² the Blue Mound Road Corridor.³ and the IH 94 West Freeway Corri-

²The IH 94 South Freeway Corridor is an approximately six-mile-wide corridor consisting of lands located on either side of IH 94 in Kenosha, Racine, and southern Milwaukee Counties.

³The Blue Mound Road corridor is an approximately three-mile-wide corridor consisting of lands located on either side of IH 94 in Milwaukee and Waukesha Counties extending from the Zoo Interchange west to Waukesha County CTH T.

¹The Kenosha Urban Planning District consists of the City of Kenosha, the Village of Pleasant Prairie, and the Town of Somers. The Racine Urban Planning District consists of the City of Racine, the Villages of Elmwood Park, North Bay, Wind Point, and Sturtevant, and the Towns of Caledonia and Mt. Pleasant.

dor,⁴ for which detailed land use and highway system development plans have recently been completed or are currently under preparation by the Commission in cooperation with the state agencies and county and local units of government concerned.

The planning districts are intended to comprise rational planning units within the Region, intended not only to provide the basis for the preparation of certain elements of the areawide development plan in greater depth and detail, but also to provide an important basis for the implementation of the overall regional development plans. This latter function is important since the Regional Planning Commission is an entirely advisory body, and it is, therefore, only through cooperative interagency action that the regional plans can be implemented. The establishment of planning programs for such subareas of the Region as an urban planning district, a freeway corridor, or a watershed affords an excellent opportunity to coordinate overall regional planning programs with more detailed county and local planning programs for such areas of the Region, and thereby provides for full integration of local and regional development objectives and plans, and for the implementation of regional as well as local plans through cooperative action.

PLAN IMPLEMENTATION ORGANIZATIONS

Because of the completely advisory role of the Commission, implementation of the recommended plans will be entirely dependent upon action by certain local, areawide, state, and federal agencies of government. Examination of the various agencies that are available to implement the recommended plan under existing enabling legislation reveals an array of departments, commissions, councils, boards, districts, and authorities at all levels of government. Implementation of the recommended plan will also depend upon the leadership provided by the elected and appointed public officials who have responsibilities for formulating and carrying out development policies and programs, particularly at the county and local levels of government.

Because of the many agencies in existence, it becomes important to identify those agencies with legal powers and financial means to implement the recommended plans most effectively. Accordingly, the agencies whose actions will have significant effect, either directly or indirectly, upon the successful implementation of the recommended regional land use plan and whose full cooperation in plan implementation will be essential are listed and discussed below. The agencies are, for convenience, discussed by level of government; however, the interdependence between the various levels, as well as between the agencies of government, and the need for close intergovernmental cooperation cannot be overemphasized. A more detailed discussion of the duties and functions of these state and local agencies as they relate to regional plan implementation may be found in SEWRPC Technical Report No. 6, (Second Edition), Planning Law in Southeastern Wisconsin, 1977, and in SEWRPC Planning Guide No. 4, Organization of Planning Agencies, 1964.

Local-Level Agencies

Statutory provisions exist for the creation at the county and municipal level of the following agencies that have certain planning and plan implementation powers important to regional plan adoption and implementation, including police, acquisition, condemnation, and construction powers.

<u>County Park and Planning Agencies</u>: County units of government have considerable flexibility available to establish agencies to perform the park and outdoor recreation and the zoning and planning functions within the county. Counties may create park commissions or park and planning commissions pursuant to section 27.02 of the Wisconsin Statutes. In addition, counties also may elect to utilize committees of the county board to perform the park and outdoor recreation and zoning and planning functions. No matter which organizational structure is chosen, the basic plan implementation powers available are

⁴The IH 94 West Freeway Corridor consists of an approximately four-mile-wide corridor consisting of lands on either side of IH 94 extending west from Waukesha County CTH T to the Jefferson County line.

essentially the same. If, however, a county elects to establish a county park or county park and planning commission, these commissions have the obligation to prepare a county park system plan and a county street and highway system plan. There is no similar mandate when a county elects to carry out these functions through committees of the county board.

Three counties in the Region, Walworth, Washington, and Waukesha Counties, have chosen to combine the park and outdoor recreation with the planning and zoning functions within a county park and planning commission having zoning, subdivision plat review, and park planning and development functions. In Washington County, the zoning function is limited to floodland and shoreland areas.

In Milwaukee County, a County Board Committee on Parks, Recreation and Culture has responsibility for park and parkway acquisition, development, operation, and maintenance. Because Milwaukee County contains no unincorporated areas, there is no county zoning authority. The Committee on Parks, Recreation and Culture, however, does perform a limited subdivision review function for subdivision plats lying in or adjacent to, proposed park and parkway development.

In Racine County, the zoning and subdivision plat review functions are assigned to the County Planning and Development Committee. Responsibility for park and parkway acquisition and development is assigned to the Racine County Public Works Committee.

In Kenosha County, the zoning and plat review functions are carried out under the County Land Use Committee. Responsibility for park and parkway acquisition, development, operation, and maintenance rests with the County Highway and Parks Committee.

Ozaukee County has established a County Park Commission with responsibility for park acquisition, development, operation, and maintenance. Ozaukee County has generally elected to leave the planning and zoning functions at the municipal level of government. The County has, however, pursuant to state law, enacted a shoreland and floodland zoning ordinance which is administered under the guidance of a county zoning committee. Implementation of the regional land use plan is best accomplished through a coordinated program of public land use regulation and public land acquisition and development activities. At the county level such coordination can be achieved by combining the responsibilities for land use regulation and park functions within a single park and planning commission. In addition to having the obligation to prepare a county park system plan and a county street and highway system plan, county park and planning commissions may prepare and administer shoreland, floodland, and comprehensive zoning ordinances and administer county land subdivision review functions. Such commissions are empowered to acquire, develop, maintain, and operate county parks and other open space land. The existence of a county park and planning commission in each county in the Region is, therefore, desirable for effective implementation of the recommended land use plan. Such implementation clearly can also be achieved by the committee approach, provided that the efforts of the various county committees involved can be closely coordinated.

<u>County Land Conservation Committees</u>: In 1982 the Wisconsin Legislature abolished the former system of county soil and water conservation districts. These districts, while closely allied with county government operations, were, in fact, separate governmental units. In place of that system, the new legislation requires that the county boards of supervisors create a land conservation committee within each county. In so doing, the Legislature recognized the county as a primary unit of government responsible for natural resource protection programs, particularly soil and water conservation programs. Each county in the Region has now established a county land conservation committee.⁵

Land conservation committees have a broad range of powers and duties, including the development and adoption of standards and specifications for management practices to control

⁵In Racine County, the County Planning and Development Committee also acts as the County Land Conservation Committee.

erosion, sedimentation, and nonpoint sources of water pollution; the distribution and allocation of available federal and state cost-sharing funds relating to soil and water conservation; the conduct of research and educational information programs relating to soil and water conservation; the conduct of programs designed to prevent flood damage, and drainage, irrigation, groundwater, and surface water problems; the provision of financial, technical, and other assistance to landowners; the acquisition of land and property; the acquisition of machinery, equipment, and supplies required to carry out various land conservation programs; the construction. improvement, operation, and maintenance of structures needed for land conservation, flood prevention, and nonpoint source pollution control; and the preparation of a long-range natural resource conservation plan for the county, including an erosion control plan.

<u>Municipal Planning Agencies</u>: These agencies include city, village, and town park boards and plan commissions created pursuant to Sections 27.08, 27.13, 62.23(1), 61.35, and 60.22(3) of the Wisconsin Statutes. These agencies complement the actions of the county park and planning commission in the implementation of the various elements of the recommended regional land use plan. A discussion of the extent and limitations of the power of these various agencies may be found in SEWRPC Planning Guide No. 4, <u>Organization of Planning Agencies</u>, 1964.

It is recommended that those cities, villages, or towns without plan commissions created in accordance with Section 62.23 of the Wisconsin Statutes create such commissions. A model ordinance and resolution creating such commissions and giving towns power to create such commissions is provided in Appendices D and F of the planning guide cited above.

<u>Municipal Utility and Sanitary Districts</u>: These districts may be created by towns, villages, and cities pursuant to Sections 60.71, 66.072, 62.18, and 198.22 of the Wisconsin Statutes and are authorized to plan, design, construct, operate, and maintain various public utility systems, including sanitary sewerage, water supply, and stormwater drainage systems.

Farmland Drainage Districts: Farmland drainage districts may be established under Chapter 88 of the Wisconsin Statutes to provide for the execution of areawide drainage improvements. Such districts are administered by a single county drainage board under the jurisdiction of the circuit court, although drainage districts previously created under Chapter 89 of the 1961 Statutes may operate under their own drainage boards.

<u>Community Development Authorities</u>: Cities and villages are authorized under Sections 66.4325 and 66.436 of the Wisconsin Statutes to create community development authorities for the purpose of carrying out blight elimination, slum clearance, and urban renewal programs and projects and housing projects. Cities and villages may also create redevelopment authorities to undertake and carry out redevelopment and urban renewal projects, as provided for under Sections 66.431 and 66.436 of the Statutes. Redevelopment authorities, unlike community development authorities, have no powers relative to public housing.

Areawide Agencies

Statutory provisions exist for the creation of the following multi-county or metropolitan agencies having both general and specific planning and plan implementation powers important to implementation of the regional plan.

Milwaukee Metropolitan Sewerage District: The Milwaukee Metropolitan Sewerage Commission, which operates pursuant to the provisions of Sections 66.88 through 66.918 of the Wisconsin Statutes, has the power to plan, design, and construct sewage treatment plants, main and intercepting sewers, and pumping stations for the collection, transmission, treatment, and disposal of domestic, industrial, and other sanitary sewage generated within the Milwaukee Metropolitan Sewerage District and adjacent contract service areas. The District consists of all of Milwaukee County except the City of South Milwaukee and certain portions of the Cities of Franklin and Oak Creek, those portions of the City of Milwaukee in Washington and Waukesha Counties, and the Village of Bayside in Ozaukee County. The Milwaukee Metropolitan Sewerage Commission, furthermore, may modify any watercourse within the District, or which flows out of and back into the District, by deepening, widening, or otherwise changing the watercourse where such change is deemed necessary to carry off surface or drainage waters. Under rules adopted by the Commission, the District also must approve all sanitary sewer extensions as well as the design of tributary storm sewers.

Other Metropolitan Sewerage Districts: Sections 66.20 through 66.26 of the Wisconsin Statutes enable the creation of metropolitan sewerage districts outside of Milwaukee County. Such districts may be formed by the Wisconsin Department of Natural Resources upon a request by resolution of the governing body of any municipality sought to be served by such a district. In addition to being capable of properly carrying out projects relating to the conveyance and treatment of sanitary sewage, metropolitan sewerage districts may build stormwater drainage and flood control facilities. To date, two such districts, the Western Racine County Sewerage District and the Walworth County Metropolitan Sewerage District, have been created in the Region. Under rules adopted by the Commissions governing those districts, all sanitary sewer extensions must be approved by the district concerned.

Joint Sewerage Commissions: Under Section 144.07 of the Wisconsin Statutes, jointly acting governmental units may construct, operate, and maintain an areawide sewerage system and create a joint sewerage commission to conduct the affairs of the system in much the same manner as a metropolitan sewerage commission is created to carry out areawide sewerage functions under a metropolitan sewerage district. The key difference between a joint sewerage system and a metropolitan sewerage district is that under a joint sewerage system all the governing bodies of the local units of government that initially formed the system must approve budgets and appropriations annually, whereas under a metropolitan sewerage district a special unit of government is created with its own taxing and appropriations powers. There are no such joint commissions operating in the Region.

<u>Cooperative Contract Commissions</u>: Section 66.30 of the Wisconsin Statutes provides broad authority enabling municipalities⁶ to contract with each other for the receipt and furnishing of

services or the joint exercise of powers or duties required or authorized by law. Such contract arrangements may include the creation of commissions for carrying out the desired functions cooperatively. Such commissions have been given bonding powers for the purposes of acquiring, developing, and equipping land, buildings, and facilities for areawide projects. Significant economies can often be effected by providing governmental services and facilities on a cooperative, areawide basis. Moreover, the nature of certain developmental and environmental problems often requires that solutions be approached on an areawide basis. Such an approach may be efficiently and economically provided through the use of a cooperative contract commission.

Examples of the use of a cooperative contract commission include the Underwood Sewer Commission, established cooperatively by contract between the City of Brookfield and the Village of Elm Grove for the purpose of providing for the construction, operation, and maintenance of a sanitary interceptor sewer along Underwood Creek: the Menomonee South Sewerage Commission, established cooperatively between the City of Brookfield and the Village of Menomonee Falls for the purpose of providing for the construction, operation, and maintenance of a sanitary intercepting sewer along Butler Ditch; and the Delafield-Hartland Water Pollution Control Commission, established cooperatively by the City of Delafield and the Villages of Hartland and Nashotah to build and operate a sewage treatment plant and system of trunk sewers. Another example of a cooperative contract commission is the North Shore Water Commission, created to plan, design, construct, and operate a water supply system for the City of Glendale and the Villages of Fox Point and Whitefish Bay in Milwaukee County.

The intergovernmental cooperation under such cooperative contract commissions may range from the sharing of expensive public works equipment to the construction, operation, and maintenance of major public works facilities on an areawide basis. Such cooperative contract commissions may be delegated specific areawide plan implementation powers by the local units of government and, as such, could become important agencies for implementing certain functional elements of the comprehensive plan for the physical development of the Region. A

⁶The term municipality under this section of the Statutes is defined to include the State and any agency thereof, cities, villages, towns, counties, regional planning commissions, school districts, sanitary districts, and various other specialpurpose government districts and agencies.

model agreement creating a cooperative contract commission is provided in Appendix A of SEWRPC Technical Report No. 6 (First Edition), <u>Planning Law in Southeastern Wisconsin</u>, 1966.

Regional Planning Commission: Although not a plan implementation agency, one other areawide agency warrants discussion: the Regional Planning Commission itself. This Commission, created by the Governor in cooperation with the seven constituent county boards under Section 66.945 of the Wisconsin Statutes, is empowered to prepare and adopt a master plan for the physical development of the Region. It has no statutory plan implementation powers. Its powers are limited to publicizing plans; issuing reports; providing community planning assistance; contracting with the local units of government to do planning; making findings as to plan conformance for state agencies relative to public and private sanitary sewer extensions; acting for a state agency or local unit of government, with approval of that agency or unit, in reviewing and approving subdivision plats and administration of shoreland zoning ordinances; and reviewing the location of, or acquisition of land for, any of the elements or facilities which are included in the adopted regional plan.

Although it has no statutory plan implementation powers, a regional planning commission may indirectly influence the implementation of its plans by being designated a reviewing agency of applications for federal grants-in-aid. An example of such indirect plan implementation is the review of federal grant applications under Presidential Executive Order No. 12372 and Gubernatorial Executive Order No. 29.

State-Level Agencies

At the state level, there exist the following agencies that have either general or specific planning authority and certain plan implementation powers important to adoption and implementation of the recommended regional land use plan.

Wisconsin Department of Administration: The Wisconsin Department of Administration was established to coordinate management services and assist the other agencies of state government. The Department serves as the state clearinghouse for the review of federal grants from within Wisconsin pursuant to Presidential Executive Order No. 12372 and Gubernatorial Executive Order No. 29. The Department's Bureau of Energy and Coastal Policy Analysis is responsible for administration of the federal coastal management program in Wisconsin. That program is intended to coordinate governmental activities toward the better management of the resources of the Lake Michigan and Lake Superior coastal zones of the state.

Wisconsin Department of Natural Resources: The Department of Natural Resources has broad authority and responsibility in the areas of park development, natural resource protection, water quality control, and water regulation. The Department has the obligation to prepare a comprehensive statewide plan for outdoor recreation and to develop long-range, statewide conservation and water resource plans; the authority to designate the sites necessary to protect, develop, and regulate the uses of state parks, forests, fish, game, lakes, streams, certain plant life, and other outdoor resources; the authority to acquire conservation and scenic easements; and the authority to administer the federal program known as the Land and Water Conservation Fund (LAWCON) program within the State, as well as the park and open space grant funds available under the state Stewardship Program.

The Department has a number of additional authorities and responsibilities which bear directly or indirectly on implementation of the regional land use plan. The Department has responsibility for establishing standards for floodland and shoreland zoning, including shoreland-wetland zoning, and for overseeing county and local floodland and shoreland zoning activities; authority to review water supply and sewerage system development, operation, and maintenance; authority to administer state financial assistance programs for water resource protection, including the Nonpoint Source Water Pollution Abatement program and the Clean Water Fund program; authority to regulate water diversions and other modifications of navigable waters; authority to establish and carry out a pollutant discharge elimination program in accordance with policy guidelines set forth under the federal Water Pollution Control Act of 1972, as amended; and authority to adopt and enforce ambient air quality standards.

<u>Wisconsin Department of Development</u>: The Wisconsin Department of Development has a range of responsibilities, including business retention, expansion, and attraction; development financing; small and minority business assistance; and tourism promotion and development. The Department is the state agency responsible for the review of proposed annexations, incorporations, and consolidations of cities and villages. The Department also administers the federal Small Cities Community Development Block Grant program in Wisconsin.

Wisconsin Department of Industry, Labor and <u>Human Relations</u>: The Department of Industry, Labor and Human Relations is the state agency responsible for the administration of the state one- and two-family dwelling code and the administration of state rules governing the use of private onsite sewage disposal systems, as well as private sanitary sewers that connect to public sewerage systems.

Wisconsin Department of Agriculture, Trade and Consumer Protection: The Wisconsin Department of Agriculture, Trade and Consumer Protection has a wide range of responsibilities for the conservation and protection of soil and water resources in the State. Among the Department's many responsibilities, most important to the implementation of the regional land use plan is the administration of the state Farmland Preservation program. That program combines planning and zoning provisions with income tax incentives for the purpose of ensuring the preservation of farmland. The program supports the attainment of the agricultural land preservation objectives of the regional land use plan by reducing through income tax credit the burden to farmers of high property tax assessments while providing the assurance that the land concerned will remain in agricultural use. The Department also administers the state Soil and Water Resources Management program, which provides financial assistance to county land conservation committees in support of their various soil and water conservation activities. In addition, the Department is responsible for administration of state platting regulations under Chapter 236 of the Wisconsin Statutes.

Wisconsin Department of Transportation: The Department of Transportation has a major role in the provision of transportation services and facilities necessary in support of the recommended land use plan. The Wisconsin Department of Transportation is authorized to preserve and improve mass transit systems within the State and to provide the State with an integrated highway transportation system. The Department is charged with responsibility for administering all state and federal aids for highway improvements: for the planning, design, construction, and maintenance of all state trunk highways; and for planning, laying out, revising, constructing, reconstructing, and maintaining the national system of interstate and defense highways, the Federal Aid Primary system, the Federal Aid Secondary system, and the Federal Aid Urban system, the latter four functions all being subject to federal review and regulation. The Department is also responsible for reviewing county trunk highway routes in order to assure that these routes form an integrated system of county trunk highways between adjoining counties. The Department is authorized to enter into cooperative agreements with the governing bodies of any county, city, village, or town, or with the federal government, respecting the financing, planning, establishment, improvement, maintenance, use, regulation, or vacation of highways within their respective jurisdiction.

The Department is also empowered to review and regulate subdivision plats along state trunk highways outside the corporate limits of the City of Milwaukee and to prepare official maps of future freeway and expressway routes. The Department, through its administration of federal and state highway aids to local units of government and through its highway design and engineering functions, exerts a powerful influence on street and highway system planning and development within Wisconsin.

University of Wisconsin-Extension: The University of Wisconsin-Extension operates on a contractual basis with counties to provide technical and educational assistance on matters ranging from economic development to soil and water conservation. Extension agents assigned to counties within the Region can contribute significantly toward implementation of the regional land use plan through their informational and educational activities.

Federal-Level Agencies

At the federal level the following agencies administer federal regulatory programs and aid programs that will have important effects upon the implementation of the recommended regional plan:

<u>U. S. Department of Housing and Urban Development</u>: This agency administers the various federal housing assistance programs and the federal Community Development Block Grant program. Under the Community Development Block Grant program, grants are available to local units of government for a broad range of activities directed toward neighborhood revitalization, economic development, and provision of improved community facilities and services.

U. S. Department of Commerce, Economic Development Administration: This agency administers various federal programs intended to foster the economic development of areas characterized by low personal income and severe unemployment.

U. S. Department of the Interior, National Park Service: This agency administers park and open space acquisition and development grants through the federal Land and Water Conservation Fund program. This program is administered in Wisconsin through the Wisconsin Department of Natural Resources. Grants under this program can be particularly important to implementation of the outdoor recreation and open space preservation elements of the regional land use plan.

<u>U. S. Department of Agriculture, Soil Conservation Service</u>: This agency administers resource conservation and development projects and watershed protection and flood prevention projects and provides technical and financial assistance to landowners in the planning and construction of measures for land treatment, agricultural water management, and flood prevention and for public fish, wildlife, and recreational development. This agency also conducts detailed soil surveys and provides interpretations as a guide to utilizing soil survey data in local planning and development.

U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service: This agency administers the federal Agricultural Conservation program, a financial assistance program intended to help rural landowners in carrying out approved conservation practices. and the Agricultural Resources Conservation program. The Agricultural Resources Conservation program is an umbrella program including four component programs: the Conservation Reserve program, which provides incentives to help farmers convert highly erodible cropland and other fragile cropland to less intensive uses; the Wetlands Reserve program, which provides incentives to farmers to retire converted wetlands from agricultural production; the Environmental Easements program, which is intended to promote the long-term protection of environmentally sensitive areas; and the Agriculture Water Quality Protection program, which provides farmers with incentive payments and technical assistance to reduce nonpoint source pollution.

U.S. Environmental Protection Agency: This agency administers water quality management planning grants and grants for related pollution control programs. In Wisconsin such programs and grants are generally administered through the Wisconsin Department of Natural Resources, which has been granted most of the environmental program administration responsibilities. In addition, the Environmental Protection Agency is responsible for the ultimate enforcement of water quality standards of interstate waters, should the states not adequately enforce such standards. Under guidelines promulgated by this agency, river basin, regional, and metropolitan water quality management plans are required as a condition of the approval and award of federal grants-in-aid for the construction of sewerage facilities. The U.S. Environmental Protection Agency is also charged with administering Section 208 of the 1972 federal Water Pollution Control Act. As a designated agency under that program, the Regional Planning Commission is involved cooperatively with the Wisconsin Department of Natural Resources in the continuing water quality planning and management program for southeastern Wisconsin, which is intended to update, extend, and refine the previous regional water quality management plan completed by the Commission. Further, the U.S. Environmental Protection Agency has the responsibility to enforce the provisions of the Clean Air Act of 1963 and its subsequent amendments.

U. S. Department of Agriculture, Farmers Home <u>Administration</u>: This agency administers water and waste disposal facility construction grants and loans for rural areas, community facility loans for rural areas, and rural housing loans and grants.

Federal Emergency Management Agency: Under the National Flood Insurance Act of 1968, the Federal Emergency Management Agency was given authority to conduct studies to determine the location and extent of floodlands and the monetary damage risks related to the insurance of urban development in floodland areas. The Federal Emergency Management Agency is conducting such studies on a community-bycommunity basis throughout the United States. In areas where detailed flood hazard data already exist, such as the data developed by the Commission under its comprehensive watershed planning programs, the federal studies have utilized the existing data. The federal studies may also include the development of flood hazard data for small, previously unstudied tributaries. In areas where no flood hazard data exist, the federal studies develop the data necessary for the delineation of flood hazard areas.

U. S. Army Corps of Engineers: The U. S. Army Crops of Engineers is the principal federal water resources regulatory and development agency. Section 404 of the federal Water Pollution Control Act of 1972, as amended, requires the Corps of Engineers to regulate, in accordance with guidelines developed by the U. S. Environmental Protection Agency, the discharge of dredge and fill materials into waters of the United States, which waters by definition include adjacent wetlands. The wetland regulatory provisions of this act have important implications for land use planning and development.

PLAN ADOPTION AND INTEGRATION

Upon adoption of the new regional land use plan by formal resolution of the Southeastern Wisconsin Regional Planning Commission, in accordance with Section 66.945(10) of the Wisconsin Statutes, the Commission will transmit a certified copy of the resolution and adopted plan to all local legislative bodies within the Region and to all of the aforesaid existing state, local, areawide, and federal agencies.

Endorsement, adoption, or formal acknowledgment and integration of these plans by the local legislative bodies and the existing local, areawide, state, and federal level agencies involved is highly desirable, and in some cases necessary, to assure a common understanding between the several government levels and to enable their staffs to program the necessary implementation work. In some cases, formal adoption is required by the Wisconsin Statutes before certain public plan implementation actions can proceed, as in the case of city, village, and town plan commissions created pursuant to Section 62.23 of the Wisconsin Statutes. Adoption of the new, design year 2010, regional land use plan by units and agencies of government that have adopted the first-generation, design year 1990, or secondgeneration, design year 2000, regional land use plans will serve to substitute the new plan for the old.

It is extremely important to understand that adoption of the recommended regional plans by any unit or agency of government pertains only to the statutory duties and functions of the adopting agency; such adoption does not and cannot in any way preempt action by another unit or agency of government within its jurisdiction.

Local-Level Agencies

- 1. It is recommended that the seven county boards formally adopt the recommended regional land use plan as it affects each county, as authorized by Section 66.945(12) of the Wisconsin Statutes, after recommendation by the respective county park and planning agencies, or cognizant county committees, as a guide to future land use development within the county. The plans should be adopted as county development plans pursuant to Section 59.97(3)(d) of the Wisconsin Statutes.
- 2. It is recommended that the seven county land conservation committees formally acknowledge the plan and consider the plan recommendations in carrying out their broad range of responsibilities with respect to the use and protection of soil and water resources.
- 3. To supplement the aforerecommended county actions, it is suggested that the plan commissions of cities, villages, and towns in the Region adopt the recommended regional plan as authorized by Section 66.945(12) of the Wisconsin Statutes as a guide to physical development in their area of jurisdiction. The plans should be adopted by the local plan commissions as local master plans pursuant to Section 62.23(3)(b) of the Wisconsin Statutes. While Wisconsin Statutes do not require adoption of local master plans by the local governing body, the Regional Planning Commission recommends that city councils, village boards, and town boards adopt such local master plans as a matter of endorsing the local plan commission action.
- 4. It is desirable that the governing bodies of all local utility and sanitary districts,

including stormwater drainage districts, formally acknowledge the recommended regional land use plan and use the plan as a basis for the formulation of their service area and facility plans.

- 5. It is recommended that all farmland drainage boards acknowledge the regional land use plan and consider the plan as appropriate in carrying out their designated drainage responsibilities.
- 6. It is recommended that all local community development authorities and redevelopment authorities formally acknowledge the recommended regional land use plan, particularly plan policies pertaining to the conservation and renewal of existing urban areas, and consider the plan in the preparation and implementation of urban redevelopment plans.

Areawide Agencies

- 1. It is recommended that the Milwaukee Metropolitan Sewerage Commission, the Western Racine County Sewerage Commission, the Walworth County Metropolitan Sewerage Commission, and any other metropolitan sewerage commission or joint sewerage commission created subsequent to the publication of this report formally acknowledge the recommended regional land use plan, particularly the residential land use element, in the determination of their service areas.
- 2. It is recommended that existing cooperative contract commissions and any cooperative contract agencies subsequently created formally acknowledge the recommended regional land use plan in regard to the exercise of their specific powers and duties.

State-Level Agencies

- 1. It is recommended that the Wisconsin Department of Administration endorse the regional land use plan and consider the plan in its administration of the federal coastal management program.
- 2. It is recommended that the Wisconsin Natural Resources Board endorse the regional land use plan and direct its staff in the Wisconsin Department of Natural

Resources to integrate the recommended land use plan elements into its broad range of agency responsibilities, as well as to assist in coordinating plan implementation activities during the plan design period. In particular, it is recommended that the Natural Resources Board endorse the recommended outdoor recreation and open space subelements and direct its staff to integrate these plan elements into its long-range conservation and comprehensive outdoor recreation plans. It is further recommended that the Board, through its staff. coordinate the recommended regional land use plan with its activities relating to floodland and shoreland zoning. It is also recommended that the Board and its staff consider and give due weight to the recommended land use plan in the exercise of their various water regulatory powers; in the exercise of their air quality planning and regulatory functions; and in the review of sanitary sewerage system improvements including the construction or expansion of sewage treatment plants and the extension of sewers.

- 3. It is recommended that the Wisconsin Department of Development endorse the regional land use plan and integrate the plan into its activities with respect to business retention, expansion, and attraction; the review of proposed annexations, incorporations, and consolidations of cities and villages; and administration of the Small Cities Community Development Block Grant program.
- 4. It is recommended that the Wisconsin Department of Industry, Labor and Human Relations endorse the land use plan and consider the recommendations of the plan, particularly those pertaining to the proper location of urban development within the Region, in its regulation of private onsite sewage disposal systems.
- 5. It is recommended that the Wisconsin Department of Agriculture, Trade and Consumer Protection endorse the regional land use plan, particularly the agricultural land element, and utilize the plan in its administration of the state Farmland Preservation program and the state Soil and Water Resources Management program.

- 6. It is recommended that the Wisconsin Department Transportation endorse the regional land use plan and consider the plan, particularly the planned distribution of population, employment, and urban land uses, in carrying out its highway and transit planning and development functions.
- 7. It is recommended that the University of Wisconsin-Extension endorse the regional land use plan and, with the support of the concerned counties, include in its work program informational and educational efforts designed to create a greater awareness and understanding of the plan among local officials, local units and agencies of government, and the general public.

Federal-Level Agencies

- 1. It is recommended that the U.S. Department of Housing and Urban Development formally acknowledge the regional land use plan and utilize the plan in the administration of the federal Community Development Block Grant program and federal housing assistance programs.
- 2. It is recommended that the U.S. Department of Commerce, Economic Development Administration, formally acknowledge the regional land use plan and consider the plan recommendations in the administration of its economic development programs.
- 3. It is recommended that the U.S. Department of the Interior, National Park Service, formally acknowledge the regional land use plan and consider the plan, especially the environmental corridor and the regional recreational site elements, in the administration and granting of federal aids under the Land and Water Conservation Fund Act.
- 4. It is recommended that the U.S. Department of Agriculture, Soil Conservation Service, formally acknowledge the regional land use plan and utilize the plan recommendations in its administration of the federal Resource Conservation and Development program and Watershed Protection and Flood Prevention program, and in its provision of technical assistance to landowners and operators for land and water conservation practices.

- 5. It is recommended that the U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, formally acknowledge the regional land use plan and utilize the plan recommendations in the administration of its Agricultural Conservation program and Agricultural Resources Conservation program.
- 6. It is recommended that the U.S. Environmental Protection Agency formally acknowledge the regional land use plan, utilize the plan recommendations in the administration of federal water quality management planning grant programs, and consider and give due weight to the recommended plan in the exercise of its air quality regulatory functions and in the administration of its air quality programs.
- 7. It is recommended that the U.S. Department of Agriculture, Farmers Home Administration, formally acknowledge the recommended regional land use plan, particularly the agricultural and residential land use elements, and utilize the plan in the administration and granting of loans and grants for rural water and waste disposal facilities, other community facilities, and housing.
- 8. It is recommended that the Federal Emergency Management Agency formally acknowledge the regional land use plan and utilize the plan in the administration of the National Flood Insurance program.
- 9. It is recommended that the U.S. Army Corps of Engineers formally acknowledge the regional land use plan, particularly the plan recommendations pertaining to the preservation of wetlands, and utilize the plan in carrying out its regulatory responsibilities under Section 404 of the federal Water Pollution Control Act of 1972, as amended.

Subsequent Adjustment of the Plan

No plan can be permanent in all its aspects or precise in all its elements. The very definition and characteristics of "regional planning" suggest that a regional plan, to be viable and useful to local, state, and federal units and agencies of government, be continually adjusted through formal amendments, extensions, additions, and refinements to reflect changing conditions. The Wisconsin Legislature clearly foresaw this when it gave to regional planning commissions the power to "amend, extend, or add to the master plan or carry any part or subject matter into greater detail" under Section 66.945(9) of the Wisconsin Statutes.

Amendments, extension, and additions to the regional plan will be forthcoming, not only from the work of the Commission under the continuing regional land use study, but also from statewide plans and from federal agencies as national policies are established or modified, new programs created, or existing programs expanded or curtailed. The regional planning effort documented in this report itself represents an amendment to the second-generation, design year 2000, regional land use plan adopted in 1977. Adjustments may come from subregional district and county and local planning programs which, of necessity, must be prepared in greater detail and result in greater refinement of the regional plans. Areawide adjustments may also come from regional or state planning programs. which may include additional comprehensive or special-purpose planning efforts. All these adjustments and refinements will require the utmost cooperation between local, areawide, state, and federal agencies, as well as coordination by the Southeastern Wisconsin Regional Planning Commission, which is empowered under Section 66.945(8) of the Wisconsin Statutes to act as a coordinating agency for programs and activities of the local units of government.

To achieve this coordination between local, areawide, state, and federal programs most effectively and efficiently and, therefore, assure the timely adjustment of the regional plans, it is recommended that all the aforesaid local, areawide, and state and federal agencies having various plan and plan implementation powers transmit all subsequent planning studies, plan proposals and amendments, and plan implementation devices to the Southeastern Wisconsin Regional Planning Commission for consideration as to integration into, and adjustment to, the adopted regional plans.

LAND USE PLAN IMPLEMENTATION

The implementation of the recommended regional land use plan is perhaps the most important single step toward the ultimate realization of the adopted regional development objectives. It requires the most intricate implementation measures and the utmost in cooperation among the local units of government and the areawide, state, and federal agencies involved in the application of those measures. The most important land use plan implementation measures are summarized in this section. For convenience in presentation and use, this section has been divided into the following major subject areas: local plans, zoning ordinances, subdivision control ordinances, urban design standards, official mapping, special land use regulations, open space acquisition, public development policies, public redevelopment and renewal policies, capital improvement programming, and state and federal aid programs.

Local Plans

Subsequent to formal plan adoption, an important step in the implementation of the regional land use plan is the refinement and detailing of that plan through appropriate county and local planning efforts. Such planning provides a means for the proper integration of regional and local land use development objectives and provides a basis for the adjustment of local plan implementation devices in accordance with those regional and local objectives.

- 1. It is recommended that each county in the Region, except Milwaukee County, after adopting the regional land use plan as the county development plan as recommended above, refine and detail the plan as it pertains to their unincorporated areas pursuant to Section 59.97 of the Wisconsin Statutes. The land use plan, appropriately refined and detailed, should provide a sound basis for the application of county zoning and land subdivision ordinances and other land use controls. The plan should also provide a basis and point of departure for the development of functional plans including county highway and transit plans, park plans, solid waste management plans, and other facility plans.
- 2. It is recommended that cities, villages, and towns that have adopted village powers in the Region, after adopting the regional land use plan as the local master plan as recommended above, refine and detail the plan pursuant to Section 62.23 of the Wisconsin Statutes. It is further recommended that cities and villages consider supplementing

the local master plan with precise neighborhood unit development plans for newly developing areas and with urban conservation and revitalization plans for existing urban areas, as appropriate.

Zoning Ordinances

Of all the land use implementation devices presently available, perhaps the most important and most versatile is the application of local police power to control land use development through the adoption of appropriate zoning ordinances, including zoning district regulations and zoning district delineations. Zoning ordinances are most effectively utilized when prepared within the context of a local master plan; accordingly, the preparation of local master plans refining and detailing the regional land use plan, as recommended above, should precede creation or amendment of zoning ordinances.

The zoning ordinances or amendments to existing zoning ordinances described in the following recommendations should be adopted by the appropriate local units of government within the Region so as to provide a clear indication of the intent to implement the recommended regional land use plan at the local level of government.

- 1. It is recommended that the county zoning agencies within the Region formulate and recommend to their respective county boards such amendments to the county zoning ordinances, in accordance with Section 59.97 of the Wisconsin Statutes, as may be necessary to effectively implement the regional land use plan. These new zoning measures should serve to provide district regulations, including exclusive-use districts similar to those provided in the SEWRPC Model Zoning Ordinance,⁷ together with changes to zoning district maps to reflect the recommended regional land uses.
- 2. It is then recommended that the county boards adopt the pertinent amendments and changes, in accordance with Section 59.97(5) of the Wisconsin Statutes, and that the boards of all towns which have

filed approval of the county zoning ordinances file certified resolutions approving such amendments and changes.

- 3. It is recommended that towns lying in counties which subsequently adopt a zoning ordinance similar to the SEWRPC model zoning ordinance approve such county zoning ordinance and file a certified copy of such approval in accordance with Section 59.97 of the Wisconsin Statutes.
- 4. It is further recommended that the planning commissions of all cities, villages, and towns which have not filed approval of the county zoning ordinance formulate and recommend to their respective governing bodies, as appropriate, new zoning ordinances or amendments to existing zoning ordinances, in accordance with Sections 60.61 or 62.23(7) of the Wisconsin Statutes, as necessary. These new measures should serve to provide district regulations, including exclusive-use districts similar to those provided in the SEWRPC Model Zoning Ordinance,⁸ together with new zoning district maps or changes to existing zoning district maps, to reflect the recommended regional land uses.
- 5. It is then recommended that the respective municipal governing bodies adopt such ordinances or amendments thereto, including such district maps or changes thereto, pursuant to Sections 60.61 or 62.23(7) of the Wisconsin Statutes.

It should be noted that the Wisconsin Statutes provide three approaches to the general zoning in unincorporated areas. First, towns may adopt the county zoning ordinance if one exists. Second, towns may adopt village powers and utilize zoning authority granted to cities and villages. Adoption of an ordinance and ordinance amendments in this situation, however, requires the approval of the county board if a county zoning ordinance exists. Third, where a county zoning ordinance does not exist, a town may adopt its own zoning ordinance, but only after the county board fails to adopt a county

⁷See SEWRPC Planning Guide No. 3, <u>Zoning</u> <u>Guide</u>, April 1964.

⁸Ibid.

zoning ordinance at the petition of the town board concerned. While recommendations numbered 1 through 5 above recognize these various zoning arrangements, it should be noted that the implementation of the regional land use plan, particularly the natural resource protection and farmland preservation elements of that plan. may be best accomplished when the zoning of unincorporated areas is administered through a county zoning ordinance. County zoning provides an effective means for the uniform application of zoning regulations that address matters of areawide concern, such as environmental corridor and prime agricultural land preservation. Moreover, such an approach can provide an efficient means for the administration of zoning through qualified professional staff, a staff which may otherwise be unavailable in rural towns.

The task of delineating zoning district boundaries to reflect the regional plan recommendations is as difficult as it is important. Proper delineation of the boundaries of the recommended regional land uses will require a careful study and thorough understanding not only of the local community plan recommendations of the local zoning agencies, but also of the regional plan recommendations and their relationships to the local community. In this process, recommended environmental corridors must be delineated and broken down in appropriate districts and recommended agricultural use areas must be delineated. Moreover, the delineation of the zoning districts to reflect immediately the recommended regional land use plan may result initially in overzoning; this may, in turn, result in mixed and uneconomical future land use patterns. Therefore, the use of holding zones, such as exclusive agricultural districts or large estate-type residential districts, may be necessary to regulate community growth in both time and space in an orderly and economical manner. The following recommendations are made to all zoning agencies within the Region to assist them in the task of zoning ordinance preparation. including zoning district delineation.

<u>Urban Residential Areas</u>: Not all the areas shown on the recommended regional land use plan as devoted to urban residential use should initially be placed in residential use districts. Only existing and platted, but not yet fully developed, residential areas, as well as those areas that have immediate residential develop-

ment potential and can be economically served by municipal utilities and facilities, such as sanitary sewer, public water supply, adequate arrangements for stormwater management, and schools, should be placed in exclusive residential districts and related to the development densities indicated on the recommended regional land use plan. The rest of the residential land use elements should be placed in a holding district, such as an agricultural district zone. The use of these holding districts is discussed in SEWRPC Planning Guide No. 3, Zoning Guide. Such holding districts should be rezoned into the appropriate residential district or supporting land use districts, such as neighborhood business or park districts, only when the community can economically and efficiently accommodate the proposed development.

It should be noted that the recommended residential densities shown on the regional land use plan can be achieved within each planned development unit by various combinations of lot sizes per dwelling unit and various housing structure types. Moreover, each residential development density specified on the plan encompasses a density range. The density categories utilized in the plan preparation include urban high-density, with a net lot area per dwelling unit ranging from 0.06 to 0.14 acre; urban medium-density, with a net lot area per dwelling unit ranging from 0.15 to 0.44 acre; urban low-density, with a next lot area per dwelling unit ranging from 0.45 to 1.44 acres; suburban residential-density, with a net lot area per dwelling unit ranging from 1.45 to 5.00 acres; and rural residential-density, with a net lot area per dwelling unit exceeding 5.00 acres. These ranges are broadly defined so as to provide flexibility to local units of government in the selection of local residential land use regulations permitting attainment of the regional development objectives. It is incumbent upon each community to determine at which point within the recommended density range it wants land development to occur.

It is also important to recognize that residential zoning restrictions may have a significant influence on housing costs, and, therefore, on the choice of location of housing for moderate- and lower-income persons. To maximize locational choice, all urban communities, especially "developing" communities, should incorporate provisions for a full range of residential structure types, single-family, two-family, and multifamily, as well as a reasonable range of housing sizes within their zoning ordinances. Moreover, with but few exceptions, urban communities should incorporate provisions for a full range of residential lot sizes and include one or more residential districts specifying lot sizes of no more than 7,200 square feet for single-family detached housing units and 8,000 square feet for two-family structures.

Rural Residential Areas: The plan recognizes that there will continue to be some demand for rural, or "country" living by nonfarm people. In past years this demand has been met, to a large extent, through the development of subdivisions served by septic tanks and private wells with lot sizes ranging from one to three acres. The recommended regional land use plan seeks to discourage this kind of development since it represents neither rural nor urban development. Rather, the plan recommends that this portion of the housing market be satisfied through very low-density country estate-type developments. Rural residential zoning districts accommodating such development should specify lot sizes of at least five acres per dwelling unit, preferably larger. In the delineation of rural residential zoning districts, every effort should be made to ensure that the resulting development is properly situated with respect to the natural resource base. In this respect, rural residential development should be accommodated only in areas covered by soils that are suitable for such development and should minimize disturbance of natural drainage systems. Building sites should, to the extent practicable, be located outside environmental corridors and isolated natural areas. Where building sites are located in environmental corridors or isolated natural areas, disturbance of wetlands, prairies, and other particularly sensitive resource elements should be avoided and the overall biological diversity of the area should be maintained. Properly situated with respect to the natural resources base, such large-lot rural residential development can be sustained without public sanitary sewer and water supply and extensive engineered and constructed stormwater management systems, woodland and wetland areas can be preserved, wildlife can continue to sustain itself in the area, and groundwater quality and the recharge areas of aquifers can be more readily protected. The large lot size recommended for such development also provides the

opportunity for the replacement of malfunctioning onsite sewage disposal systems as necessary.

<u>Agricultural Areas</u>: Areas which have been designated as prime agricultural lands and agricultural areas surrounding major scientific, educational, and recreation sites should be placed in an exclusive-use agricultural district which essentially permits only agricultural uses. Such a district should provide for a minimum parcel site of 35 acres in order to preserve workable farm units, and prohibit the intrusion of incompatible urban development. No structures or improvements should be permitted unless they are consistent with agricultural use. In general, residences should be limited to those required for the farmer, farm laborer, or parents or children of the farmer.

In addition to the preservation of prime agricultural lands, the preservation of other general agricultural lands in the Region is also important to the economic well-being, natural beauty, and the quality of life within southeastern Wisconsin. While such general agricultural lands may serve as a land reserve for urban expansion necessitated by growth in the regional population, these general agricultural lands should also be preserved insofar as possible, and the extent of conversion of general agricultural land to urban land use should be confined to that proposed under the adopted regional land use plan. The preservation of general agricultural lands should be accomplished through the use of general agricultural and rural residential zoning districts designed to reflect community needs, the pattern of land ownership, and the suitability of land for farming.

Environmental Corridors: Areas which have been designated as primary environmental corridors should be placed in one of several zoning districts, depending upon the type and character of the natural resource features to be preserved and protected. All lakes, rivers, streams, wetlands, and associated undeveloped floodlands and shorelands, including lowland wildlife habitat, generally should be placed in lowland conservancy or floodland protection districts. Upland wooded areas and areas of steep slope, that is, 12 percent or more, including scenic overlooks and upland wildlife habitat, generally should be placed in appropriate upland conservancy, rural-density residential, or park and recreational districts. Placement of the environmental corridors in these zoning districts would generally promote the preservation of such corridors in essentially natural, open uses.

While calling for the preservation of environmental corridor lands, the regional land use plan recognizes that certain transportation and utility facilities may of necessity have to be accommodated within the environmental corridors. The plan also recognizes that certain environmental corridor lands provide highly desirable settings for residential and recreational development and that certain limited residential and recreational uses may be accommodated within the corridors without jeopardizing the overall integrity of the corridors. The major types of development which may be accommodated within the various component natural resource features of the environmental corridors are indicated in Table 166. In order to assure the protection of the natural resources within the environmental corridors, permitted uses within the floodland protection, upland and lowland conservancy, park and recreational, and rural-density residential zoning districts as specified in county and local zoning ordinances should be reviewed and revised as necessary to be consistent with the guidelines set forth in Table 166.⁹

Table 166 indicates that streets and highways, utility lines and related facilities, engineered stormwater management facilities, and engineered flood control facilities may be accommodated within certain natural resource features comprising the environmental corridors. Proposals for the location of all such transportation and utility facilities within the environmental corridors should be carefully evaluated on a case-by-case, site-specific, basis. In such evaluation possible alternative locations should be identified and comparatively evaluated. If it is determined that such facilities should be located within the corridors, the design and development of the facilities should be sensitive to the existing resource features, and, to the extent

possible following construction, disturbed areas should be restored to preconstruction conditions.

Table 166 also indicates the types of outdoor recreational facilities which may be accommodated within the various natural resource features comprising the environmental corridors. Most of these facilities are resource oriented insofar as they depend upon natural resource features for existence or are greatly enhanced by the presence of natural resource features. As indicated in Table 166, in general no more than 20 percent of the total environmental corridor area should be developed for the indicated recreational facilities. Furthermore, no more than 20 percent of the environmental corridor area consisting of upland wildlife habitat and woodlands should be developed for such facilities. It is recognized, however, that in certain cases these percentages may have to be exceeded in efforts to accommodate needed public recreational facilities within appropriate natural settings.

Limited single-family residential development within the environmental corridor may occur in various forms ranging from development on large rural estate-type lots to clustered singlefamily development. In order to preserve the integrity of the environmental corridors, it is essential that the amount, configuration, and location of such residential development be properly related to existing natural features. In this regard, the maximum number of housing units accommodated at a proposed development site within the environmental corridor should be limited to the number determined by dividing the total corridor area within the site minus the area covered by surface water and wetlands by five. In addition, individual lots should contain a minimum of approximately one acre of land determined to be developable for each housing unit, with developable lands being defined to include upland wildlife habitat and woodlands, but excluding areas of steep slope. Adherence to these guidelines will result in a net residential density of no more than one housing unit per five acres of environmental corridor lands beyond surface water and wetland areas. Adherence to these guidelines will also ensure the creation of building lots with sufficient developable area so as to prevent undue disturbance of the natural resource base during and after construction.

Residential development should, to the extent practicable, be directed to areas of the corridor

⁹The zoning ordinance amendments which may be necessary to reflect the development guidelines in Table 166 should not preclude singlefamily residential development on existing lots of record as permitted under county and local zoning at the time of adoption of the land use plan.

which may have been previously disturbed and to the edges of the corridor. Where clustered residential development is utilized, the surrounding lands needed to maintain the recommended net residential density should be placed under restrictive covenants or dedicated to an appropriate public park agency, a private conservancy organization, or a duly constituted neighborhood homeowners association, with dedication specifying maintenance in natural, open use.

It should be noted that Table 166 is not exhaustive, listing only the major types of development which may be accommodated within the environmental corridors in accordance with the regional land use plan. With good judgment, the guidelines set forth in Table 166 may be extended to, and used in the evaluation of, proposals for similar types of development not specifically listed in that table.

Finally, it should be noted that adherence to the environmental corridor development guidelines may require that certain large land-consuming facilities, such as golf courses and certain transportation and utility facilities, may have to be located wholly or partially on adjacent agricultural lands, including prime agricultural lands. Proposals for such development must be evaluated on a case-by-case basis, carefully weighing farmland preservation objectives and environmental corridor preservation objectives for the affected area.

Major Commercial Centers: The regional land use plan recommends the development of five new major commercial centers, including one retail center and four office centers, by the year 2010. Four of these centers, including the Park Place office center in the City of Milwaukee, an office center in the City of Mequon, an office center in the Town of Pewaukee, and a retail shopping area located near the intersection of IH 94 and STH 50 in Kenosha County, were under development by 1990. The local units of government concerned should review their local zoning ordinances to determine what adjustments, if any, are needed to ensure the continued development of these sites in conformance with the regional land use plan recommendations. The fifth new major commercial center, to be developed as the Milwaukee County Research Park in the City of Wauwatosa, was not yet under development by 1990. That center has been appropriately placed in a planned business development district under the City of Wauwatosa zoning ordinance and is thus reserved for future development in accordance with the regional land use plan.

<u>Major Industrial Centers</u>: The regional land use plan recommends that three new major industrial centers be developed in the Region by the year 2010, including centers located in or adjacent to the Cities of Burlington and Hartford and the Village of Pleasant Prairie. All three sites were at some stage of development by 1990. The local units of government involved should review their local zoning ordinances to determine what adjustments, if any, are needed to ensure the continued development of these sites as envisioned under the regional land use plan.

Major Outdoor Recreation Sites: The regional land use plan recommends the acquisition and development of four entirely new major parks in the Region by the year 2010: the Sugar Creek site in the Town of LaFayette, Walworth County; the Paradise Valley site in the Town of West Bend, Washington County; Mitchell Park in the City and Town of Brookfield, Waukesha County; and an unnamed site in the western portion of the Village of Pleasant Prairie, Kenosha County. The entire Pleasant Prairie park site and a substantial portion of the Mitchell Park site were publicly acquired by 1990. The Sugar Creek and Paradise Valley sites have not yet been acquired. Those portions of the sites lying within the primary environmental corridors should be placed in upland conservancy, lowland conservancy, or floodland protection districts, depending upon the types and characteristics of the natural resources so as to preserve existing resources and accommodate limited outdoor recreation use. Those undeveloped portions of the sites lying outside of the corridors should be placed in park districts consistent with the proposed recreation use.

<u>Airports</u>: A major element of the comprehensive plan for the development of the Region is the regional airport system plan. This plan is a guide to public airport development that recommends the commercial and general aviation airports which are essential to meeting the public's future air transportation needs of southeastern Wisconsin. The plan recommends the number, overall size, and function of those airports identified as being essential and also recommends the major improvements necessary for each of those airports. Thus, the airports in

GUIDELINES FOR DEVELOPMENT CONSIDERED COMPATIBLE WITH ENVIRONMENTAL CORRIDORS

	Permitted Davelopment																
	Tra (see Ge	ansportation neral Develo	and Utility Facili pment Guideline		Recreational Facilities (see General Development Guidelines below)												
Component Natural Resource and Related Features within Environmental Corridors ^a	Streets and Highways	Utility Lines and Related Facilities	Engineered Stormwater Management Facilities	Engineered Flood Control Facilities ^b	Trail ^C	Picnic Area	Family Camping ^d	Swimming Beach	Boat Access	Ski Hill	Golf	Playfield	Hard Surface Courts	Parking	Buildings	Rural Density Single-Family Residential Development (see General Development Guidelines below)	
Lakes, Rivers, Streams	e	f,g		h	. i			x	x								
Shoreline	x	x	x	x	x	x		x	x		x			x	. -		
Floodplain	ĴĴ	x	X	x	X	x		x	x		x	х		x	х		
Wetland ^k	_j	x	х	x	x				х			• •		• •			
Wet Soils	×	X	х	x	x			х	x		х			x			
Woodland	х	х	X		x	х	x		x	x	x	x	х	х	x	x	
Wildlife Habitat	х	X	x		x	х	х		x	X	x	x	x	x	х) x	
Steep Slope	x	x	••		^m		••			xn	x		••				
Prairie		Q	·		m	• -					• -	••		••			
Park	х	×_	х	х	X_	х	х	x	X	x	x	х	х	X	Х		
Historic Site	••	9	. • •	 .	^m				••		• -	••					
Scenic Viewpoint	X	X	••		×	х	x	'	х	X	х		••	х	Х	x	
Scientific or Natural	• -	8	. · · · ·			÷ •	••		••			• -		••			
Area Site																	

NOTE: An "X" indicates that facility development is permitted within the specified natural resource features. In those portions of the environmental corridors having more than one of the listed natural resource features, the natural resource feature with the most restrictive development limitation should take precedence.

GENERAL DEVELOPMENT GUIDELINES

• <u>Transportation and Utility Facilities</u>: All transportation and utility facilities proposed to be located within the important natural resources should be evaluated on a case-by-case basis to consider alternative locations for such facilities. If it is determined that such facilities should be located within natural resources, development activities should be sensitive to these resources, and, to the extent possible following construction, such resources should be restored to preconstruction conditions.

The above table presents development guidelines for major transportation and utility facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

<u>Recreational Facilities</u>: In general, no more than 20 percent of the total environmental corridor area should be developed for recreational facilities. Furthermore, no more than 20 percent of the environmental corridor area consisting of upland wildlife habitat and woodlands should be developed for recreational facilities. It is recognized, however, that in certain cases these percentages may be exceeded in efforts to accommodate needed public recreational and game and fish management facilities within appropriate natural settings.

The above table presents development guidelines for major recreational facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

<u>Single-Family Residential Development</u>: Limited single-family residential development within the environmental corridor may occur in various forms ranging from development on large rural estate lots to clustered single-family development. The maximum number of housing units accommodated at a proposed development site within the environmental corridor should be limited to the number determined by dividing the total corridor area within the site less the area covered by surface water and wetlands by five. Individual lots should contain a minimum of approximately one acre of land determined to be developable for each housing unit--with developable lands being defined to include upland wildlife habitat and woodlands, but to exclude areas of steep slope.

Single-family development on existing lots of record should be permitted as provided for under county or local zoning at the time of adoption of the land use plan.

⁸The natural resource and related features are defined as follows:

Lakes, Rivers, and Streams: Includes all lakes greater than five acres in area and all perennial and intermittent streams as shown on U. S. Geological Survey quadrangle maps.

Shoreline: Includes a band 50 feet in depth along both sides of intermittent streams; a band 75 feet in depth along both sides of perennial streams; a band 75 feet in depth around lakes; and a band 200 feet in depth along the Lake Michigan shoreline.

Floodplain: Includes areas, excluding stream channels and lake beds, subject to inundation by the 100-year recurrence interval flood event.

Wetlands: Includes areas one acre or more in size in which the water table is at, near, or above the land surface and which are characterized by both hydric soils and by the growth of sedges, cattails, and other wetland vegetation.

Wet Soils: Includes areas covered by wet, poorly drained, and organic soils.

Woodlands: Includes areas one acre or more in size having 17 or more deciduous trees per acre with at least a 50 percent canopy cover as well as coniferous tree plantations and reforestation projects; excludes lowland woodlands, such as tamarack swamps, which are classified as wetlands.

Wildlife Habitat; Includes areas devoted to natural open uses of a size and with a vegetative cover capable of supporting a balanced diversity of wildlife.

Steep Slope: Includes areas with land slopes of 12 percent or greater.

Prairies: Includes open, generally treeless areas which are dominated by native grasses.

Park: Includes public and nonpublic park and open space sites.

Historic Site: Includes sites listed on the National Register of Historic Places.

Scenic Viewpoint: Includes vantage points from which a diversity of natural features such as surface waters, wetlands, woodlands, and agricultural lands can be observed.

Scientific and Natural Area Sites: Includes tracts of land and water so little modified by man's activity that they contain intact native plant and animal communities believed to be representative of the presentative of the presentative of the second sec

^bIncludes such improvements as stream channel modifications and such facilities as dams.

^C Includes trails for such activities as hiking, bicycling, cross-country skiing, nature study, and horseback riding, and excludes all motorized trail activities. It should be recognized that trails for motorized activities such as snowmobiling that are located outside the environmental corridors may of necessity have to cross environmental corridor lands. Proposals for such crossings should be evaluated on a case-by-case basis, and if it is determined that they are necessary, such trail crossings should be designed to ensure minimum disturbance of the natural resources.

d Includes areas intended to accommodate camping in tents, trailers, or recreational vehicles which remain at the site for short periods of time--typically ranging from an overnight to a two-week stay.

^eIt should be recognized that certain transportation facilities such as bridges may be constructed over such resources.

^fIt should be recognized that utility facilities such as sanitary sewers may be located in or under such resources.

^gIt should be recognized that electric power transmission lines and similar lines may be suspended over such resources.

h It should be recognized that certain flood control facilities such as dams and channel modifications may need to be provided in such resources to reduce or eliminate flood damage to existing development.

¹It should be recognized that bridges for trail facilities may be constructed over such resources.

¹It should be recognized that streets and highways may cross such resources. Where this occurs, there should be no net loss of flood storage capacity or wetlands.

^kAny development affecting wetlands must adhere to the water quality standards for wetlands established under Chapter NR 103 of the Wisconsin Administrative Code.

¹Only an appropriately designed boardwalk/trail should be permitted.

^mOnly appropriately designed and located hiking and cross country ski trails should be permitted.

ⁿOnly an appropriately designed, vegetated, and maintained ski hill should be permitted.

Source: SEWRPC.

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the plan are those that should be protected and at which public funding should be directed.

The regional airport system plan is a secondgeneration plan, adopted by the Commission in June 1987. The initial plan was adopted by the Commission in March 1976. The current recommended plan includes 11 essential public-use airports, including one classified as a Transport airport, four classified as General Utility-Stage II airports, three classified as General Utility-Stage I airports, and three classified as Basic Utility-Stage II airports. The regional airport plan recommends that master plans be prepared for each airport as an important step toward preventing incompatible land use development within the airport environs and toward minimizing nuisances and safety hazards involving aircraft operations and neighboring land uses. It further recommends that those cities, villages, and towns involved review their local zoning ordinances and take appropriate action to determine what adjustments, if any, are needed to ensure that the land use development allowed by zoning and height control ordinances is fully compatible with the airport development.

Zoning and Property Tax Policies: One of the criticisms often leveled against the use of zoning powers for open space preservation purposes is that, in an urbanizing area, the assessed valuation of the restrictively zoned land may be so high as to reasonably preclude maintenance of the land in predominantly rural uses. In addition, the mill rate applied to the assessed valuation is often rising rapidly in developing communities due to increased demands for urban services, in particular for school services. This is particularly true where communities have allowed substantially unregulated land development to occur, resulting in extensive urban sprawl.

Section 70.32 of the Wisconsin Statutes directs local assessors to assess real estate at the full market value, or the value which could ordinarily be attained at a private sale. Where open lands are adjacent to or within a rapidly urbanizing area, and particularly where poor land use regulations have permitted highly dispersed urban development, property tax assessments may reflect the public's sometimes exaggerated estimate of the development potential. Even if the land is zoned for exclusive agricultural or conservancy use, the local assessor is allowed to consider the market value of real property based on the reasonable probability of rezoning to permit more intensive use.

The Wisconsin Legislature took an important step toward addressing this problem as it pertains to agricultural land with the enactment in 1977 of the Wisconsin Farmland Preservation Program. That program provides state income tax credits as an offset to property taxes on farmland subject to agricultural use restrictions imposed through exclusive agricultural zoning or long-term farmland preservation agreements between the landowner and the State. In 1988, such tax credits were granted on about one-fifth of all agricultural land in the Region. Income tax credits averaged about one-third of the total property tax due on such lands.

Additional means available under present Wisconsin constitutional and statutory law for relieving the owners of land zoned for exclusive agricultural or conservancy use from the possibility of unrealistically high property assessment and resultant taxation include the following:

- 1. The property owner may voluntarily grant to a governmental unit an easement that would prohibit development for a substantial period of time, for example, 20 years.
- 2. The property owner may voluntarily place restrictive covenants which would prohibit development and would be enforceable by a governmental unit in perpetuity or for a substantial period of time.
- 3. A governmental unit may purchase any development rights that may have inured to a property.

Each of these private or governmental actions has the potential to affect the valuation of individual land ownerships. Under these approaches, the local assessor would assess lands at their fair market value for agricultural, conservancy, and floodland uses rather than for potential urban uses, and the landowner would realize an advantage through a reduced assessment of his property. Under the third approach, the landowner would realize additional value through the sale of development rights.

Subdivision Control

Land subdivision control ordinances are of particular importance to plan implementation

since decisions concerning the subdivision of land are among the first official activities involving public policy as it applies to future development. Cities, villages, towns, and counties are authorized under Wisconsin Statutes to adopt subdivision control ordinances regulating the manner in which land is subdivided and prepared for development. Villages and cities can extend the applicability of their ordinances into extraterritorial areas in neighboring towns. The subdivision ordinance power of towns and counties, on the other hand, is confined to their own unincorporated areas.

Subdivision control ordinances can regulate the form of urban development through detailed design standards regarding streets and the layout of lots and blocks and through requirements regarding the installation of storm sewers. sanitary sewers, water supply, and other public improvements. Importantly, such ordinances can require the dedication of reasonable portions of the subdivision for park and open space and other public purposes or the payment of a fee in lieu of such dedication. Such dedication or fee in lieu of dedication requirements reflect the fact that the new development places a demand upon the entire community which is thereafter responsible for the services and facilities that must be provided to the new development and its residents. Such requirements recognize that the developer or future residents should in justice bear all or a portion of such costs directly attributed to the new development.

- 1. It is recommended that all counties, except Milwaukee County, and all cities, villages, and towns within the Region, pursuant to Section 236.45 of the Wisconsin Statutes, amend existing or adopt new subdivision regulations similar to the SEWRPC Model Land Division Ordinance.¹⁰
- 2. It is recommended that such subdivision control ordinances include provisions prohibiting the subdividing of primary environmental corridor lands which are recommended for public acquisition and all open space areas which are recommended

for development as large parks under the regional park and open space plan and county refinements of that plan.

3. It is recommended that city, village, and town subdivision control ordinances include provisions for the dedication of appropriate recreational sites and corridor parklands or payment of fees in lieu of such dedication. Such dedication and fee in lieu of dedication requirements are intended to meet the need for additional local park and open space lands and facilities generated by new land subdivisions. It is envisioned that larger, that is, county and regional, parks would be more broadly financed by the state and county governments concerned.

It is important that plans used by counties as a basis for regulating land subdivision be duly adopted as provided for under the Wisconsin Statutes. The Wisconsin Statutes provide for two kinds of plans to guide growth and development at the county level. Section 59.97(3) provides that counties, through county zoning agencies, shall prepare a county development plan pertaining to the unincorporated area of the county, as well as to incorporated areas whose governing bodies agree to be included in the plan. The Statutes envision the county development plan as a comprehensive plan dealing with a wide range of matters pertaining to the physical and economic development of the county. If the county development plan is to be used as a basis for subdivision plat review, Section 236.13 requires that the plan be adopted as a county board ordinance.

Section 236.46 authorizes counties to prepare detailed plans pertaining to the future platting of lands and the future location of streets. highways, and parkways, and the extension or widening of existing streets and highways. Such plans apply only to unincorporated areas: however, in counties with a population less than 500,000, the plans apply to the unincorporated extraterritorial plat review areas of cities and villages if the concerned city or village has approved the plan. The plan must be submitted to, and approved by, the town boards concerned prior to county board adoption. The county board may adopt the plan by ordinance only in those towns which have approved the plan. Outside of any plans which may have been prepared by the Milwaukee County Regional

¹⁰See Appendix A of SEWRPC Planning Guide No. 1, <u>Land Development Guide</u>, November 1963.

Planning Department, which ceased functioning in 1962, no county platting plans are known to have been prepared within the seven-county Southeastern Wisconsin Region.

It should be noted that the regional land use plan as it pertains to each county may be adopted by county board ordinance as the county development plan. The county development plan can then be used by the county as a basis for plat review, whether or not that plan has been approved by the towns concerned.

Urban Design Standards

Achievement of an urban development pattern that is functional, safe, and attractive, as recommended in the regional plan, ultimately depends upon good design of individual development sites. Local units of government can promote good site design through the development of urban design standards and the application of such standards in the preparation of development plans. Development projects completed in accordance with soundly conceived urban design standards can enhance the visual character of permitted sites and buildings. contribute to the long-term stability of the developed areas and the maintenance of property values, and protect the public investment in supporting infrastructure systems.

Urban design standards should reflect both regional and local development objectives. Regional concerns that should be addressed in such standards include transit serviceability, proper access to arterial streets and highways, and protection of the natural resource base. Local concerns which may be addressed in such standards include, among others, the layout of lots and blocks; provision of off-street parking; building mass, facades, and materials; solar access; grading; drainage; screening or buffering of building appurtenances; landscaping; and outdoor lighting. Some of the design standards may be quantitative in nature, so that compliance is directly measurable. Other standards may be qualitative in nature, so that determination of compliance involves experienced judgment.

Perhaps the best way to ensure compliance with urban design standards is to incorporate those standards into local land use controls, particularly zoning and subdivision control ordinances. Zoning ordinances can be expanded by requiring that site plans and building plans be prepared for each proposed development and by specifying the standards which the plans must meet. Subdivision control ordinances may be expanded to stipulate additional design standards required to be met in the land development process. Freestanding architectural control ordinances may also be used to codify building-related design standards.

It is recommended that each county and local unit of government in the Region consider the formulation of a comprehensive set of urban design standards reflecting regional and local development objectives and determine whether and how the existing framework of local land use controls should be amended to ensure adherence to those standards.

Official Mapping

Official mapping powers provide a means of prohibiting the construction of buildings or structures and their associated improvements on land that has been designated for current or future public use, including streets, highways, drainageways, parkways, parks and playgrounds. Good planning practice dictates that the location of such required public lands should be determined in precise neighborhood development plans. The single most important prerequisite of such official mapping is the availability of accurate base maps at an adequate scale, based upon a control survey system that properly relates the U.S. Public Land Survey System to the State Plane Coordinate System. Such prerequisite maps have now been prepared for areas encompassing a total of about 1,363 square miles, or about 51 percent of the total area of the Region.

It is recommended that all cities, villages, and towns in the Region prepare and adopt official maps pursuant to Section 62.23(6) of the Wisconsin Statutes showing thereon as proposed parks and parkways those primary environmental corridor lands proposed for public acquisition and other lands proposed to be publicly acquired and developed as large parks under the regional park and open space plan and county refinements of that plan.

Special Land Use Regulations

In addition to the general zoning regulations previously discussed and recommended, there are several special land use regulations available to local units of government and to certain state and federal agencies. These can contribute in varying degrees toward the implementation of the recommended regional land use plan.

Floodland Regulations: The first-generation, design year 1990, and second-generation, design year 2000, regional land use plans both recommended the adoption of floodplain zoning regulations to preserve the natural floodwater conveyance and storage capacity of floodplain areas and to avoid the intensification of flooding problems in the Region. Such regulations have now been adopted on a widespread basis by county and local units of government throughout the Region. Under Section 87.30 of the Wisconsin Statutes, counties, cities, and villages in Wisconsin are required to adopt floodplain zoning once the hydraulic and engineering data required to formulate such an ordinance become available.

Floodplain zoning regulations should be formulated so as to protect fully the entire 100-year recurrence interval flood hazard area, including both floodway and flood fringe areas. The floodway is that portion of the floodplain required to convey the 100-year recurrence interval peak flood flow. The flood fringe is that portion of the floodplain located outside the floodway that would be covered by flood water during the 100-year flood event. It is recommended that counties, cities, and villages review and amend, as appropriate, their floodplain zoning regulations to ensure that such ordinances fully protect both floodway and flood fringe areas against any intrusion by flood damageprone urban uses and against filling, which destroys the floodwater storage capacity of the floodlands.

Shoreland Regulations: Each county in the Region, except Milwaukee County, has adopted special regulations for the protection of shoreland areas as recommended under the firstgeneration, design year 1990, and secondgeneration, design year 2000, regional land use plans and as required under Section 59.971 of the Wisconsin Statutes and Chapter NR 115 of the Wisconsin Administrative Code. Those regulations apply in unincorporated areas to all land lying within 1,000 feet of a navigable lake, pond, or flowage, or within 300 feet of a navigable stream or to the landward side of the floodplain, whichever distance is greater. As part of its shoreland regulations, each of these counties has placed all wetlands at least five acres in size lying in shoreland areas in a protective conservancy zoning district, as required under Chapter NR 115. It is recommended that the six counties concerned carefully review their respective shoreland zoning regulations to determine whether changes are necessary to meet the land use development objectives proposed in the recommended year 2010 regional land use plan.

Under Section 62.231 and 61.351 of the Wisconsin Statutes and Chapter NR 117 of the Wisconsin Administrative Code, cities and villages are also required to place all shoreland wetlands covering five acres or more into a protective conservancy district upon completion of supporting wetland inventory mapping. It is recommended that all of the concerned cities and villages adopt and administer shorelandwetland zoning in accordance with the standards set forth in Chapter NR 117.

Soil and Water Conservation Regulations: As described in Chapter X, the new regional land use plan proposes the development of additional urban land sufficient to accommodate the anticipated increases in population and economic activity in the Region through the year 2010. The development and redevelopment of land for residential, commercial, industrial, transportation, and other urban uses may result in significant soil erosion, creating problems on the development site itself and contributing to offsite problems, including water quality degradation and the clogging of culverts, roadside ditches, channels, and bays. Such erosion can be minimized, however, through the application of appropriate erosion control measures. Authority to adopt regulations designed to control construction site erosion has been granted by the Wisconsin Legislature to cities and villages and to counties with respect to their unincorporated areas under Sections 62.234, 61.354, and 59.974 of the Statutes. As indicated in Chapter VII, a number of local units of government in the Region have utilized this authority to adopt construction site erosion control ordinances.

Certain changes in the legal framework pertaining to the control of construction site erosion were under consideration in 1991. The Wisconsin Department of Industry, Labor and Human Relations has proposed revisions to the Wisconsin One- and Two-Family Dwelling Code adding requirements for the control of construction site erosion attendant to new one- and two-family housing. In addition, the Wisconsin Legislative Council has recommended new state legislation which would mandate local regulation of other construction site erosion. The recommended legislation would require that counties adopt construction site erosion control ordinances effective throughout the county, with larger cities and villages authorized to adopt their own ordinances.

Because urban development takes on many forms and often occurs in stages, it is important that a comprehensive approach be taken in the control of construction site erosion. For example, erosion should be controlled as residential land subdivisions are improved and, subsequently, as individual lots within the subdivision are developed. Erosion should also be controlled as individual sites are developed for commercial, industrial, institutional, and public utility and facility use. It is recommended that county and local units of government, working together, ensure adequate control of construction site erosion as authorized or required by evolving state statutory and administrative rules.

Counties, cities, and villages can also promote sound soil and water conservation practices through the adoption of regulations prohibiting land uses and land management practices which cause excessive soil erosion, sedimentation, nonpoint source water pollution, or stormwater runoff as provided for under Section 92.11 of the Wisconsin Statutes. Upon adoption of such an ordinance by the governing body, such ordinance provisions become effective only upon approval by a majority of voters in a referendum in the affected area. It is recommended that counties, villages, and cities in the Region consider the formulation and adoption of soil and water conservation regulations pursuant to Section 92.11.

Section 404, Federal Water Pollution Control Act of 1972: Section 404 of the federal Water Pollution Control Act of 1972, as amended, requires the U. S. Army Corps of Engineers to regulate the discharge of dredge and fill materials into waters of the United States, including adjacent wetlands. As this regulatory program is administered in southeastern Wisconsin, any wetland that lies within a primary environmental corridor and is proposed to be filled is subject to an individual Section 404 permit. Filling of wetlands lying outside of primary environmental corridors may also require an individual Section 404 permit. It is recommended that the Corps of Engineers utilize to the fullest extent its regulatory authority under Section 404 to assure the protection of wetlands both inside and outside of primary environmental corridors.

Park and Open Space Acquisition

Acquisition of open space lands for outdoor recreation and other open space purposes may be accomplished in various ways, ranging from actual gifts by owners through dedication by land developers at the time of platting to outright purchase of the entire fee or of lesser interest by the state or by local units of government. As noted above, there is justification for requiring land developers to dedicate reasonable portions of their subdivision for park purposes or to pay a fee in lieu of dedication toward the purchase of neighboring park land. Accordingly, as noted above, city, village, and town subdivision control ordinances should include provisions for the dedication of appropriate recreational sites and park lands or payment of fees in lieu of such dedication.

If park and open space lands cannot reasonably be acquired by gift or dedication, public purchase of the entire fee interest or the purchase of less than fee interest may be required for plan implementation. It should be noted in this respect that purchase by the counties and other local units of government of less than the fee interest of park and open space lands, including primary environmental corridors, may be considerably cheaper than acquisition of the entire interest and may result in more rapid preservation, acquisition, and use of these lands. Such acquisition of less than fee interests may be in the form of scenic easements for vista protection, conveyances of development rights to assure continuance of private parks or open spaces, and grants of various public access and development rights for construction and use of park facilities. These devices should be used when acquisition of the entire fee interest is too costly or otherwise not practical.

The following actions are recommended relative to the state acquisition of park and open space lands in the Region.

1. It is recommended that the constituent county boards, by resolution, formally request the Wisconsin Department of Natural Resources to acquire those segments of the primary environmental corridor and other lands within their county
which are shown on the regional park and open space plan, as amended,¹¹ as recommended for acquisition by the State.

2. It is then recommended that the Wisconsin Department of Natural Resources acquire the lands recommended for state ownership under the regional park and open space plan, pursuant to Section 27.01 of the Wisconsin Statutes.

Such state action should be supplemented by appropriations and expenditures for park and open space purposes by local units of government in the Region, particularly at the county level, and may be supplemented through open space acquisition by private interests.

- 1. It is recommended that all seven counties within the Region continue or begin active park acquisition and development programs, pursuant to Section 27.065 of the Wisconsin Statutes, so as to provide an integrated system of regional parks and recreation areas and a permanent preservation of the primary environmental corridors.
- 2. It is also recommended that all cities, villages, and towns supplement such county action whenever possible through the local acquisition of park and open space lands, including primary environmental corridors. Several communities have initiated corridor acquisition programs and already own segments of the

primary environmental corridor. Those communities may wish to continue their acquisition program separately or with financial assistance from their respective counties, or they may desire to donate their holdings to the county, as was done in Milwaukee County in 1937.

3. It is recommended that private environmental groups supplement public open space acquisition efforts, as appropriate, to ensure the preservation of important natural areas.

Public acquisition provides the greatest assurance of the long-term preservation of primary environmental corridor lands. Primary environmental corridors and other open space lands that are publicly acquired for open space preservation purposes should be made available, insofar as practicable, for public appreciation and enjoyment in appropriate scientific, educational, and recreational pursuits. Such pursuits can generally be readily accommodated within upland corridor areas. Efforts to accommodate public access to, and appreciation of, wetland areas must be carefully planned and designed to avoid undue disturbance of the natural environment.

Public Development Policies

Also important to implementation of the recommended regional land use plan is the adoption and adherence to certain public development policies concerning annexation, incorporation, and consolidation; the extension of municipal utilities, such as water supply and sanitary sewer systems; and the use of onsite sewage disposal systems. The following recommendations concern the more important public policies that will have a significant effect upon the implementation of the regional land use plan.

1. It is recommended that all cities and villages within the Region carefully consider the urban land use pattern indicated on the recommended regional land use plan when reviewing proposed annexations. To the maximum extent possible, only such lands shown on the recommended plan as urban and such other contiguous lands which may be necessary to meet local open space, utility, and community facility needs should be annexed.

¹¹See SEWRPC Planning Report No. 27, <u>A</u> <u>Regional Park and Open Space Plan for Southeastern Wisconsin-2000, November 1977. Also see the following amendments to the regional plan: SEWRPC Community Assistance Planning Report No. 131, <u>A Park and Open Space</u> <u>Plan for Kenosha County; No. 132, A Park and Open Space Plan for Milwaukee County;</u> No. 133, <u>A Park and Open Space Plan for Ozaukee County; No. 134, A Park and Open Space Plan for Racine County; No. 135, A Park and Open Space Plan for Walworth County; No. 136, <u>A Park and Open Space Plan for Washington County;</u> and No. 137, <u>A Park and</u> <u>Open Space Plan for Waukesha County</u>.</u></u>

- 2. It is also recommended that all cities, villages, and towns within the Region carefully consider the urban land use pattern indicated on the recommended land use plan when reviewing consolidations and incorporations and give due weight to the urban service area implications of any consolidations or incorporations as these might affect the regional land use pattern.
- 3. It is further recommended that the Wisconsin Department of Development, in reviewing any proposed annexations, consolidations, or incorporations, give due weight to the urban land use pattern shown on the recommended land use plan and the implications which this pattern may have for the establishment of rational urban service areas, recognizing that annexations, incorporations, or consolidations which do not properly recognize the recommended land use plan may not be in the public interest and may substantially hinder the solution of governmental problems affecting the regional community.
- 4. It is recommended that all metropolitan and municipal utilities and the Wisconsin Department of Natural Resources adopt and adhere to utility extension policies that would result in those areas shown as urban on the recommended regional land use plan being served by public water supply and sanitary sewer systems. While the recommended regional land use plan should be used as a basis for the delineation of appropriate sanitary sewer service areas. this delineation should be refined to take into consideration factors such as the location, type, and extent of existing and locally planned urban land use development; the location of areas where onsite soil absorption sewage disposal systems are known to be failing; the location and extent of gravity drainage areas tributary to the major sewerage system pumping stations or to the sewage treatment facilities; the location and capacity of existing and planned trunk sewers; and the location of existing property ownership boundaries.

The sanitary sewer service area refinement effort should also consider the range of population forecasts envisioned for the

area in question as determined under the alternative futures postulated in the regional planning effort. Consideration of a range of population levels is especially important in sanitary sewer service facility planning in order to identify alternatives which perform well under a reasonable range of possible future conditions. Construction of certain facilities, such as mechanical components and other selected components of sewage treatment facilities. typically are based upon relatively shortterm population and loading forecasts. These facilities are often replaced or rebuilt at intervals of 15 to 25 years and are often expanded in a staged manner. Accordingly, capital investment in such facilities are often limited to those relatively certain to be needed over a 20-year design period. The use of the intermediate-growth population forecast as set forth in the recommended land use plan may thus be most appropriate for use in the design of such facilities.

Consideration of a high-growth population forecast, however, may be appropriate in delineating a service area and in the design of certain components of the sewerage system that have a longer life, including some conveyance facilities and certain treatment plant components. With respect to the size of the service area, the highgrowth population forecast may be the most logical to use since analyses indicate that such a level is potentially achievable within the Southeastern Wisconsin Region. A sanitary sewer service area size based upon that level may also be desirable in order to provide flexibility to communities in determining the spatial distribution of anticipated new urban development and to facilitate the operation of the urban land market. With respect to the design of certain components of the sewerage system, the use of the high-growth population forecast may also be desirable where the physical life of the facilities is substantially greater than 20 years. Thus, facility construction based upon the high-growth population forecast and loading levels may be warranted where the physical life of the facilities extends beyond the 20-year planning period. Population levels anticipated under the recommended year 2010 regional

land use plan and the year 2010 alternative futures land use plans are presented by sewer service area in Appendix F.

- 5. It is further recommended that all metropolitan and municipal utilities design and install public water supply and sanitary sewer systems so as to preclude the provision of such services to urban development proposed to be located in floodplains, primary environmental corridors, or areas covered by soils designated in the regional soil survey as having severe limitations for such urban development and to minimize the provision of such services to urban development proposed to be located in prime agricultural lands.
- 6. It is recommended that metropolitan and municipal utility and sanitary districts plan, design, and install stormwater management systems that are consistent with the urban growth recommendations of the regional land use plan and consistent, moreover, with the stormwater management and flood control recommendations of the comprehensive watershed plans which have been completed by the Commission for the Fox, Kinnickinnic, Menomonee, Milwaukee, Pike, and Root River and for the Oak Creek watershed. Stormwater management plans should be designed for entire drainage areas, with provision made for storage, as well as conveyance, and for water quality, as well as quantity, control.
- 7. It is recommended that the Wisconsin Department of Industry, Labor and Human Relations and the county and local units of government responsible for the regulation of private onsite sewage disposal systems¹² ensure that onsite soil absorption sewage disposal systems are

utilized only in areas covered by soils suitable for the system being considered.

- 8. It is recommended that, to the extent practicable, the Wisconsin Department of Industry, Labor and Human Relations and the concerned county and local units of government limit the use of onsite sewage disposal systems to the following: rural residential development, suburban-density residential development on existing lots or parcels of record, and urban land uses which may be required in unsewered areas such as transportation-related businesses, agriculture-related businesses, communication facilities, utility installations, and park and recreation sites.
- 9. It is recommended that, to the extent practicable, the Wisconsin Department of Industry, Labor and Human Relations and the concerned county and local units of government provide for the use of the various types of onsite sewage disposal systems in accordance with the following:
 - New development in unsewered areas should be designed to be served only by conventional (septic tank) onsite soil absorption sewage disposal systems.
 - Alternative (mound and other) onsite soil absorption sewage disposal systems should be utilized only to remedy failing conventional onsite sewage disposal systems or on lots or parcels of record that cannot support conventional systems.
 - Holding tanks should be used only as a last resort as a replacement for failing conventional or alternative onsite sewage disposal systems.
- 10. It is recommended that, as part of their responsibilities with respect to the regulation of private sewage disposal systems, the concerned county and local units of government take appropriate steps to ensure proper system maintenance.

Public Redevelopment and Renewal Policies

The attainment of a centralized regional settlement pattern is dependent upon the maintenance of healthy and attractive environments in existing fully developed areas of the Region. The

¹²Under Sections 59.065 and 145.01 of the Wisconsin Statutes, all counties in Wisconsin, except Milwaukee County, are required to adopt and enforce an ordinance governing private onsite sewage systems. In Milwaukee County, this responsibility is assigned to cities and villages.

following recommendations are important to the conservation and renewal of existing urban areas.

- 1. Cities and villages and urban towns should carefully assess urban conservation and renewal needs, particularly in older fully developed areas, and develop plans and programs to address the identified needs.
- 2. To the extent practicable, plans and programs directed at conservation and renewal should be carried out on a neighborhood basis and should seek to preserve those historic and cultural features which provide for neighborhood identity within the larger urban complex.
- 3. Urban conservation and renewal plans and programs should maximize opportunities for the provision of living arrangements and amenities that are unique to the city, such as "downtown" housing and urban waterfront development.
- 4. Implementation of urban conservation and renewal plans and programs should fully utilize all available local, state, and federal resources, as well as private sector resources.

Capital Improvement Programming

The ability of county and local units of government to implement the regional land use plan as subsequently refined and detailed in county development plans and community master plans depends in part upon the proper timing and coordination of major capital improvements, including major streets and highways, major utility facilities, parks, libraries, and other major public facilities. This can best be accomplished through systematic capital improvement programming, a process involving the scheduling of major public improvements over a specified period of time, taking into account the relative importance of, and need for, those improvements and the financial resources anticipated to be available. Although procedures vary, this process typically involves the preparation of a capital improvement budget for the next fiscal year and a capital improvement program indicating improvements planned for the following four or five years. It is common for the capital improvement budget to be prepared and the capital improvement program to be revised annually. As part of the capital improvement programming process, every effort should be made to relate major capital improvements to the development objectives set forth in county development plans and local comprehensive plans which refine the regional land use plan.

State and Federal Aid Programs

The following recommendations concern those state and federal agencies which administer loans and grants in support of the acquisition and development of lands and the construction of specific municipal facilities with a direct effect upon the implementation of the recommended regional land use plan.

- 1. It is recommended that the Wisconsin Department of Natural Resources administer the federal Land and Water Conservation Fund program and the state Stewardship Program in accordance with the recommended regional land use plan as refined by the regional park and open space plan and amendments thereto.
- 2. It is recommended that the U.S. Department of Housing and Urban Development approve only those applications for community development block grants that are properly related to the recommended regional land use plan, and, where public facilities and utilities are involved in such grants, approve only those requests that are located and designed generally in accordance with the recommended urban service areas and population forecasts.
- 3. It is recommended that the Wisconsin Department of Natural Resources approve only those loan applications for sewage treatment plants and related facilities under the state Clean Water Fund program that are located and designed in accordance with the recommended regional land use plan and population forecasts.
- 4. It is recommended that the U.S. Department of Agriculture, Farmers Home Administration, approve only those grant and loan applications for rural water and waste disposal facilities which would provide service to the existing development or are located and designed in accordance with the recommended regional land use plan and population forecasts. It is further recommended that this agency approve only those loan applications for other community facilities and rural housing

which are consistent with the recommended regional land use plan.

FINANCIAL AND TECHNICAL ASSISTANCE

Upon adoption of the recommended regional land use plan, it is essential that the areawide governmental agencies concerned and the local units of government within the Region effectively utilize all sources of financial and technical assistance available for execution of the various plan elements. In addition to current revenue sources, such as property taxes, fees, fines, public utility earnings, state collected taxes, and state appropriations and aids for highways, education, and welfare available for plan implementation, the areawide agencies and local units of government can make use of other revenue sources, such as borrowing, special taxes and assessments, gifts, and certain state and federal aids and grants. Various types of technical assistance useful in plan implementation are also available from county, regional, state, and federal sources. The type of assistance available ranges from the detailed advice on land and water management practices provided by the U.S. Department of Agriculture, Soil Conservation Service, to the educational, advisory, and review services offered by the Regional Planning Commission's Community Assistance Division.

Because of the numerous financial and technical assistance programs available, it becomes necessary to identify and discuss herein those that may have a significant effect upon the direct implementation of the recommended regional land use plan, particularly those programs that relate to land acquisition and major facility construction. Programs that are applicable to only one unit of government or have only an indirect effect upon implementation of the regional plans, such as federal mortgage financing insurance, are not discussed.

Borrowing

Areawide agencies and local units of government are normally authorized to borrow so as to effectuate their powers and discharge their duties. Chapter 67 of the Wisconsin Statutes generally empowers counties, cities, villages, and towns to borrow money and to issue municipal obligations not to exceed 5 percent of the equalized assessed valuation of the municipality's taxable property, but with certain exceptions, including school bonds and revenue bonds. Certain special-purpose units of government such as town sanitary districts and metropolitan sewerage districts may borrow money to finance capital improvements under Sections 60.78 and 66.25, respectively, of the Wisconsin Statutes. In addition, the powers of cooperative contract commissions created under Section 66.30 of the Wisconsin Statutes include borrowing by the contracting bodies of such commissions for acquiring, constructing, and equipping areawide projects.

<u>Temporary Borrowing</u>: Section 67.12 of the Wisconsin Statutes authorizes counties, cities, villages, and towns to obtain temporary loans in anticipation of the payment of federal or state aids, levied taxes, or other deferred payments. In this situation, temporary borrowing may not exceed 60 percent of the municipality's total actual and anticipated receipts in the fiscal year.

Industrial Revenue Bonds: Section 66.521 of the Wisconsin Statutes allows cities, villages, and towns to issue industrial revenue bonds with the proceeds of the bonds provided to eligible participants for the purpose of constructing, improving, or enlarging industrial facilities within the boundary of the governmental unit. The use of industrial revenue bonds has become an important means of promoting industrial development and redevelopment.

<u>Special-Purpose Loans</u>: Special-purpose loan programs are available for public works planning and construction. A brief description of those programs which may be of greatest significance to regional plan implementation follows:

- 1. Loans for water supply, sanitary sewerage, and solid waste disposal systems are available from the U.S. Department of Agriculture, Farmers Home Administration, to rural units of government which are unable to obtain credit elsewhere at reasonable terms, for developing domestic water supply and waste collection and disposal systems.
- 2. Community facility loans are available from the U.S. Department of Agriculture, Farmers Home Administration, to rural units of government which are unable to obtain credit elsewhere at reasonable terms. These loans are available for a

variety of facilities in support of overall community development.

3. Under the state Clean Water Fund program administered by the Wisconsin Department of Natural Resources, marketrate and below market-rate loans are available to local units of government in support of planning, engineering, and construction of sanitary sewerage and waste treatment facilities.

Special Taxes and Assessments

Counties and cities have special assessment powers for park and parkway acquisition and improvement under Sections 27.065 and 27.10(4), respectively, of the Wisconsin Statutes. Counties are empowered under Section 27.06 of the Wisconsin Statutes to levy a mill tax to be collected into a separate fund and to be paid out only upon order of the county park commission for the purchase of land and other commission expenses. Drainage districts, town sanitary districts, metropolitan sewerage districts, cities, villages, and towns also have taxing and special assessment powers under Sections 88.35, 60.77, 66.25, 66.60, and 62.18(16) of the Wisconsin Statutes.

Tax Incremental Financing

Tax incremental financing is a local financing mechanism authorized under Section 66.46 of the Wisconsin Statutes that allows cities and villages to finance public improvements made within designated tax incremental finance districts through the property taxes generated on subsequent increases in the value of taxable property in the district. At least 50 percent of the property within the district must be blighted, in need of rehabilitation or conservation, or suitable for industrial use, and the district must be a contiguous geographic area. The taxes collected from the base value of the property within the district at the time of its creation continue to be distributed among all taxing jurisdictions, just as the taxes from property outside the district are distributed. The incremental tax revenues derived from the increased value of property within the district are allocated to a special fund to be used by the city or village for the payment of costs associated with the completion of public improvement projects specified in the district project plan. The tax incremental finance district terminates when all costs of all planned public improvements have been paid, or 16 years following the last expenditure identified in the district project plan.

Gifts

Donations of lands, interest in lands, or monies from private individuals and corporations should not be overlooked as means of possible assistance in regional plan implementation, particularly with respect to park acquisition and environmental corridor preservation. The potential contributions, both in leadership and funds from private groups, should not be underestimated. Such gifts, either in lands, interest in lands, or monies, may, moreover, be used toward the local contribution in obtaining various state and federal grants.

Comprehensive Planning Grants

Federal financial support for comprehensive planning activities, provided in substantial amounts under a comprehensive planning assistance program administered by the U.S. Department of Housing and Urban Development, particularly during the 1960s and 1970s, has largely been dissipated. Governmental units participating in the federal Community Development Block Grant program may use block grant funds on a limited basis in support of the development of specific components of a comprehensive plan, such as plan components dealing with housing, neighborhood revitalization, or economic development. No other federal or state grant programs in support of county or local comprehensive planning now exists.

Urban Development Grants

An important element of the regional land use plan is the conservation of stable existing urban areas and the revitalization of deteriorating areas. The major urban development grant programs available in support of these objectives are described below.

Community Development Block Grant Program: This program, originally authorized under Community Development Act of 1974 and administered by the U.S. Department of Housing and Urban Development, provides grants to local units of government for a wide range of activities directed toward neighborhood revitalization and economic development, including neighborhood conservation, urban planning, continuing urban renewal projects, and social services. The objective of the program is to develop viable urban communities with decent housing and suitable living environments and to expand economic opportunities, principally in low- and moderate-income areas. Community development block grants are available as entitlement grants to urban counties as well as to cities with populations in excess of 50,000, and are available under the "small cities program" to communities with populations under 50,000 persons. In Wisconsin, the small cities program is administered through the Wisconsin Department of Development.

Economic Development Grants for Public Works and Development Facilities: This program, originally authorized under the Public Works and Economic Development Act of 1965 and administered by the U.S. Department of Commerce, Economic Development Administration. is intended to assist in the construction of public works and development facilities to promote the creation or retention of permanent jobs in areas experiencing severe economic distress. Grants are available to local units of government for such public facilities as water and sewer systems, port facilities, railroad sidings and spurs. business incubator facilities, infrastructure improvements for industrial parks, and other improvements to foster economic growth in such areas.

Park and Open Space Grants

State and federal park and open space aid programs provide local units of government with substantial financial assistance in the acquisition and development of park and open space lands. In general, the local units of government in the Region are eligible for these grants; however, the eligibility of individual projects is based upon certain planning and other prerequisites. The following is a brief description of the two most important programs.

<u>Stewardship Program</u>: The Wisconsin Legislature established this program, administered by the Wisconsin Department of Natural Resources, to provide assistance funds to acquire and develop park and open space lands and facilities, restore wildlife habitat, and protect water quality. Two program areas, the local park aids program area and the urban greenspace program area, provide grants to counties and other local units of government in amounts up to 50 percent of the cost of acquisition and development of lands to be used for county and local park and open space systems.

<u>Federal Land and Water Conservation Fund</u> <u>Program</u>: This program, administered by the U. S. Department of the Interior, National Park Service, through the Wisconsin Department of Natural Resources, provides grants to state and local units of government in amounts up to 50 percent of the cost of acquisition and improvement of outdoor recreation areas.

Water Supply and Sewerage System Grants

Grants are available to rural units of government in support of the installation, repair, improvement, or expansion of water supply facilities and sanitary sewer facilities under the water and waste disposal systems program for rural communities administered by the U. S. Department of Agriculture, Farmers Home Administration.

Soil and Water Conservation Grants

There are several programs available for conservation and protection of the agricultural lands and environmental corridors recommended to be preserved under the regional land use plan. These programs are briefly described below.

State Nonpoint Source Water Pollution Abatement Program: The state nonpoint source pollution abatement program, also referred to as the priority watershed program and administered by the Wisconsin Department of Natural Resources. is designed to maintain and improve surface water and groundwater quality by reducing nonpoint sources of pollution. Under the program, funding is provided for the preparation of detailed nonpoint source pollution abatement plans for selected priority watersheds and for plan implementation. Funding for plan implementation includes local assistance grants to local units of government to maintain the resources and staff required for plan implementation and cost-share assistance to landowners and local units of government in support of the needed management practices.

State Lake Management Planning Grants: This program, created under Section 144.253 of the Wisconsin Statutes and administered by the Wisconsin Department of Natural Resources, provides funds to local units of government and qualified lake management associations in support of data collection and analysis regarding lake water quality and factors affecting water quality and the development of plans for the abatement of identified water quality problems.

Federal Coastal Management Program Grants: Under this program, administered by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, grants are available to state and local units of government to assist in the management of the Great Lakes and coastal areas. Grants may cover up to 80 percent of the total cost of the management proposals.

Federal Agricultural Conservation Program: This program, administered by the U. S. Department of Agriculture, Agricultural Stabilization and Conservation Service, provides grants to farmers for carrying out approved soil, water, woodland, and wildlife conservation practices.

Agricultural Resources Conservation Program: Administered by the U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, the Agricultural Resources Conservation program is an umbrella program that includes four components: the Conservation Reserve Program, which provides incentives to farmers to convert highly erodible cropland and other fragile cropland to less intensive uses; the Wetlands Reserve Program, which provides incentive to farmers to retire converted wetlands from agricultural production: the Environmental Easements Program, which is intended to promote the long-term protection of environmentally sensitive areas; and the Agriculture Water Quality Protection Program, which provides farmers with incentive payments and technical assistance to reduce nonpoint source pollution.

<u>Federal Watershed Protection and Flood Preven-</u> <u>tion Program</u>: This program, administered by the U. S. Department of Agriculture, Soil Conservation Service, provides cost sharing up to 100 percent to qualified sponsors, such as county land conservation committees and flood control, drainage, or irrigation districts, for flood prevention works and up to 50 percent toward agricultural water management, public recreation, and fish and wildlife development.

Technical Assistance

Certain federal, state, regional, and county agencies provide, upon request, various levels and types of technical assistance useful in regional plan implementation to local units of government and individual landowners. Limited guidance and assistance is usually provided without cost; such assistance may be provided for a nominal fee. In some cases, the local unit of government may contract with the agency for more extensive technical assistance services. A summary of the various levels and types of assistance available by agency follows. <u>County Agencies</u>: County land conservation committees are authorized to cooperate in furnishing technical assistance to owners or occupiers of land and to any public or private agency in preventing soil erosion and floodwater and sedimentation damage and in furthering water conservation and development.

Those counties with park or planning staffs provide to local units of government and private groups certain technical services related to park design and to general community planning and development problems.

Areawide Agencies: The Southeastern Wisconsin **Regional Planning Commission**, through its Community Assistance Division, provides limited educational, advisory, and review services to the local units of government, including participation in educational programs, such as workshops: provision of speakers; sponsorship of regional planning conferences; publication of bimonthly newsletters; selection of staff and consultants: preparation of planning programs; special base and soil mapping; preparation of suggested zoning, official mapping, and land division ordinances: provision of information regarding federal and state aid programs; and the review of local planning programs, plan proposals, ordinances, and most federal grant applications. In addition, the Commission is empowered to contract with local units of government under Section 66.30 of the Wisconsin Statutes to make studies and offer advice on land use, transportation, community facilities, and other public improvements.

The Milwaukee Metropolitan Sewerage District provides technical assistance to local units of government within the District and its contract areas on stormwater drainage and sanitary sewer design, construction, and maintenance.

State Agencies: The University of Wisconsin-Extension, through county agents and extension specialists, provides important educational and technical assistance to farmers and to local units of government in public affairs, soil and water conservation, and outdoor recreation.

The Wisconsin Department of Natural Resources provides advice on water problems, on fish management, and on forest planting, protection, management, and harvesting. The Wisconsin Department of Natural Resources is authorized to provide technical assistance to local units of government and private groups in their efforts to initiate or engage in specific types of development, such as parks, recreation, resource development, water supply, and sewage disposal. The Department also provides plan review services and supervision of the operation of public water supply and sewage treatment facilities.

<u>Federal Agencies</u>: The U.S. Department of Agriculture, Soil Conservation Service, provides technical assistance to local units of government and landowners for resource conservation, development, and utilization programs. The Soil Conservation Service also provides technical assistance to local units of government in the adaptation of the detailed operational soil survey and interpretative analyses to urban planning and development problems.

The U.S. Department of Agriculture, Farmers Home Administration, provides technical and management assistance to farmers and farm associations for forestry programs, soil improvements, fish production, and recreational enterprise.

The U.S. Environmental Protection Agency provides technical assistance and advice, on request, to state and local units of government and private firms relative to water quality problems.

SUMMARY

This chapter has described the various means available and has recommended specific procedures for implementation of the recommended regional land use plan. The most important recommended plan implementation actions are summarized in the following paragraphs by level of government and responsible agency or unit of government.

Local Level

<u>County Board of Supervisors</u>: It is recommended that each county board of the seven constituent counties comprising the Region, upon the recommendation of the county planning agencies:

• Adopt the recommended regional land use plan as the county development plan and direct the county planning agency to refine and detail the plan as it pertains to its unincorporated areas pursuant to Section 59.97 of the Wisconsin Statutes.

- Consider the creation of a county park and planning commission where this has not already been accomplished.¹³
- Amend existing or adopt new county zoning ordinances so as to provide land use regulations similar to those contained in the SEWRPC Model Zoning Ordinance and adopt changes to the zoning district maps, as appropriate, to reflect the recommended regional land use plan.¹⁴
- Adopt construction site erosion control regulations pursuant to Section 59.974 of the Wisconsin Statutes and consider adoption of soil and water conservation regulations pursuant to Section 92.11 of the Wisconsin Statutes.
- Amend existing or adopt new county subdivision control ordinances so as to provide regulations similar to those contained in the SEWRPC Model Land Division Ordinance.
- Request, by resolution, the Wisconsin Department of Natural Resources to acquire those segments of the primary environmental corridor and other lands within the county which are shown on the regional park and open space plan as recommended for state acquisition and continue or commence active county park and related open space acquisition and development programs so as to promote an integrated system of regional parks and recreation areas and the permanent preservation of the primary environmental corridors.

<u>County Land Conservation Committees</u>: It is recommended that each county land conservation committee of the seven constituent counties:

¹³Walworth, Washington, and Waukesha Counties have created such commissions. Milwaukee County has a County Board Committee on Parks, Recreation and Culture, but has no need for a combined park and planning commission because there are no unincorporated areas remaining in the County.

¹⁴Not applicable in Milwaukee, Ozaukee, and Washington Counties.

• Formally acknowledge the recommended regional land use plan, particularly the agricultural land and natural resource elements, and consider the plan recommendations in carrying out its broad range of responsibilities with respect to the use and protection of soil and water resources.

<u>Common Councils, Village Boards, and Town</u> <u>Boards</u>: It is recommended that upon referral to, and recommendation of, the local plan commissions, each common council, village board, and town board within the Region:

- Adopt the recommended regional plan as the local master plan and refine and detail the plan pursuant to Section 62.23 of the Wisconsin Statutes.
- Amend existing or adopt new local zoning ordinances so as to provide land use regulations similar to those contained in the SEWRPC Model Zoning Ordinance and adopt changes to the zoning district maps, as appropriate, to reflect the recommended regional land use plan or file certified resolutions approving amendments and changes to the county zoning ordinances.
- Acquire lands lying within the primary environmental corridors appropriate for development as community parks.
- Consider and give due weight to the rational urban service areas designated by the recommended regional land use plans in all deliberations concerning annexations, consolidations, and incorporations.
- Adopt official maps showing thereon as proposed parks and parkways those primary environmental lands proposed for public acquisition and other lands proposed to be publicly acquired and developed as large parks under the regional park and open space plan and amendments thereto.
- Amend existing or adopt new subdivision control ordinances to provide regulations similar to those contained in the SEWRPC Model Land Division Ordinance in order to facilitate local implementation of the regional land use plan.
- Adopt construction site erosion control ordinances as provided for cities and vil-

lages under Section 62.234 and 61.354, respectively, of the Wisconsin Statutes and consider adoption of soil and water conservation regulations pursuant to Section 92.11 of the Wisconsin Statutes.

<u>Municipal Utility and Sanitary Districts</u>: It is recommended that all municipal utility and sanitary districts within the Region:

- Acknowledge the recommended regional land use plan and thereafter determine proposed utility service areas in accordance with the plan and adopt and adhere to utility extensions and service policies that are consistent with the rational urban service areas designated by the plan.
- Design and install public water supply and sanitary sewage systems so as to preclude service by such systems to proposed development located in floodplains, primary environmental corridors, or areas covered by soils having severe limitations for urban development and to minimize the provision of such services to urban development in prime agricultural lands.
- Design and install stormwater management systems that are consistent with the urban growth recommendations of the regional land use plan and consistent, moreover, with the stormwater management and flood control recommendations of the comprehensive watershed plans which have been completed for the Region.

<u>Farmland Drainage Districts</u>: It is recommended that all farmland drainage districts within the Region:

• Acknowledge the regional land use plan and consider the plan as appropriate in carrying out their designated drainage responsibilities.

<u>Community Development Authorities</u>: It is recommended that all local community development authorities and redevelopment authorities:

• Acknowledge the regional land use plan, particularly plan policies pertaining to the conservation and renewal of existing urban areas, and consider the plan in the preparation and implementation of urban redevelopment plans.

Areawide Level

Metropolitan Sewerage Commissions: It is recommended that the Milwaukee Metropolitan Sewerage Commission, the Western Racine County Sewerage Commission, and the Walworth County Metropolitan Sewerage Commission:

• Acknowledge the recommended regional land use plan and thereafter determine proposed sewer service areas in accordance with the plan and adopt and adhere to utility extension and service policies that are consistent with the rational urban service areas applied by the plan.

State Level

<u>Wisconsin Department of Administration</u>: It is recommended that the Wisconsin Department of Administration endorse the regional land use plan and consider the plan recommendations in its administration of the federal Coastal Management Program and in carrying out its role as the statewide clearinghouse for the review of federal grants in Wisconsin.

<u>Wisconsin Department of Natural Resources</u>: It is recommended that the Wisconsin Natural Resources Board and the Department of Natural Resources:

- Endorse the regional land use plan and direct its integration into the various conservation, outdoor recreation, environmental protection, and technical and financial assistance programs conducted by various divisions of the Department.
- Endorse and integrate the environmental corridors shown on the recommended regional land use plan into the state long-range conservation and outdoor recreation plans and acquire those portions of the primary environmental corridors which are recommended for acquisition by the State under the regional park and open space plan and amendments thereto.
- Administer the federal Land and Water Conservation Fund program and state Stewardship Program in accordance with the recommended land use plan as refined by the regional park and open space plan and amendments thereto.
- Approve only such applications for loans in support of the construction and improve-

ment of municipal pollution prevention and abatement facilities under the Clean Water Fund program as are located and designed in conformance with the urban service area recommendations of the recommended plan.

• Approve only those proposed sanitary sewer extensions found to be in accord with the development recommendations contained in the regional land use plan.

<u>Wisconsin Department of Development</u>: It is recommended that the Wisconsin Department of Development:

• Endorse the regional land use plan and integrate the plan into its activities with respect to business retention, expansion, and attraction; the review of proposed annexations, incorporations, and consolidations of cities and villages; and administration of the Small Cities Community Development Block Grant program.

<u>Wisconsin Department of Industry, Labor and</u> <u>Human Relations</u>: It is recommended that the Wisconsin Department of Industry, Labor and Human Relations:

• Endorse the land use plan and consider the recommendations of the plan, particularly those pertaining to the proper location of urban development within the Region, in its regulation of private onsite sewage disposal systems.

<u>Wisconsin Department of Agriculture, Trade and</u> <u>Consumer Protection</u>: It is recommended that the Wisconsin Department of Agriculture, Trade and Consumer Protection:

• Endorse the regional land use plan, particularly the agricultural land element, and utilize the plan in its administration of the Wisconsin Farmland Preservation and the Soil and Water Resources Management programs.

<u>Wisconsin Department of Transportation</u>: It is recommended that the Wisconsin Department of Transportation:

• Endorse the regional land use plan and consider the plan, particularly the planned distribution of population, employment, and

urban land uses, in carrying out its highway and transit planning and development functions.

<u>University of Wisconsin-Extension</u>: It is recommended that the University of Wisconsin-Extension:

• Endorse the regional land use plan and include in its work program informational and educational efforts designed to create a greater awareness and understanding of the plan among local officials, local units and agencies of government, and the general public.

Federal Level

U. S. Department of Housing and Urban Development: It is recommended that the U. S. Department of Housing and Urban Development:

• Acknowledge the recommended regional land use plan and use the plan as a guide in the administration of the federal Community Development Block Grant program and federal housing assistance programs.

<u>U. S. Department of Commerce, Economic Development Administration</u>: It is recommended that the U. S. Department of Commerce, Economic Development Administration:

• Acknowledge the regional land use plan and consider the plan recommendations in the administration of its economic development assistance programs.

U. S. Department of the Interior, National Park Service: It is recommended that the U. S. Department of the Interior, National Park Service:

• Acknowledge the regional land use plan and consider the plan, especially the environmental corridor and regional recreational site elements, in the administration and granting of federal aids under the Land and Water Conservation Fund Act.

<u>U. S. Department of Agriculture, Soil Conserva-</u> <u>tion Service</u>: It is recommended that the U. S. Department of Agriculture, Soil Conservation Service:

• Acknowledge the regional land use plan and utilize the plan recommendations in its administration of the federal Resource Conservation and Development and Watershed Protection and Flood Prevention programs, and in its provision of technical assistance to landowners and farm operators regarding land and water conservation practices.

U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service: It is recommended that the U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service:

• Acknowledge the regional land use plan and utilize the plan recommendations in the administration of its Agricultural Conservation program and the Agricultural Resources Conservation program.

U. S. Department of Agriculture, Farmers Home Administration: It is recommended that the U. S. Department of Agriculture, Farmers Home Administration:

• Acknowledge the regional land use plan, particularly the agricultural and residential land use elements, and utilize the plan in the administration and granting of loans and grants for rural water and waste disposal facilities, other community facilities, and housing.

<u>U.S. Environmental Protection Agency</u>: It is recommended that the U.S. Environmental Protection Agency:

• Acknowledge the regional land use plan, utilize the plan recommendations in the administration of federal water quality management planning grant programs, and consider and give due weight to the recommended plan in the exercise of its air quality regulatory functions and in the administration of its air quality programs.

<u>Federal Emergency Management Agency</u>: It is recommended that the federal Emergency Management Agency:

• Acknowledge the regional land use plan and utilize the plan in the administration of the National Flood Insurance program.

<u>U.S. Army Corps of Engineers</u>: It is recommended that the U.S. Army Corps of Engineers:

• Acknowledge the regional land use plan, particularly the plan recommendations pertaining to the preservation of wetlands, and utilize the plan in carrying out its regulatory responsibilities under Section 404 of the federal Water Pollution Control Act of 1972, as amended.

General Considerations

Several particularly significant aspects of regional plan implementation previously discussed in this chapter warrant restatement here in summary form. First, it should be reiterated that the recommended regional land use plan, as presented in this report, is intended to comprise a flexible guide to be used in the placement of land use development in time and space, and is advisory to the local, state, and federal units and agencies of government and to private developers as these public and private bodies consider land use development matters within the Region. The plan is to be regarded as a set of norms against which land use development proposals can be evaluated as they arise and in the light of which better development decisions can be made by all concerned. The plan is intended to be used as a framework around which both comprehensive community development plans and singlepurpose facility system development plans are developed in a coordinated manner and, as such, is subject not only to continual interpretation but also to refinement and detailing.

Second, the adoption or endorsement of the recommended regional land use plan as a guide to the sound development of the Region by the local units of government and by the various state and federal agencies concerned is highly desirable, and in some cases essential, in order to secure a common understanding of areawide development objectives and to permit the necessary plan implementation work to be programmed cooperatively and executed jointly.

Third, plan implementation action policies and programs should not only be preceded by plan adoption or endorsement, but should also emphasize the most important and essential elements of the plan and those areas of action which will have the greatest impact on guiding and shaping development in accordance with the recommended plan. Two major criteria should be used to determine which plan elements are truly regional in character or influence and are, therefore, essential to the attainment of regional development objectives: 1) the importance of the plan elements to the wise and judicious use of the underlying and sustaining natural resource base, and 2) the importance of

the plan elements to the functional relationships existing between land use and the demand for major utility, recreation, and transportation facilities. In light of these criteria, the regional land use plan will be largely achieved if the primary environmental corridors and prime agricultural lands of the Region are protected from incompatible urban development, if the major regional park and recreation areas are acquired for public use, if future residential development within the Region approximates the density and spatial distribution patterns recommended by the regional plan, and if the major commercial and industrial centers approximate the general scale and spatial location recommended by the plan.

Fourth, implementation of the recommended land use plan is directed not only toward the proper guidance of new urban growth and development but also toward the maintenance of healthy and attractive living environments in fully developed areas as well. The ability to achieve the centralized settlement pattern recommended under the regional land use plan is closely tied to the quality of life in older urban areas. Urban conservation and renewal efforts thus represent a key component of the plan implementation process.

Fifth, the importance of close coordination and cooperation between the local units of government and between these units of government and the various state and federal agencies to plan implementation cannot be overemphasized. Responsibilities for achieving such coordination and cooperation on a voluntary basis within the traditional framework of government in Wisconsin have been assigned to the Commission by the Legislature, and the Commission is utilized by both local municipalities and by certain state and federal agencies for the attainment of the necessary coordination and cooperation. Even more intensive utilization of the Commission as a center for the attainment of close coordination of the many planning and plan implementation activities which are carried on within the sevencounty Region must be made in the future if the regional plans are to be implemented and a more efficient, economical, attractive, and healthful environment is to be achieved within the Region. Advisory review of the location and size of major public works facilities by the Commission is essential for the effective development of transportation, utility, and community facilities

within the Region, which not only comprise efficient systems as such, but which also properly serve and promote the desired regional land use pattern, the abatement of costly duplication of effort and unnecessary expenditure of public funds, and the preservation and protection of the underlying and sustaining natural resource base. Such review by the Commission may be obtained by contract or by request or it may be required by state and federal legislation.

Sixth, implementation of the recommended regional land use plan will not be brought about by massive action of any one unit or agency of government. Rather, implementation of the plan will be brought about through literally thousands of development decisions made on a dayto-day basis over a period of many years by many private investors and by many public administrators operating at the local, areawide, state, and federal levels of government. It is extremely important that the individuals, corporations, and agencies making these decisions be aware of and understand the development proposals set forth in the recommended regional land use plan so that the plan will receive proper consideration in development decisions. Educational and informational efforts directed at public officials and private investors to increase the overall awareness and understanding of the recommended plan are thus extremely important to successful plan implementation.

Finally, regional plan implementation can be achieved only within the context of a continuing, comprehensive, areawide planning effort, through which the planning inventories and forecasts that underlie the regional land use plan and other functional plan elements are updated, monitored, and revised; the plans themselves are reappraised and, if necessary, revised to accommodate changing conditions; and through which the plans are interpreted on a day-to-day basis to local, state, and federal units and agencies of government and to private investors and developers as the need to make development decisions arises. In this respect. it should be stressed that planning does not and cannot concern itself with future decisions; that is, with "things that should be done in the future." Rather, it must be recognized that decisions exist only in the present and that planning is necessary just because decisions can only be made in the present, yet cannot be made for the present alone. The question, therefore, that faces public officials, private investors, and interested citizen groups within the Region concerning implementation of the recommended regional land use plan is not what should be done tomorrow to bring about the plans but, rather, what must be done today in light of the plans to get ready for an uncertain tomorrow. In a highly complex and dynamic urbanizing region such as southeastern Wisconsin, one key decision or the lack of such a decision may commit the Region as a whole and its many constituent units and agencies of government to a given course of action, sometimes irrevocably. This is particularly true in the field of public works development, where a decision to build one important link in a system may commit the entire system for a generation or more to come.

Chapter XIII

SUMMARY AND CONCLUSIONS

Land use is one of the most important issues facing public officials, citizen leaders, and technicians within the Region. Although much new land use development is financed by private capital, each new increment of urban growth, whether it be a subdivision, shopping center, or industrial plant, inevitably creates a demand for public facilities and services and requires the investment of public capital in new or improved transportation facilities, utilities, and community facilities and the expenditure of public funds for their operation and maintenance. While detailed land use development problems are primarily of local concern and properly subject to local planning and control, the aggregate effects of changing land use activities are regional in scope and not only interact strongly with the need for regional transportation, utility, and recreational facilities, but also inevitably exert a demand on a limited natural resource base. The wise and judicious use of this resource base, together with the functional relationships existing between land use and the demand for transportation, utility, and recreational facilities, is, therefore, of areawide concern.

Recognizing this, the Southeastern Wisconsin Regional Planning Commission, in January 1963, undertook a four-year study leading to the adoption in December 1966 of a regional land use plan along with a supporting regional transportation system plan for southeastern Wisconsin. Those plans are documented in SEWRPC Planning Report No. 7, <u>Land Use-Transportation Study</u>, Volume 1, <u>Inventory Findings: 1963</u>; Volume 2, <u>Forecasts and Alternative Plans: 1990</u>; and Volume 3, <u>Recommended Regional Land Use</u> and Transportation Plans: 1990.

Within the framework of the planning process conceived by the Commission, the periodic review of major elements of the comprehensive regional plan is essential. The periodic review of the regional land use plan is especially important, since it is the most basic element of the comprehensive regional plan, the element upon which all other plan elements are based. Accordingly, in 1977 the Commission completed a major reevaluation of the design year 1990 regional land use plan, which in turn led to the adoption of a second-generation regional land use plan with a design period extended to the year 2000. The findings and recommendation of that plan reevaluation and revision process are set forth in SEWRPC Planning Report No. 25, <u>A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin—2000</u>, Volume 1, <u>Inventory Findings</u>; and Volume 2, Alternative and Recommended Plans.

In 1991, the Commission completed a major reappraisal of the second-generation design year 2000 regional land use plan. This process involved the review and reevaluation of the design year 2000 plan in light of changes which have occurred since the preparation of that plan with respect to population and employment levels and distribution, land use patterns, and public facility and utility system development and in light of any discernible changes in regional development objectives. This process led to the preparation of a third-generation regional land use plan with a design period extended to the year 2010.

This report describes the findings and recommendations of that plan reappraisal process. Specifically, this report presents in summary form the results of reinventories of information essential to sound long-range, areawide land use planning in southeastern Wisconsin, including information on the economic and demographic base, the natural resource and public utility base, and the historic and existing land use patterns of the Region and on the status of community plans and land use control ordinances within the Region. This report also presents a set of revised regional land use development objectives, principles, and standards, formulated under the plan reevaluation effort; presents forecasts of resident population and economic activity levels within the Region through the year 2010; and presents a new recommended land use plan designed to accommodate anticipated growth and change in the Region through the new plan design year 2010, along with specific land use plan implementation recommendations. In addition, this report presents four alternative land use plans for southeastern Wisconsin which differ from the recommended year 2010 plan in terms of the overall scale of development to be accommodated and the distribution of such development within the Region. Prepared in response to the continued uncertainty surrounding future social and economic conditions in the Region, the alternative plans are intended to supplement the recommended year 2010 land use by indicating a range of possible future conditions with respect to the level and distribution of population and economic activity and attendant land use patterns in the Region, thereby broadening the framework within which planning for the physical development of the Region can be carried out.

It should be noted that, while the recommended year 2010 regional land use plan and the alternative futures plans can only be described in summary form in this report, each plan is supported by extensive data files indicating anticipated design year conditions down to small areas, specifically, U.S. Public Land survey quarter sections. These files indicate planned allocations of population, households, and employment as well as planned allocations of land use by eight major categories under the respective plans. Utilizing these quarter section files, key plan data can be readily aggregated for larger geographic areas, including minor civil divisions, watersheds, sanitary sewer service areas, and traffic analysis zones. In this manner, the plan data files lend themselves to direct application to transportation planning, including transportation system modeling; stormwater drainage planning; flood control planning; sanitary sewerage system planning; and other functional planning.

INVENTORY FINDINGS

Population

Population trends in the Region have changed significantly since 1970, the base year of the second-generation regional land use plan. Rapid population growth rates experienced in the Region during the 1950s and 1960s have been replaced by relatively stable population levels in the 1970s and 1980s. Thus, after increases of 333,000 persons, or 27 percent, during the 1950s; and 182,000 persons, or 12 percent, during the 1960s; the regional population increased by only about 8,700 persons, or less than 1 percent, during the 1970s, reaching a level of about 1,765,000 persons in 1980. It is estimated that between 1980 and 1985, the regional population actually decreased by about 22,000 persons, or about 1 percent, to a level of about 1,743,000

persons. The most recent benchmark data, the 1990 U. S. Census of Population and Housing, suggest a recovery during the latter part of the 1980s, with the resident population approximating 1,810,000 persons in 1990, an increase of 45,000 persons over 1980 and of 67,000 persons over 1985.

Changes in population growth rates in the Region are the results of changes in rates of natural increase and of population migration. Crude birth rates in the Region have decreased from 26.2 births per 1,000 persons in 1960 to 17.7 in 1970 and to 16.0 in 1985. The crude death rate declined only slightly during this time, remaining at about 8.6 deaths per 1,000 persons in 1985. Net migration into the Region approximating 108,000 persons during the 1950s was replaced by net out-migration of more than 104,000 persons during the 1970s. The stabilization of the resident population of the Region since 1970 may thus be attributed to lower rates of natural increase coupled with net out-migration.

Population within the seven county Region is continuing to decentralize. The outlying counties, notably, Ozaukee, Washington, and Waukesha Counties, experienced the highest relative rates of population growth since 1960. The distributional shifts in population are most evident in Waukesha and Milwaukee Counties. Thus, Milwaukee County's share of the regional population decreased from 66 percent in 1960, to 53 percent in 1990, while Waukesha County's share increased from 10 percent in 1960 to 17 percent in 1990. The decentralization of population has been accompanied by an areawide diffusion of urban development and the intensification of developmental and environmental problems related to such development.

Actual population growth in the Region has been well below that envisioned under the second-generation regional land use plan. The population forecasts on which that plan were based anticipated a 1985 resident population of about 1,954,000 persons. The actual 1985 population of about 1,743,000 persons was thus lower than the 1985 forecast population by about 211,000 persons, or by about 11 percent. The actual 1985 population level was lower than the forecast level for each county of the Region, with the variances between the actual and forecast population levels ranging from 7 percent in Milwaukee County to 22 percent in Ozaukee County.

In contrast to the recent stabilization of the regional population, the number of households in the Region has increased significantly. There were about 643,800 households in the Region in 1985, an increase of about 177,900 households, or 38 percent, since 1960; of about 107,300, or 20 percent, since 1970. The increase in the number of households has been accompanied by a significant decrease in the average household size. The average household size in the Region decreased from 3.30 in 1960 to 3.20 in 1970, 2.75 in 1980, and 2.64 in 1985. The overall decrease in the average household size may be attributed to a number of factors, including the declining birthrates and the attendant decrease in average family size and to the increase in the number of one-person households. Recently released data from the 1990 U.S. Census indicate that the number of households in the Region has continued to increase, reaching about 676,100 in 1990. The Census results further indicate that the average household size in the Region stood at 2.62 persons per household in 1990.

Unlike the resident population, the increase in the number of households in the Region between 1970 and 1985 closely approximated the increase envisioned under the second-generation regional land use plan. The actual number of households in 1985 was about 11,600, or 2 percent, greater than the forecast level. Actual household levels were slightly greater than forecast in Milwaukee, Racine, Walworth, and Waukesha Counties and slightly lower than forecast in Kenosha, Ozaukee, and Washington Counties.

Economic Activity

One of the important measures of economic activity in an area is the number of employment opportunities, or jobs. The long-term trend in employment within the Region has been one of steady growth. Total employment in the Region approximated 872,000 jobs in 1985, an increase of about 224,000 jobs, or 35 percent, over 1960 and an increase of about 118,000 jobs, or 16 percent, over 1970. Job levels in southeastern Wisconsin, as in other areas, are subject to fluctuation in response to business cycles. During the deep economic recession of 1979 to 1983, for example, total employment decreased from a 1979 level of 902,000 jobs to a 1982 level of 819,000 jobs before the start of an extended period of recovery. By 1990, total employment in the Region increased to 990,000 jobs.

Changes in the level of employment within the Region have been accompanied by changes in the types of jobs available, reflecting certain basic changes in the structure of the regional economy. Manufacturing has traditionally been the largest employment category in the Region. The dominance of manufacturing jobs in the Region, however, is lessening. Manufacturing employment accounted for 30 percent of all jobs in the Region in 1985, down from 38 percent in 1970 and 43 percent in 1963. The declining percentage of manufacturing employment been accompanied by an increashas ing percentage of regional employment in service industries.

There has been a decentralization of employment within the Region, with employment moving away from the large, older, urban employment centers to outlying areas of the Region. Among the seven counties, Waukesha County experienced the largest relative increase in employment, over 459 percent, between 1960 and 1990, while Ozaukee and Washington Counties experienced relatively large increases of 239 percent and 188 percent, respectively. As a result of its rapid employment growth, Waukesha County's share of the total regional employment increased from 5 percent in 1960 to 10 percent in 1970 and to 17 percent in 1990. Conversely, Milwaukee County's share of total regional employment decreased from 75 percent in 1960, to 67 percent in 1970, and to 58 percent in 1990.

Employment growth in the Region has generally conformed well to the forecasts used in the preparation of the second-generation regional land use plan. The 1985 regional employment level envisioned under the adopted land use plan totaled about 879,000 jobs. The actual 1985 employment level of about 872,000 jobs was within 1 percent of the forecast level, indicating good conformance with the forecast trend at the regional level. At the county level, actual employment growth varied somewhat from the forecast rates. Between 1970 and 1985, employment increased substantially faster than forecast in Waukesha County and slightly faster than forecast in Washington County, with actual 1985 employment levels in these two counties 26 and 11 percent greater than forecast, respectively. In Kenosha, Milwaukee, Ozaukee, Racine, and Walworth Counties, employment

increased somewhat slower than forecast, with actual 1985 employment levels in these five counties from 4 to 14 percent less than forecast.

Natural Resource and Public Utility Base

Air Quality: Since 1977, the year of the initial assessment of air quality conditions within the Region by the Regional Planning Commission, there has been a general improvement in those conditions and a reduction in most major pollutants over the past decade. Particulate matter, carbon monoxide, and sulfur dioxide levels have decreased significantly. Lead concentrations have decreased significantly since monitoring of this pollutant species began in 1982. Nitrogen dioxide levels have been stable since the early 1980s, remaining well below established standards.

As a result of these improvements, the U.S. Environmental Protection Agency has modified or rescinded nonattainment area designations for certain pollution species. The Environmental Protection Agency rescinded the carbon monoxide nonattainment area designation for the central portion of Milwaukee County in 1990. Before that, the Agency rescinded the primary particulate matter nonattainment area designations and reduced the size of the secondary particulate matter nonattainment areas in the City of Waukesha and the central portion of Milwaukee County. It rescinded the secondary particulate matter nonattainment area designation for an area surrounding Mitchell International Airport in Milwaukee County. The Environmental Protection Agency, however, has determined not to change the secondary particulate matter nonattainment area designations in the Cities of Kenosha and Racine or the sulfur dioxide nonattainment area designation for a portion of Milwaukee County. No portion of the Region has been designated a nonattainment area for nitrogen dioxide or lead.

Ozone remains the most serious air pollution problem, with the entire southeastern Wisconsin Region designated an ozone nonattainment area. It has been concluded by the Regional Planning Commission and the Wisconsin Department of Natural Resources that the transport of ozone and its precursor emissions from areas south of the Region is a major contributor to the observed ozone problem in southeastern Wisconsin. As a result of legal action brought by the Department, an interstate study under the direction of the U. S. Environmental Protection Agency was mounted in 1989 to investigate the occurrence, frequency, and severity of interstate transport of ozone and its precursor emissions in the four states bordering Lake Michigan.

Given the general improvement in air quality as evidenced by the reduction in major pollutant species over the past decade and given that a portion of the ozone problem is attributable to sources outside the Region and will require interstate regional control, it may be concluded that the air quality conditions should not constitute a constraint on the design of the new land use plan.

Soils: The Southeastern Wisconsin Region contains a wide variety of soil types, ranging from poorly drained organic soils to excessively drained mineral soils, with significantly different soil types frequently intermingled in very small areas. It is essential that new urban development be properly located with respect to the soils of the Region since many soils have characteristics unsuitable for urban development. Analysis of the detailed soil survey data indicated that 901 square miles, or about 34 percent of the total area of the Region, are covered by soils having severe limitations for residential development served by public sanitary sewers, or, stated differently, poorly suited for residential development of any kind.

At the time of the adoption of the initial 1990 regional land use plan in 1966, soil limitations constituted a major constraint on the use of onsite sewage disposal systems in the Region. At that time, onsite disposal of domestic sewage was based primarily on one type of technology, the septic tank system, involving trenches or beds which rely on gravity distribution of partially treated sewage effluent below the natural surface of the soil. Since then, alternative onsite sewage disposal systems, including shallow in-ground, at-grade, and above-grade mound soil absorption systems, have been designed, field tested, and, in some cases, approved for use under more limiting soil conditions than those for which conventional systems would be acceptable. In addition, current state-mandated regulatory practice tends to foster, rather than discourage, the use of onsite sewage disposal systems. As part of the field investigations required to determine site suitability for onsite sewage disposal systems, every effort is made to identify areas capable of accommodating an onsite system. As a result,

very small areas capable of supporting such systems may be identified within areas which are, for the most part, covered by soils unsuitable for the use of onsite sewage disposal systems or even unsuitable for urban development of any kind.

Under the current regional planning effort, the classification of soils based upon suitability for onsite sewage disposal systems was revised and updated to reflect current administrative rules and regulatory practice. It was found that about 1,420 square miles, or about 53 percent of the total area of the Region, are covered by soils classified as unsuitable for conventional onsite sewage disposal systems; about 458 square miles, or 17 percent, are covered by soils classified as suitable for such systems; and about 608 square miles, or just over 22 percent, are covered by soils of undetermined suitability. The remaining 203 square miles, or about 8 percent of the Region, consist of disturbed land for which no soil survey data are available and surface water. In comparison, about 911 square miles, or about 34 percent of the total area of the Region, are covered by soils classified as unsuitable for mound sewage disposal systems; about 1.014 square miles, or just over 37 percent, are covered by soils classified as suitable for such systems; and about 561 square miles, or 21 percent, are covered by soils of undetermined suitability. Clearly, the development of mound sewage disposal systems and other alternative onsite sewage disposal systems has the potential for permitting substantial additional areas of the Region to be developed for urban use without centralized sanitary sewerage systems.

The decreasing importance of soil limitations as a constraint on urban development utilizing onsite sewage disposal systems, as a result of technological change and changes in regulatory practices, has important implications for regional settlement patterns insofar as it enables the proliferation of scattered urban development in rural areas. Such scattered development will contribute to the destruction of the natural resource base, disrupt local farming economies, and result in incomplete neighborhoods which are difficult to provide with basic urban services and facilities. Public and private costs of accommodating unsewered development in marginal areas will also be affected. Initially, higher costs will be associated with the design and installation of the required alternative onsite sewage

disposal systems and construction of supporting roadways and other public improvements in areas which are not well suited for such uses. Over time, higher costs will also be associated with the correction of costly problems, such as drainage and flood control and water pollution resulting from failure of the onsite systems, and with the provision of urban facilities and services over broad areas within which scattered urban development may have been permitted to occur on small areas of suitable soils.

Surface Water Resources: There are 101 major lakes of 50 acres or more in area within the seven county Region, with a combined surface water area of about 36,500 acres, or about 2 percent of the total area of the Region. Because of human activities, many lakes in the Region face water quality problems which limit the use of lakes by humans and which threaten desirable forms of aquatic life. Of the 49 major lakes for which water chemistry data were available in 1979, water quality standards were violated in 39 lakes, or 80 percent of the total. The dissolved oxygen and phosphorus standards were most frequently violated. Since the completion of the regional water quality management plan in 1979, the water quality of some lakes has continued to decline, usually because of the effects of urban development in the tributary watersheds. The water quality of other lakes has improved, however, because of the implementation of nonpoint source water pollution control measures in some areas and the elimination of malfunctioning septic tank systems, usually through the provision of sanitary sewer service.

There are about 1,148 miles of perennial streams in the Region, streams which maintain, at a minimum, a small, continuous flow throughout the year except under unusual drought conditions. Monitoring of stream water quality conditions by the Regional Planning Commission over the period 1964 to 1975 showed a general decline in stream water quality and the attendant achievement of water quality standards under summer low flow conditions. About 35 percent of the total stream miles sampled in 1964 met adopted water use objectives and standards; in 1975, only about 19 percent of the stream miles sampled met those objectives and standards.

A number of important steps have been, and are being, taken to address water quality problems in the Region, including the preparation of a regional water quality management plan, the preparation of a management plan for the Milwaukee harbor estuary, and the preparation of nonpoint source pollution abatement plans for the Milwaukee River watershed and certain other watersheds in the Region. Improvements in water quality through the implementation of these plans would not only enhance the aesthetic values and expand recreational opportunities. but may also stimulate economic development, such as the renewal of older urban river and lakefront areas. The new regional land use plan should emphasize sound development in lake and riverine areas to avoid further water quality degradation and to enhance social, environmental, economic, recreational, and aesthetic values of such areas.

Groundwater Resources: The Region is richly endowed with groundwater resources. Continuous, relatively uniform discharge from groundwater storage helps maintain the base flow of major streams within the Region. The three groundwater aquifers underlying the Region are a major source of water supply for domestic. municipal, and industrial water users. Groundwater quality can be adversely affected by human activity and by naturally occurring phenomena. Relatively high levels of naturally occurring radium have been found in a number of municipal wells using the sandstone aquifer as a source. In certain areas, volatile organic materials have entered the groundwater system through commercial, industrial, and municipal waste disposal systems or chemical spills. Cases of bacterial and nitrogen contamination have also been identified in the Region. Efforts are underway to address the identified problems. and despite the existence of localized problems. the quality of groundwater in the Region overall may be generally characterized as good.

<u>Woodlands</u>: Woodlands have both ecologic and economic value; under good management, can serve a variety of uses. Woodlands assist in maintaining a unique natural relationship between plants and animals, reduce stormwater runoff, contribute to atmospheric oxygen and water supply, aid in reducing soil erosion and stream sedimentation, provide the resource base for the forest product industries, and provide valuable recreational opportunities as well as a desirable aesthetic setting for rural and urban development. There were about 116,200 acres of woodlands in southeastern Wisconsin in 1985, representing about 7 percent of the total area of the Region. There was a decrease in the woodlands of about 1,600 acres, or just over 1 percent, between 1963 and 1970. Between 1970 and 1985, the woodland area decreased by another 1,750 acres, or just over 1 percent. These figures, it should be noted, represent the net effect of decreases in woodlands in certain areas of the Region, due largely to their conversion to intensive urban or agricultural uses, and increases in other areas as a result of reforestation activities.

Wetlands: Wetlands also perform a set of important natural functions, including support of a wide variety of desirable, and sometimes unique, forms of plant and animal life, stabilization of lake levels and streamflows, entrapment and storage of plant nutrients in runoff, contribution to atmospheric oxygen and water supplies, reduction in stormwater runoff, protection of shorelines from erosion, and provision of the population with opportunities for certain scientific, educational, and recreational pursuits. Wetlands encompassed about 169,000 acres, or about 10 percent of the total area of the Region, in 1985. Over time wetlands may decrease in certain areas and increase in other areas. Wetlands may be lost as a result of filling and development in urban areas and through drainage for agricultural use in rural areas. Wetlands may be created as a result of abandonment of agricultural drainage systems or of wetland restoration efforts. The overall effects of these types of changes was a net decrease of about 2.600 acres in wetlands between 1963 and 1970 and a further decrease of about 4,000 acres between 1970 and 1985.

<u>Prairies</u>: Prairies are treeless, or generally treeless, areas which are dominated by perennial native grasses. Prairies have important ecological and scientific value and consist of four basic types: low prairies, mesic or moderately moist prairies, dry prairies, and savannas. Once covering extensive areas of southeastern Wisconsin, prairies have been reduced to scattered remnants located primarily in the southern and western portions of the Region. Prairies have been lost chiefly as a result of their conversion to urban use and agricultural use and of the suppression of the wildfires which had served to constrain advancing shrubs and trees which shade out the prairie plants.

Wildlife Habitat Areas: Within southeastern Wisconsin, wildlife is composed primarily of small upland game, such as rabbits and squirrels; some predators, such as foxes and raccoons; game birds, including waterfowl; and game and nongame fish species. Deer are also found and, while not as abundant compared to other regions of the State, are increasing in number. The most recent inventory of wildlife habitat areas in the Region was carried out cooperatively by the Wisconsin Department of Natural Resources and the Commission in 1985. Most of the remaining wildlife habitat areas identified through this inventory are located within the primary and secondary environmental corridors and isolated natural areas in the Region shown on Map 35 presented in Chapter V of this report. The protection of those environmental corridors and isolated natural areas would, therefore, assure the preservation of most of the identified wildlife habitat.

Since 1986, additional wildlife habitat has been restored on agricultural lands enrolled in the federal Conservation Reserve Program. These areas, not included in the 1985 wildlife habitat inventory, consist primarily of cool-season grasses which provide critical nesting cover for severely depressed populations of grassland species of wildlife. These wildlife include songbirds, waterfowl, and upland game birds. Agricultural lands enrolled in the Conservation Reserve Program can provide excellent wildlife habitat. Future federal farm programs, similar to the Conservation Reserve Program, may further augment wildlife habitat beyond the environmental corridors or isolated natural areas.

Floodlands: The floodlands of a river or stream are the wide, gently sloping areas contiguous with, and usually lying on both sides of, a river or stream channel. Rivers and streams occupy their channels most of the time. However, during even minor flood events, the channel is not able to convey all the flow. As a result, stages increase and the river or stream spreads laterally over the floodlands. The delineation of the floodlands of southeastern Wisconsin is extremely important for sound local as well as regional planning and development. The Commission, as an integral part of its comprehensive watershed studies, provides definitive data on the 10- and 100-year recurrence interval floods for most of the perennial streams in each watershed studied. Flood hazard data have also been developed within the Region by the Federal

Emergency Management Agency. The 100-year recurrence interval floodlands identified by the Commission or by the Federal Emergency Management Agency encompass a total area of nearly 250 square miles, representing about 9 percent of the total area of the Region. New intensive urban development should generally not be accommodated with the identified 100-year recurrence interval flood hazard areas.

Lake Michigan Erosion Hazard Areas: Like flooding, Lake Michigan shoreline erosion and bluff recession are naturally occurring phenomena. Shoreline erosion and bluff recession are among the most difficult and costly problems facing private property owners and local units of government along the Lake Michigan shoreline. About 55 miles of shoreline, or 68 percent of the total Lake Michigan shoreline along the Southeastern Wisconsin Region, is considered threatened by shoreline erosion or bluff recession. New urban development along the Lake Michigan shoreline should be set back properly, in accordance with anticipated shoreline erosion and bluff recession rates, or should be protected by adequate erosion and bluff recession control measures.

Park and Open Space Sites: Park and related outdoor recreation areas in the Region numbered 2,608 sites in 1985. Together, these sites encompassed about 114,200 acres, or 7 percent of the total area of the Region.

Publicly owned sites accounted for 1,696 sites, or 65 percent of all park and related outdoor recreation sites, and encompassed about 84,300 acres, or 74 percent of the total recreation site acreage in 1985. Publicly owned sites include, among others, large state parks, recreation areas, and hunting grounds; county, city, village, and town parks; public school outdoor recreation areas; special use sites such as zoos, fair grounds, and botanical gardens; and urban green spaces.

Privately owned sites accounted for 912 sites, or 35 percent of all park and related outdoor recreation sites, and encompassed about 29,900 acres, or 26 percent of the total recreation site acreage in 1985. Many of the privately owned sites were water-oriented, clustered around the shores of inland lakes and rivers.

Primary Environmental Corridors: The most important elements of the natural resource base and features closely related to that base, including woodlands, wetlands, prairies, wildlife habitat, major lakes and streams and associated shorelands and floodlands, and historic, scenic, and recreational sites, when considered together, result in essentially linear patterns in the landscape referred to by the Commission as environmental corridors. "Primary" environmental corridors include a wide variety of important natural resource and resource related elements and are, by definition, at least 400 acres in size, two miles long, and 200 feet wide. In 1985 primary environmental corridors encompassed about 299,600 acres, or 17 percent of the total area of the Region. Yet these corridors encompassed 65 percent of all woodlands. 80 percent of all wetlands, 93 percent of all surface waters, and 59 percent of all floodlands in the Region.

Between 1963 and 1970, there was a slight decrease of 1,400 acres, or of less than 1 percent, in the primary environmental corridor area. Between 1970 and 1985 there was a further decrease of about 4,900 acres, or of just under 2 percent. These changes were the net effects of decreases in environmental corridor lands in certain areas of the Region and increases in other areas. Decreases in environmental corridor lands occur, for the most part, as a result of the conversion of natural areas to intensive urban or agricultural use. Increases may occur as a result of reforestation, water impoundment, or the reversion of agricultural lands to wetlands.

The preservation of primary environmental corridors in essentially natural, open uses has since 1966 been one of the most important recommendations of the adopted regional land use plan. Such preservation is essential to the maintenance of a high level of environmental quality in the Region, to the protection of its natural beauty, and to the provision of opportunities for certain scientific, educational, and recreational activities. The exclusion of urban development from these corridors will also prevent the creation of serious and costly developmental problems such as wet and flooded basements, foundation failures, and excessive clearwater infiltration and inflow into sanitary sewerage systems.

<u>Public Sanitary Sewer and Water Supply Ser-</u> <u>vice</u>: Public utility systems are among the most important and permanent elements of urban growth and development. Of particular importance to sound regional development are centralized sanitary sewerage and water supply systems. Areas served by public sanitary sewers encompassed about 377 square miles, or about 14 percent of the total area of the Region, in 1985. About 1,508,000 persons, representing nearly 87 percent of the total resident population of the Region, were served. Between 1970 and 1985, the area served by sanitary sewers increased by about 68 square miles, or 22 percent. The population served increased by about 19,000 persons, or about 1 percent. The relatively modest increase in population served by sanitary sewers is the net result of an increase in the number of persons served in areas outside Milwaukee County and a decrease in the number served within Milwaukee County, where the total resident population decreased by almost 115,000 persons during the 15-year period. The proportion of the population served by sanitary sewers increased in each county in the Region, including Milwaukee County, between 1970 and 1985.

In 1985, public water supply service was provided to a total of 293 square miles, or about 11 percent of the total area of the Region. A total of about 1,390,000 persons, representing nearly 80 percent of the resident population of the Region, was served by public water supply systems. The area of the Region served by public water supply increased by almost 34 square miles, or about 13 percent, between 1970 and 1985. The total number of persons in the Region served by public water supply, however, did not change significantly, as increases in the population served in outlying counties were offset by a substantial decrease in Milwaukee County.

In general, it may be assumed that sanitary sewer and water supply service will be made available as necessary to meet the needs associated with increases in, and the redistribution of, population and economic activity in the Region through the new plan design year 2010. The availability of sewer and water supply service, therefore, need not be considered an impediment in the design of the year 2010 regional land use plan. With respect to water supply, it should be noted that Lake Michigan remains an abundant source of potable water for portions of the Region located east of the subcontinental divide, which traverses the Region in a generally northwesterly-southeasterly direction. West of that divide, where

groundwater is relied upon as a source of water supply, certain local groundwater quality problems, such as the presence of unacceptable levels of radium, will have to be resolved.

Land Use

Historic Urban Growth: Although urban development within the Region has increased continuously since 1850, a dramatic change in the character of this development occurred after World War II. The earlier pattern of new urban development occurring in tight, concentric bands contiguous to, and outward from, established urban centers was supplanted by a diffused pattern of areawide sprawl. This highly diffused pattern of urban development first became evident within the Region during the period from 1950 to 1963, when a 39 percent increase in urban resident population was accompanied by a 93 percent increase in land devoted to urban use. This pattern continued between 1963 and 1970, when a 6 percent increase in the urban population was accompanied by a 20 percent increase in land devoted to urban use, and between 1970 and 1985, when land devoted to urban use increased by 41 percent while the urban population of the Region remained essentially unchanged.¹

¹The Commission relies on two types of inventories and analyses in order to monitor urban growth and development in the Region, an urban growth ring analysis and a land use inventory. The urban growth ring analysis delineates the outer limits of the lands developed and committed to urban use. The growth rings encompass both lands committed to urban use, but not yet in such use, and open lands proposed to be preserved for resource conservation purposes within the urban concentrations. The Commission land use inventory identifies all lands actually in urban use wherever located. Thus, open lands included as urban within the delineated urban growth rings are, in the land use inventory, classified as rural. Thus, it may be expected that the urban growth ring analysis will show higher increments of urban growth than the land use inventory for certain periods of time. When related to urban population levels, the urban growth ring analysis provides a good basis for calculating urban population densities. The regional land use inventory is a "land cover" inventory. As such it identifies as urban all land which has been developed for residential, commercial, industrial, institutional, transportation, and similar uses, regardless of location.

The areawide spread of urban development within the Region has been accompanied by marked reductions in urban population densities. The overall urban population density for the Region has decreased from an historic high of about 11,300 persons per square mile in 1920 to about 8,100 in 1950, to about 5,800 in 1963, to about 5,100 in 1970, and to about 3,600 in 1985. The adopted regional land use plan has since 1966 advocated a gradual stabilization of urban population densities, envisioning an urban density of about 4,500 persons per square mile in 1985, and about 3,800 persons per square mile in the year 2000. The actual 1985 urban population density of 3,600 persons per square mile was thus considerably lower than the 1985 planned density, and slightly lower than the year 2000 planned density.

Urban Land Uses: Urban land uses, consisting of lands devoted to residential, commercial, industrial, governmental and institutional, recreational, transportation, and unused urban land, encompassed a total of about 387,700 acres, or just under 23 percent of the Region in 1985. Urban land uses increased by about 39,800 acres, or 14 percent, between 1963 and 1970 and by an additional 64,200 acres, or 20 percent, between 1970 and 1985. The overall increase in land devoted to urban uses between 1970 and 1985 was somewhat greater than anticipated under the adopted regional land use plan. As a result, the actual area of land in residential, commercial, industrial, transportation, and public recreation uses, those categories for which incremental amounts were specifically identified under the adopted regional land use plan, in 1985 exceeded the area envisioned under the plan by about 12,700 acres, or 4 percent.

The urban land use category typically occupying the greatest area is residential, and this use accounted for about 184,600 acres, or about 11 percent of the total area of the Region, in 1985. Land devoted to residential use within the Region increased by about 20,200 acres, or 16 percent, between 1963 and 1970 and by an additional about 41,900 acres, or 29 percent, between 1970 and 1985. Since 1970, the development of residential land has proceeded at a rate somewhat higher than envisioned under the adopted regional land use plan. Moreover, while the plan recommended that new residential development should occur primarily at medium density, with an average of about four housing units per net residential acre, the period from 1970 to 1985 saw the continued widespread development of residential land at significantly lower densities.

The adopted regional land use plan recommends that new urban growth occur in areas contiguous to existing urban centers which can be readily served by public sanitary sewerage facilities and other basic facilities and services. Of the approximately 41,900 acres of residential land developed in the Region between 1970 and 1985. only about 38 percent, or about 15,800 acres, was served by public sanitary sewers. On the other hand, of the approximately 107,300 additional occupied housing units in the Region, about 79 percent, or 84,800 units, were served by public sanitary sewers. The difference in these proportions reflects the low density of unsewered residential development, which requires large lots to accommodate onsite sewage disposal systems, in comparison to the much higher densities which may be accommodated in areas where public sanitary sewer service is available.

Substantial progress has been achieved with respect to the development of the major regional activity centers identified in the adopted regional land use plan, namely, the major commercial centers, the major industrial centers, and the major parks. Five major commercial centers proposed in the original land use plan adopted in 1966 have been developed, including the Regency Mall in the City of Racine, the Brookfield Square Shopping Center in the City of Brookfield, the Northridge Shopping Center in the City of Milwaukee, the STH 100 shopping area in the City of West Allis, and the Southridge Shopping Center in the Village of Greendale. Development has also proceeded at six sites recommended as major industrial centers under the original land use plan, three in the Milwaukee metropolitan area, including one in the Granville area of the City of Milwaukee, one in the City of Oak Creek, and one in the City of New Berlin; one each in the Kenosha and Racine metropolitan areas; and one in the City of Burlington.

The original regional land use plan as adopted in 1966 recommended a system of 26 major parks, including 13 existing parks and 13 proposed new parks, to meet the needs of the regional population through the year 1990. Eleven of the 13 proposed parks have been acquired by state and county park agencies, including Brighton Dale Park in Kenosha County, Oakwood Park in Milwaukee County, Hawthorne Hills and Harrington Beach Parks in Ozaukee County, Cliffside and Ela Parks in Racine County, Whitewater Lake Park in Walworth County, Pike Lake Park in Washington County, and Minooka, Ottawa Lake, and Monches Parks in Waukesha County. Only two of the originally recommended sites, the Sugar Creek Park site in Walworth County and the Paradise Valley site in Washington County, have not been publicly acquired to date. The second-generation regional land use plan expanded the proposed system of major park sites by identifying three additional sites, Bender and Dretzka Parks in Milwaukee County and Mee-Kwon Park in Ozaukee County. Each of these has been acquired by the concerned county park agency.

While significant progress has been achieved with regard to the development of the proposed major commercial and industrial centers, certain development trends, not fully consistent with the major centers concept as envisioned under the plan, have materialized. First, while substantial amounts of commercial and industrial development have occurred in the proposed major centers, such development has also occurred in areas not envisioned for such development under the plan. There has been a dispersal of commercial and industrial development, perhaps most evident in the relatively recent increase in commercial and industrial development along freeway corridors. Second, there have been changes in the nature of many areas developed for commercial and industrial use. New types of economic activity centers have emerged, the most noteworthy being the office park. There has also been an increase of commercial and industrial development in mixed-use settings. While some areas remain relatively homogeneous concentrations of commercial and industrial activity, the traditional designations do not apply well to other areas, particularly the newer developing areas, because of the mixture of commercial and industrial uses present.

<u>Nonurban Land Uses</u>: Nonurban lands, consisting of agricultural, woodlands, surface water and wetlands, and unused rural and other open land, encompassed about 1,333,400 acres, or 77 percent of the total area of the Region, in 1985. The nonurban category occupying the greatest area was agricultural, which accounted for about 932,000 acres, or 70 percent of all nonurban lands and 54 percent of the total area of the Region. The agricultural land base of the Region has decreased significantly in recent years due largely to the massive conversion of farmland to urban uses. Between 1963 and 1970, agricultural land in the Region decreased by about 46,300 acres, or about 4 percent. Between 1970 and 1985, agricultural land decreased by an additional approximately 69,400 acres, or 7 percent.

A major recommendation of the adopted regional land use plan is the preservation in agricultural use of the remaining prime agricultural lands of southeastern Wisconsin, the most productive farming areas in the Region. Prime agricultural lands are defined as blocks of farmland of at least 100 acres in area consisting of farm units with a minimum size of 35 acres where at least 50 percent of each farm unit is covered by national prime farmland soils or farmland soils of statewide importance. In 1985, prime agricultural lands encompassed about 670,100 acres, or 39 percent of the total area of the Region. Between 1963 and 1985, prime agricultural lands decreased by about 102,700 acres, or 13 percent. Of this total, about 17,200 acres, or 17 percent, were located in, or adjacent to, expanding urban areas. The conversion of these areas to urban use was generally consistent with the adopted land use plan. The balance, about 85,500 acres, or 83 percent of the total loss, was located in outlying rural areas generally recommended to remain in agricultural use under the plan.

Land Use Controls

A reinventory of zoning ordinances and other land use controls in effect within the Region in 1985 revealed that considerable progress has been made in adjusting county and local zoning ordinances and other land use controls into accordance with recommendations contained in the adopted regional land use plan, although much still remains to be accomplished.

<u>Urban Zoning Districts</u>: With respect to zoning for urban development, one of the significant changes since the initial Commission inventory in 1964 is the reduction in residential zoning in outlying areas of the Region. The total area in residential zoning districts in the Region decreased from over 440,000 acres in 1964 and 1972 to about 385,000 acres in 1985. Much of the reduction involved the rezoning from residential

districts to appropriate exclusive agricultural and conservancy districts. As a result of the reduction in the gross area zoned for residential use and the actual development of substantial amounts of residentially zoned land over time, the incremental land area proposed for residential use under local zoning in the Region has decreased significantly, from about 285,100 acres in 1964, to about 256,400 acres in 1972 and, further, to about 153,500 acres in 1985, a reduction of about 131,600 acres, or 46 percent, over the 21-year period. Despite this reduction, the Region remains overzoned for residential use. At the rate of population growth anticipated under an intermediate regional growth scenario, it would take over 230 years to utilize fully all of the land proposed to be converted to residential use.

Land zoned for commercial use encompassed about 41,400 acres, or just over 2 percent of the total area of the Region, in 1985; land zoned for industrial use encompassed about 75,900 acres, or just over 4 percent. The incremental land area proposed for commercial use under local zoning decreased from 29,200 acres in 1972 to 26,200 acres in 1985. The incremental land area proposed for industrial use also decreased from 63,800 acres to 50,700 acres during this time. Despite these decreases, the Region remains overzoned for commercial and industrial use. At the rate of employment growth anticipated under the intermediate regional growth scenario, it would take about 200 years to utilize fully all the proposed additional commercial land and about 215 years to fully utilize all of the proposed additional industrial land. Strip commercial zoning, that is, the zoning of strips of land abutting arterial streets and highways for commercial use, remains widespread in the Region. Such zoning is generally undesirable insofar as it tends to destroy aesthetic values along arterial streets and highways, to destroy the capacity of the arterial streets and highways, to create traffic hazards and congestion, to promote scattered development, and to create land use conflicts.

<u>Agricultural Zoning</u>: Considerable progress has been made with respect to the protection of prime agricultural land through the application of exclusive agricultural zoning, as recommended since 1966 in the adopted regional land use plan. Exclusive agricultural zoning districts by definition establish a relatively large minimum parcel size and restrict the use of land primarily to agricultural use. In 1966, the Town of Belgium in Ozaukee County became the first zoning jurisdiction in the Region to apply such zoning in a substantial way. While it took a number of years to gain public acceptance, exclusive agriculture zoning was by 1985 in effect in many areas of the Region. Exclusive agricultural zoning establishing a minimum parcel size of 35 acres served to protect from inappropriate urban development about 374,600 acres, or 56 percent of the 670,100 acres of prime agricultural land within the Region in 1985.

One of the problems with regard to agricultural zoning identified under previous Commission zoning inventories was the widespread use of agricultural districts which, in addition to agricultural and open space uses, also permit low-density residential development. Despite an increase in such zoning in some subareas of the Region, there has been a significant reduction in this type of zoning within the Region as a whole. Thus, in 1972, about 833,000 acres, or about 85 percent of the total of 984,600 acres of land in agricultural zoning districts in the Region, permitted residential development on lots less than five acres in size. Owing to the increased use of exclusive agricultural zoning and other changes in agricultural zoning district regulations since 1972, the amount of agriculturally zoned land permitting residential development on lots smaller than five acres had decreased to about 291,700 acres, or about 35 percent of all agriculturally zoned land in the Region in 1985.

Protection of Primary Environmental Corridors: Considerable progress has also been achieved with respect to the protection of primary environmental corridors within the Region through a combination of public acquisition and public land use regulation, as recommended in the adopted regional land use plan. By 1985, about 94,300 acres of primary environmental corridor lands, including about 45,600 acres of surface water, representing 31 percent of the total corridor area were in public ownership and thereby permanently protected against inappropriate development. An additional approximately 113,000 acres, or 38 percent, had been effectively protected from inappropriate development through joint state-local floodplain and shoreland-wetland zoning and federal wetland regulation. Furthermore, state administrative rules governing sanitary sewer extensions helped to protect upland corridors located within planned sewer service areas, areas encompassing an additional approximately 16,400 acres, or 6 percent of all corridor lands, although the basis for this protection in the Wisconsin Statutes is relatively narrow, relating only to potential adverse water quality impacts. In total, about 223,700 acres of primary environmental lands, or about 75 percent of all such lands in the Region, were fully or partially protected by 1985.

It is important to note that, while most lowland areas within the primary environmental corridors have been effectively protected from incompatible urban development, many upland areas remain vulnerable to urban encroachment. Some protection of upland corridor lands is afforded by state administrative rules governing sanitary sewer extensions, as noted above. Additional measures will, however, be necessary to provide for the permanent protection of all the remaining upland corridor areas.

ANTICIPATED REGIONAL GROWTH AND CHANGE

In the preparation of a land use plan, the future demand for land and natural resources which the plan must seek to accommodate depends primarily upon future population and economic activity levels. Control of changes in population and economic activity levels lies largely outside the scope of governmental activity and outside the scope of the physical planning process. For land use planning purposes, future population and economic activity levels must, therefore, be forecast.

Surveillance activities under the continuing regional planning program indicate increasing uncertainty with regard to future social and economic conditions within southeastern Wisconsin. To deal with this uncertainty, the Commission has adopted an "alternative futures" approach to systems level planning. This approach involves the postulation of alternative future growth scenarios for the Region and the preparation of related projections of population and employment, thereby providing a broader basis for plan design and evaluation than would be provided by a single forecast.

Under the alternative futures approach, three alternative future growth scenarios were postulated for southeastern Wisconsin. The sets of conditions postulated for each "future" are intended to represent consistent, reasonable scenarios of future changes in resident population and economic activity levels within the Region through the year 2010. Two scenarios, the "high-growth" scenario and the "lowgrowth" scenario, were intended to represent reasonable extremes. The third scenario, the "intermediate-growth" scenario, was intended to represent a more probable future.

The economic changes that may be expected under a high-growth scenario represent a return to the types of conditions that have historically prevailed in the regional economy. Under this scenario, there would be no long-term damage to the regional economy as a result of the 1979 to 1983 recession, with long-term economic growth rates attaining levels at or slightly below national averages. This growth would be expected to result from maximum capitalization on the strengths of the regional economy, such as labor availability, land availability, a good vocational-technical educational system, and high-quality infrastructure systems. Traditional manufacturing interests in the Region would improve their competitive positions, while the trade and service sectors would continue to grow at relatively rapid rates, as they have over the past several decades. Under this scenario the resident population of the Region would increase significantly, owing in part to a substantial net inmigration of population that may be expected in response to a strong regional economy. This scenario envisions that "traditional" patterns of household composition will exist, and that households consisting of a husband, wife, and children will constitute the dominant type, although the average number of children in the households would be lower than in the past.

Under the intermediate-growth scenario, the recovery of the economy from the 1979 to 1983 recession would be delayed somewhat, and would initially be weaker than the national recovery as the heavy industrial and manufacturing concerns that dominate the regional economy continue to close unprofitable plants and limit operations in streamlining efforts necessary for survival during poor economic conditions. The changes that would occur during this contraction of the manufacturing employment group would ultimately lead to a stronger, though initially smaller, regional manufacturing economy. Under this scenario, the net outmigration of population experienced during the 1970s would gradually diminish in response to improving economic conditions, and the Region would experience a modest increase in population between 1980 and 2010. Under this scenario, the "traditional" patterns of household composition would be less dominant and single-parent and single-person households would be more prevalent than under the high-growth scenario, although the historic increase in these household types would be moderated somewhat.

The economic conditions that may be expected under a low-growth scenario represent a departure from long-term trends under which the Region was able to maintain or increase its relative share of national employment. Under the low-growth scenario, the recovery of the regional economy from the 1979 to 1983 recession would be lengthy, with regional employment remaining depressed. Over the long term, the Region would experience a continuation or even an acceleration of a trend first observed in the 1970s, when southeastern Wisconsin began to experience a decline in its share of total national employment. This departure from long-term trends is based on an assumed inability of area manufacturers to modernize their aging physical capital stock, the erosion of product markets, and increased foreign competition in manufacturing industries. This scenario envisions a continued net out-migration of population in response to stagnating economic conditions and an overall decrease in the regional population between 1980 and 2010. Under this scenario, husband-wife families would continue to decrease in proportion to total households, and single-parent and single-person households would continue to increase in proportion to total households, as they have done historically.

As might be expected, population and employment levels anticipated under the three growth scenarios vary considerably. Under the highgrowth scenario, the resident population of the Region would increase by about 551,000 persons, or 31 percent, from about 1,765,000 persons in 1980 to about 2,316,000 person by the year 2010. The intermediate-growth scenario envisions a population increase of about 107,000 persons, or 6 percent, to a level of about 1,872,000 persons by the year 2010. Conversely, the low-growth scenario envisions a decrease in the regional population of about 248,000 persons, or 14 percent, to a level of about 1,517,000 persons by the year 2010. Under the high-growth scenario, total regional employment would increase by about 368,000 jobs, or 42 percent, from about 884,000 jobs in 1980 to about 1,252,000 jobs by 2010. Under the intermediate-growth scenario, employment would increase by about 167,000 jobs, or 19 percent, to about 1,051,000 jobs by 2010. Under the lowgrowth scenario, total employment would approximate 871,000 jobs by 2010, about 13,000 jobs, or about 2 percent, less than the 1980 level.

As a practical matter, the design of a regional land use plan must be targeted toward a single set of population and employment forecasts. It was the collective judgment of the Advisory Committee guiding the preparation of the design year 2010 plan that future population and employment levels in the Region would be most closely approximated by the intermediate-growth scenario. Accordingly, the Committee directed that the new land use plan be prepared to accommodate the population and employment forecasts attendant to that scenario. The Committee further directed, however, that the intermediate-growth scenario forecasts should be adjusted as appropriate to reflect the implications of new benchmark population and employment data, particularly data from the 1990 U.S. Census of Population and Housing, which indicated that population and employment growth was exceeding that envisioned under the intermediate-growth scenario in certain areas of the Region. It was thus determined that the new regional land use plan should accommodate a design year population of 1,911,000 persons, about 39,000 persons, or 2 percent, more than initially forecast, and a design year employment level of about 1,095,000 jobs, about 44,000 jobs, or 4 percent, more than initially forecast. While the new year 2010 regional land use plan is based upon the intermediate-growth scenario, potential land use patterns associated with population and economic activity levels under the low-growth and high-growth scenarios were also explored under the current planning program.

RECOMMENDED YEAR 2010 REGIONAL LAND USE PLAN

Under the first and second regional land use planning studies, a concerted effort was made to explore and evaluate the full range of practical alternatives that were available to the Region with respect to future land use development patterns. As part of the initial regional land use planning effort, four different land use plan designs were prepared and evaluated; in the second effort, two additional alternative designs were explored. Both studies clearly indicated that a controlled existing trend plan, emphasizing a centralized settlement pattern, was best among the alternatives considered. In view of the extensive work with respect to the preparation and evaluation of alternative land use designs conducted under the first and second regional land use planning efforts and the conclusive nature of the findings, it was determined that additional design alternatives would not be explored in the current effort. Rather, it was determined that the basic concepts of the adopted year 2000 regional land use plan would be brought forward and incorporated into the new land use plan and that the new plan would. thus, be prepared as an update and extension to the year 2010 of the previously adopted plan.

Like the year 2000 land use plan, the new year 2010 plan recommends a relatively compact, centralized regional settlement pattern, with urban development occurring generally in concentric rings along the full periphery of, and outward from, existing urban centers. The new plan places heavy emphasis on the continued impact of the urban land market on determining the location, intensity, and character of future development. Like the previous plan, the new plan seeks to influence the operation of the urban land market in several important ways, in order to achieve a more healthful, attractive, and efficient settlement pattern. In this regard, the new plan recommends that new urban development occur primarily in those areas of the Region which are covered by soils suitable for such development, which are not subject to special hazards such as flooding and erosion, and which can be readily served by essential municipal facilities and services, including public sanitary sewerage, water supply, and mass transit. The plan recommends the preservation in essentially natural, open uses of the identified environmental corridors and the preservation in agricultural and related use of most of the remaining prime agricultural lands in the Region. While incorporating the basic concepts of the adopted year 2000 regional land use plan, the recommended year 2010 land use plan takes into account changes in land use that have taken place in the Region since the adoption of the year 2000 plan, the findings and recommendations of county and local plans and of other regional plan elements since completed, and forecasts of resident population and economic activity levels within the Region through the year 2010, as envisioned under the intermediate-growth scenario.

The recommended year 2010 regional land use plan, like the adopted year 2000 plan, seeks to moderate the decentralization of population and economic activity that has occurred within the Region over the past several decades, maintaining, to the extent practicable, the resident population and employment levels of the older, large metropolitan areas of the Region. Implementation of the recommended plan, it should be noted, would moderate, but would not end, the decentralization of population, employment, and attendant land development. The plan seeks to strike a balance between the need to accommodate growth and development in suburban and outlying areas of the Region, as dictated by the urban land market, and the need to foster infilling, conservation, and redevelopment of existing urban areas.

Urban Development and Density

The recommended regional land use plan envisions converting about 86 square miles of land to residential, commercial, industrial, institutional, transportation, and other urban use over the period 1985 through 2010, or nearly three and one-half square miles per year. Under the plan, the amount of land in such uses within the Region would increase from about 605 square miles in 1985 to 691 square miles in 2010, a 14 percent increase. The plan envisions that most new urban development would occur in planned neighborhood development units at medium density, with a typical single-family lot size of one-quarter acre and a typical multifamily development averaging about 10 dwelling units per net acre. It would be provided with basic urban services and facilities, including, most importantly, public sanitary sewer and water supply services. The plan envisions that by the year 2010 about 85 percent of all urban land and about 91 percent of the total population of the Region would be served with public sanitary sewer and water supply services.

Under the plan, the population density within the developed area of the Region would decline from a 1985 level of about 3,600 persons per square mile to a year 2010 level of about 2,800 persons per square mile, continuing the trend toward declining densities evident in the Region since 1920. The rate of decline would be reduced, however, by implementation of plan proposals to develop the majority of new urban land within the Region at medium, rather than low, densities and to provide such development with public sanitary sewer and water supply services.

Major Regional Centers

As in the year 2000 regional land use plan, year 2010 plan includes specific recommendations with respect to the development and maintenance of major commercial, industrial, and recreational centers in the Region. The major commercial center concept has, however, been revised under the year 2010 plan to reflect the changing nature of commercial development, including, importantly, the emergence of office centers.

As envisioned under the year 2000 regional land use plan, major commercial centers were primarily intended to accommodate retail sales activity, with the typical major center anchored by at least two full-line department stores. Under the year 2010 plan, the concept of major commercial center has been broadened to take into account office development as well as retail and service uses. Under the revised regional land use development objectives and standards, two types of major commercial centers, major retail centers and major office centers, have been defined. To qualify as a major retail center, a site must accommodate at least 2,000 retail jobs; to qualify as a major office center, a site must accommodate at least 3,500 office and service-related jobs.

Based upon the revised major center definitions, there were 14 major commercial centers in the Region in 1985. Seven of the 14 sites have been identified as major retail centers: the Bay Shore, Capital Court, Northridge, Southridge, and Southgate-Point Loomis shopping centers and the STH 100 shopping area in West Allis, all in Milwaukee County, and the Regency Mall shopping center in Racine County. Four existing sites have been identified as major office centers: the central business districts of the Cities of Kenosha, Racine, Waukesha, and West Bend. Three existing sites have been identified as major combined retail and office centers: the City of Milwaukee central business district, the Mayfair commercial area in Milwaukee County, and the Bluemound Road commercial area in Waukesha County. The recommended plan proposes to retain all 14 existing major commercial centers and proposes to add five new centers, including one retail

center and four office centers. The proposed new retail center is the shopping area located near the intersection of IH 94 and STH 50 in Kenosha County, development of which was underway by 1985. The proposed new office centers include Park Place in northwestern Milwaukee County. development of which was underway by 1985; strip office development along IH 43 in the City of Mequon, which was also under development by 1985; a new research park proposed to be located near the Milwaukee County Institutions grounds in the City of Wauwatosa; and a new office center located near the intersection of IH 94 and CTH J in the Town of Pewaukee. The existing and proposed new major commercial centers are listed in Table 130 in Chapter X of this report.

There were 22 major industrial centers in the Region in 1985, each accommodating at least 3,500 industry-related jobs. The existing centers include one each in Kenosha and Washington Counties, two in Racine County, four in Waukesha County, thirteen in Milwaukee County, and one located in both Milwaukee and Waukesha Counties. The recommended plan proposes to retain all of these sites as major industrial centers and further proposes to add three new major industrial centers by the year 2010. The three proposed new centers would be located in or near the Cities of Burlington and Hartford and the Village of Pleasant Prairie. The existing and proposed new major industrial centers are identified in Table 134 in Chapter X of this report.

The year 2010 regional land use plan proposes a system of 31 major parks, each with an area of at least 250 acres, to serve the needs of the Region through the plan design year. Some 29 of these sites were recommended as major parks under the year 2000 plan. Of those 29 sites, only two, Sugar Creek in Walworth County and Paradise Valley in Washington County, have yet to be publicly acquired. The year 2010 plan also anticipates the development of two major parks not previously recommended in the year 2000 plan, namely, Mitchell Park in the City and Town of Brookfield and a currently unnamed site in the western portion of the Village of Pleasant Prairie. The entire Pleasant Prairie site and a substantial portion of the Mitchell Park site had been publicly acquired by 1990. The existing and proposed major park sites are listed in Table 140 in Chapter X of this report.

Primary Environmental Corridors

The year 2010 regional land use plan, like the year 2000 plan, proposes the preservation of the existing primary environmental corridors in essentially natural, open uses. As noted above, implementation of the plan corridor preservation recommendations will contribute immeasurably to the protection and wise use of the natural resource base of the Region and will help to prevent the creation of new, and the intensification of existing, environmental and developmental problems.

The land use plan seeks to preserve all existing primary environmental corridor lands, areas encompassing about 468 square miles, or 17 percent of the Region. In addition, the plan envisions that certain adjacent floodland areas currently in agricultural or other open use would be restored to a wetland condition, thereby becoming part of the environmental corridor network. These additional lands, which together encompass about 3,600 acres, or about six square miles, have been recommended for county or state acquisition for open space preservation purposes under county park and open space plans.

Prime Agricultural Lands

Like the year 2000 regional land use plan, the year 2010 regional land use plan seeks to preserve to the maximum extent practicable those areas identified as prime agricultural lands. As previously indicated, those areas totaled just over 1.047 square miles, or 39 percent of the Region, in 1985. The recommended year 2010 land use plan proposes to convert to urban use only those prime agricultural lands which were already committed to urban development due to proximity to existing and expanding concentrations of urban uses and the prior commitment of heavy capital investment in utility extensions. The recommended plan proposes to convert only about 16 square miles, or just over 1 percent, of the remaining prime agricultural lands to urban use by the year 2010.

PLANS FOR ALTERNATIVE FUTURES

While practical considerations dictated that the regional land use plan be designed to serve a single set of future population and economic activity levels, it would be imprudent to dismiss the possibility of future growth and change in the Region occurring at variance with the rates

assumed in the plan, given the continuing uncertainty surrounding future social and economic conditions in the Region. Accordingly, under the current regional land use planning effort, a determination was made to prepare "alternative futures" land use plans differing from the recommended year 2010 land use plan in terms of the overall scale of development to be accommodated and the distribution of such development within the Region. These alternative futures plans are intended to represent the reasonable extremes of possible future conditions with respect to the level and distribution of population and employment and the amount and distribution of the major categories of land use within the Region through the year 2010. The alternative futures plans are intended to supplement the recommended plan, broadening the basis upon which planning and decisionmaking regarding development and redevelopment within the Region can be carried out. Within this framework, for example, proposals for major public facilities and utilities and for major private development may be more readily evaluated to determine how well the proposals may be expected to perform under a range of possible future conditions. Through such sensitivity analyses, more robust plan elements which may be expected to remain viable under greatly varying conditions can be identified.

Four alternative futures land use plans were prepared. Three of these plans envision a decentralized regional settlement pattern. The "high-growth decentralized" was designed to accommodate the future population and economic activity levels that could be anticipated under a high-growth scenario. The "intermediate-growth decentralized" plan and the "lowgrowth decentralized" plans were designed to accommodate the population and economic activity levels that would be anticipated under the intermediate- and low-growth scenarios, respectively. The fourth plan, the "high-growth centralized" plan, was designed to accommodate population and economic activity levels anticipated under the high-growth scenario, emphasizing a centralized, rather than a decentralized development pattern for the Region, as the other three alternative futures do.

The high-growth decentralized plan would accommodate an increase of about 573,000 persons in the resident population of the Region and an increase of about 380,000 in regional employment through the conversion of about 172 square miles of land from rural to urban use between 1985 and 2010. The high-growth centralized plan would accommodate the same population and employment increases through the conversion of about 134 square miles of land from rural to urban use. The intermediategrowth decentralized plan would accommodate a population increase of about 129,000 persons and an employment increase of about 179,000 jobs through the conversion of about 105 square miles of land. Under the low-growth decentralized plan, about 51 square miles of land would be converted from rural to urban use, despite an anticipated decrease of about 226,000 persons in the resident population of the Region between 1985 and 2010 and despite stagnating employment levels. Such conversion would occur in conjunction with the continued redistribution of population and employment within the Region.

The changes in population and employment anticipated under the alternative futures plans would alter the relative distribution of population and employment among the counties within the Region. Most noteworthy in this respect are the population changes envisioned in Milwaukee and Waukesha Counties. Between 1985 and 2010, Milwaukee County's share of the regional population would decrease from about 54 percent to about 49 percent under the low-growth decentralized plan, to about 48 percent under the highgrowth centralized plan, to about 44 percent under the intermediate-growth decentralized plan, and to about 40 percent under the highgrowth decentralized plan. Under the recommended plan, Milwaukee County would account for 49 percent of the regional population in 2010. Conversely, Waukesha County's share of the regional population would increase from about 16 percent in 1985 to about 20 percent in the year 2010 under the low-growth decentralized and high-growth centralized plans, to about 22 percent under the intermediate-growth decentralized plan, and to about 23 percent under the high-growth decentralized plan. Under the recommended plan, Waukesha County would account for about 19 percent of the regional population.

Together, the four alternative futures land use plans are intended to conceptually bracket the new recommended year 2010 regional land use plan. While many variations of the four alternative futures plans are possible, it is believed that the four alternative futures plans, in conjunction with the recommended plan, provide a reasonable representation of the full range of possible future conditions with respect to the overall scale and distribution of land use development in the Region to the year 2010.

IMPLEMENTATION

Chapter XII of this report contains specific plan implementation recommendations directed at the concerned federal, state, and local units and agencies of government within the Region. These include recommendations concerning the implementation of the recommended regional land use plan through various land use control and public service and facility extension policies to be exercised by the state, county, and local units of government operating within the Region.

The detailed plan implementation recommendations are not repeated here. Several particularly significant aspects of regional plan implementation, however, do warrant restatement here in summary form.

First, it should be reiterated that the recommended regional land use plan, as presented in this report, is intended to comprise a guide to be used in making decisions concerning the placement of land use development in time and space, and is advisory to the local, state, and federal units and agencies of government and to private developers as these public and private bodies consider land use development matters within the Region. The plan is to be regarded as a point of departure for evaluating land use development proposals as they arise and in the light of which better development decisions can be made by all concerned. The plan is intended to be used as a framework around which both comprehensive community development plans and singlepurpose facility system development plans are developed in a coordinated manner and, as such. is subject not only to continual interpretation but also to refinement and detailing.

Second, the adoption or endorsement of the recommended regional land use plan as a guide to the sound development of the Region by the local units of government and by the various state and federal agencies concerned is highly desirable, and in some cases essential, in order to secure a common understanding of areawide development objectives and to permit the necessary plan implementation work to be cooperatively programmed and jointly executed.

Third, plan implementation action policies and programs should not only be preceded by plan adoption or endorsement, but should emphasize the most important and essential elements of the plan and those areas of action which will have the greatest impact on guiding and shaping development in accordance with the recommended plan. Two major criteria should be used to determine which plan elements are truly regional in character or influence and are, therefore, essential to the attainment of regional development objectives: 1) the importance of the plan elements to the wise and judicious use of the underlying and sustaining natural resource base, and 2) the importance of the plan elements to the functional relationships existing between land use and the demand for major utility, recreation, and transportation facilities. In the light of these criteria, the regional land use plan will be largely achieved if the primary environmental corridors and prime agricultural lands of the Region are protected from incompatible urban development, if the major regional park and recreation areas are acquired for public use. if future residential development within the Region approximates the density and spatial distribution patterns recommended by the regional plan, and if the major commercial and industrial centers approximate the general scale and spatial location recommended by the plan.

Fourth, implementation of the recommended land use plan is dependent not only on the proper guidance of new urban growth and development but also on the maintenance of healthy and attractive living environments in fully developed areas. The ability to achieve the centralized settlement pattern recommended under the regional land use plan is closely tied to the quality of life in older urban areas. Urban conservation and renewal efforts thus represent a key component of the plan implementation process.

Fifth, the importance to plan implementation of close coordination and cooperation between the local units of government and between these units of government and the various state and federal agencies cannot be overemphasized. Responsibilities for achieving such coordination and cooperation on a voluntary basis within the traditional framework of government in Wisconsin have been assigned to the Commission by the Wisconsin Legislature, and the Commission is utilized by both local municipalities and by certain state and federal agencies for the attainment of the necessary coordination and cooperation. Even more intensive utilization of the Commission as a center for the attainment of close coordination of the many planning and plan implementation activities which are carried on within the seven-county Region must be made in the future if the regional plans are to be implemented and a more efficient, economical, attractive, and healthful environment is to be achieved within the Region. Advisory review of the location and size of major public works facilities by the Commission is essential for the effective development of transportation, utility, and community facilities within the Region, which not only comprise efficient systems as such, but which properly serve and promote the desired regional land use pattern; for abatement of costly duplication of effort and unnecessary expenditure of public funds; and for the preservation and protection of the underlying and sustaining natural resource base. Such review by the Commission may be obtained by contract or by request, or may be required by state and federal legislation.

Sixth, implementation of the recommended regional land use plan will not be brought about by massive action of any one unit or agency of government. Rather, implementation of the plan will be brought about through literally thousands of development decisions made on a dayto-day basis over a period of many years by many private investors and by many public administrators operating at the local, areawide, state, and federal levels of government. It is extremely important that the individuals, corporations, or agencies making these decisions be aware of and understand the development proposals set forth in the recommended regional land use plan so that the plan will receive proper consideration in development decisions. Educational and informational efforts directed at public officials and private investors to increase the overall awareness and understanding of the recommended plan are thus extremely important to successful plan implementation.

Finally, regional plan implementation can be achieved only within the context of a continuing, comprehensive, areawide planning effort, through which the planning inventories and forecasts that underlie the regional land use plan and other functional plan elements are updated, monitored, and revised; the plans themselves are reappraised and, if necessary, revised to accommodate changing conditions; and through which the plans are interpreted on a day-to-day basis to local, state, and federal units and agencies of government and to private investors and developers as the need to make development decisions arises. In this respect, it should be stressed that planning does not and cannot concern itself with future decisions; that is, with "things that should be done in the future." Rather, it must be recognized that decisions exist only in the present and that planning is necessary just because decisions can only be made in the present, yet cannot be made for the present alone. The question therefore, that faces public officials, private investors, and interested citizen groups within the Region concerning implementation of the recommended regional land use plan is not what should be done tomorrow to bring about the plans but, rather, what must be done today in light of the plans to get ready for an uncertain tomorrow. In a highly complex and dynamic urbanizing region such as southeastern Wisconsin, one key decision or the lack of such a decision may commit the Region as a whole and its many constituent units and agencies of government to a given course of action, sometimes irrevocably. This is particularly true in the field of public works development, where a decision to build one important link in a system may commit the entire system for a generation or more to come.

CONCLUSION

This report has described the recommended land use plan for southeastern Wisconsin for the year 2010. The new plan is conceptually identical to the second-generation, year 2000, regional land use plan adopted in 1977, and, indeed, the firstgeneration plan adopted in 1966. Thus, the new year 2010 regional land use plan, like the year 2000 plan, promotes a compact, centralized regional settlement pattern; promotes the location of new urban development in areas covered by soils suitable for such use, in areas which may be readily served by basic urban service and facilities including mass transit, and in areas free of special hazards such as erosion and flooding; and seeks to the preserve the remaining primary environmental corridor lands and most of the remaining prime agricultural lands in the Region.

The year 2000 plan and the year 2010 land use plan differ significantly, however, in the terms of the scale of population and employment growth to be accommodated. Any such comparisons must recognize that the year 2000 plan had a 30-year design period while the year 2010 plan has a 25-year design period. The year 2000 plan anticipated an increase in the resident population of about 463,000 persons, substantially greater than the increase of 168,000 persons anticipated under the year 2010 land use plan. The year 2000 plan anticipated an increase of 203,000 in the number of households, compared to the increase of 130,000 under the year 2010 plan. Under the year 2000 plan, total employment within the Region was projected to increase by 267,000, compared to the increase of 223,000 envisioned under the year 2010 plan. The year 2000 plan called for the conversion of about 72,500 acres, or about 113 square miles, of land from rural to urban use to accommodate the growth and redistribution of population and economic activity within the Region, compared to 54,800 acres, or about 86 square miles, under the year 2010 plan. Both plans seek to moderate the historic decline in urban population density in the Region. Under the year 2000 plan, the population density of the developed urban area of the Region would have decreased from about 5,100 persons per square mile in 1970 to about 3,800 persons per square mile in 2000. Under the year 2010 plan, the urban density would decrease from about 3,600 persons per square mile in 1985 to about 2,800 persons per square mile in the year 2010.

The year 2010 plan, like the year 2000 plan, recommends that all new urban development be provided with public sanitary sewer and water supply service and envisions the provision of such service to certain existing urban areas developed without such service. Under the year 2010 plan, about 85 percent of the developed urban area of the Region and about 91 percent of the resident population of the Region would be provided with public sanitary sewer and water supply service by the plan design year. Under the year 2000 plan, 92 percent of the developed urban area and 93 percent of the resident population would have been provided with these services by the plan design year.

The year 2010 land use plans envisions a total of 25 major industrial centers, three more than the year 2000 plan, and a total of 19 major commercial centers, also three more than the year 2000 plan. Despite lower forecast employment growth, the additional commercial and industrial centers are required under the year 2010 plan to accommodate the continuing redistribution of economic activity within the Region. The year 2010 land use plan also envisions a total of 31 major parks to serve the needs of the Region through the year 2010, including all 29 major park sites previously recommended under the year 2000 land use plan and two additional sites.

The year 2010 land use plan, like the year 2000 plan, calls for the preservation in essentially natural, open uses of all 468 square miles of primary environmental corridor lands. The year 2010 land use plan envisions the loss of about 10,300 acres, or about 16 square miles, of prime agricultural lands, just slightly more that the loss of about 8,400 acres, or about 13 square miles, envisioned under the year 2000 plan.

As indicated above, the Southeastern Wisconsin Region may be expected to undergo continued urban growth and development, although at a lesser scale than envisioned under the secondgeneration, year 2000, land use plan. Many of the challenges existing when the secondgeneration land use plan was adopted in 1977 remain. One such challenge is how best to shape constructively the substantial additional new urban development which may still be expected to occur within the Region through the year 2010. Public officials and local units of government within the Region will be faced with the awesome task of deciding what form this new urban development should take and how it might best be served by the necessary transportation, utility, and public facility services. Failure to resolve these questions properly will result in irreparable damage to the land and water resources of the Region and in mounting problems of traffic congestion, water supply and pollution, inadequate drainage, widespread and costly flooding, and lack of adequate schools. parks, and other public facilities.

Another challenge facing public officials and local units of government is how best to preserve the quality of life in older, fully developed areas of the Region and to enhance the quality of life in declining urban areas. The attainment of a centralized land use development pattern in southeastern Wisconsin depends upon the maintenance of healthy and attractive living environments in fully developed urban areas. Public officials and local units of government must decide how best to continue to provide essential urban services to areas which have experienced population decline and how best to utilize limited resources available for urban conservation and renewal. Failure to properly resolve these questions will result in increasing underutilization and abandonment of once viable urban neighborhoods.

The challenges inherent in planning for the physical development of the Southeastern Wisconsin Region are compounded by the increased uncertainty surrounding many of the factors affecting the future scale and distribution of population and economic activity and attendant urban development within the Region. In view of this increased uncertainty, it is important that major public works projects and major private sector development proposals are evaluated in terms of their performance under a broad range of possible future conditions. To this end, the current regional land use planning effort included the preparation of alternative futures land use plans for the year 2010 differing from the recommended plan in terms of the scale and distribution of future development. The alternative futures land use plans are intended to supplement the recommended plan, providing a broader basis for planning and decision-making regarding development and redevelopment within the Region.

While presenting many challenges, future growth and change also provide a great opportunity in that a better overall regional settlement pattern can be achieved and past mistakes avoided; new growth and development can be adjusted to the underlying and sustaining resource base; preservation, rehabilitation, and redevelopment can be properly pursued to result in a better living environment in nongrowth areas; safer, more efficient, and more convenient transportation, utility, and public facility systems can be provided; and a better environment for life within the Region can be created.

Implementation of the recommended regional land use plan will provide the future Region with a balanced allocation of space to the various urban and rural land uses. an allocation which would properly meet the social, physical, and economic needs of the growing regional population. It will provide a spatial distribution of the various land uses which would result in more compatible arrangement of land use and which would be properly related to the supporting transportation and utility systems in order to assure the economical provision of transportation and utility services. Most importantly, implementation of the land use plan will do much to assure the protection and wise use of the natural resources of the Region.

Implementation of, or failure to implement, the recommended regional land use plan will affect not only the efficiency of supporting transportation, utility, and facility systems, and thereby directly affect the cost of living and doing business within the Region, but will also affect the overall quality of the environment within the Region for many generations to come. It is, therefore, hoped that government, business and industry, and interested citizen groups and individuals within the Region will take an active interest in the plan recommendations, which are completely advisory to all concerned, carefully reviewing their soundness and practicality, and, if in agreement with the plans, support them and act toward their implementation.

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APPENDICES

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Appendix A

RESIDENTIAL PLANNING UNIT DEVELOPMENT STANDARDS FOR THE URBAN LOW-, URBAN MEDIUM-, AND URBAN HIGH-DENSITY RESIDENTIAL CLASSES UTILIZED IN REGIONAL LAND USE PLAN PREPARATION

Residential Density Class	Number	Acres	Percent	Acres	Percent
Urban Low-Deosity					
Gross Residential Area				2,560.0	100.0
Public Elementary School (K-6) Area		12.8	0.5		
Public Park and Parkway Area		38.4	1.5		
Neighborhood Commercial Area		12.8	0.5		
Street Area		512.0	20.0	'	 ·
Other Public and Quasi-Public Area		25.6	1.0		
Net Residential Area		• •		1,958.4	76.5
Single-Family Area		1,958.4	76.5		
Number of Dwelling Units	2,350.0				
Net Residential Acre	1.2				
Multi-Family Area		None	• -		
Urban Medium-Density					
Gross Residential Area				640.0	100.0
Public Elementary School (K-6) Area		9.6	1.5		
Public Park and Parkway Area		16.0	2.5		
Neighborhood Commercial Area		6.4	1.0		
Street Area		147.2	23.0		
Other Public and Quasi-Public Area		6.4	1.0		
Net Residential Area		· 		454.4	71.0
Single-Family Area		416.0	65.0		
Number of Dwelling Units	1,615.0				
Dwelling Units per					
	3. 9				
Multi-Family Area		38.4	6.0		
Number of Dwelling Units	355.0				
Net Residential Acre	9.2				
Urban High-Density					
Gross Residential Area				160.0	100.0
Public Elementary School (K-6) Area	. .	4.0	2.5	¹	·
Public Park and Parkway Area		5.6	3.5		
Neighborhood Commercial Area		2.4	1.5	(
Street Area		40.0	25.0		
Other Public and Quasi-Public Area		2.4	1.5		
Net Residential Area				105.6	66.0
Single-Family Area		94.4	59.0		
Number of Dwelling Units	566.0			,	
Net Residential Acre	5.9				
Multi-Family Area		11.2	7.0		- - , ,
Number of Dwelling Units	698.0				
Net Residential Acre	62.3				

Source: SEWRPC.

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Appendix B

LAND USE IN THE REGION BY COUNTY: 1963, 1970, 1975, 1980, AND 1985

Table B-1

				Ac	tual Land Us	e				
Γ	19	63	19	70	19	075	19	980	19	985
i F	-	Percent		Percent		Percent		Percent		Percent
Land Use Category	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total
Urban										
Residential	10,712	6.0	12,266	6.9	13,936	7.8	15,128	8.5	15,320	8.6
Commercial	450	0.3	504	0.3	525	0.3	593	0.3	615	0.3
Industrial	711	0.4	769	0.4	836	0.5	888	0.5	917	0.5
Transportation, Communication,										
and Utilities /a	8,142	4.6	8,674	4.9	9,046	5.1	9,639	5.4	9,912	5.6
Governmental and Institutional	835	0.5	1,067	0.6	1,265	0.7	1,295	0.7	1,314	0.7
Recreational	1,827	1.0	2,036	1.1	2,376	1.3	2,456	1.4	2,749	1.5
Unused Urban	1,242	0.7	1,220	0.7	1,200	0.7	1,105	0.6	1,144	0.6
Subtotal	23,919	13.5	26,536	14.9	29,184	16.4	31,104	17.4	31,971	17.8
Bural			-							
Anicultural	114 042	63.9	111 188	62.4	108 793	61.1	107.298	60.2	106.165	59.8
Water	4.351	2.4	4,683	2.6	4,777	2.7	4.826	2.7	4,829	2.7
Wetlands	16.518	9.3	16.066	9.0	15.823	8.9	15,612	8.8	15,233	8.5
Woodlands	9,907	5.6	9,735	5.5	9,705	5.4	9,572	5.4	9,655	5.4
Unused Rural and	-,		-, -						·	
Other Open Land	9,492	5.3	9,963	5.6	9,862	5.5	9,762	5.5	10,321	5.8
Subtotal	154,310	86.5	151,635	85.1	148,960	83.6	147,070	82.6	146,203	82.2
Total	178 229	100.0	179 171	100.0	179 144	100.0	178 174	100.0	178 174	100.0

LAND USE IN KENOSHA COUNTY: 1963, 1970, 1975, 1980, and 1985

NOTE: The change in the total area of the County is the net effect of Lake Michigan shoreline erosion and accretion and of landfill activities.

/a Includes off-street parking areas of more than 10 spaces.

Source: SEWRPC.

Table B-2

LAND USE IN MILWAUKEE COUNTY: 1963, 1970, 1975, 1980, and 1985

				Ac	tual Land Us	e				
The second se	19	63	19	70	19	75	19	80	11	985
		Percent		Percent		Percent		Percent		Percent
Land Use Category	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total
Urban										
Residential	41,566	26.7	43,964	28.4	45,927	29.5	47,196	30.3	47,995	30.9
Commercial	2,564	1.7	2,869	1.8	3,118	2.0	3,237	2.1	3,454	2.2
Industrial	4,257	2.7	4,580	3.0	4,849	3.1	5,046	3.3	5,375	3.5
Transportation, Communication,										
and Utilities /a	28,714	18.5	33,118	21.3	34,539	22.3	35,681	23.0	36,337	23.4
Governmental and Institutional	6,286	4.1	6,921	4.5	7,030	4.5	7,097	4.6	7,154	4.6
Recreational	6,078	3.9	6,706	4.3	6,937	4.5	6,968	4.5	7,206	4.6
Unused Urban	15,292	9.9	12,307	7.9	10,662	6.9	10,003	6.4	9,274	6.0
Subtotal	104,757	67.5	110,465	71.2	113,062	72.8	115,228	74.2	116,795	75.2
Pure l										
							00.050			
Agricurural	34,044	22.0	27,803	17.9	25,694	16.5	23,050	14.8	21,128	13.6
Water	1,193	0.8	1,261	0.8	1,323	0.9	1,327	0.9	1,345	0.9
Wetlands	4,176	2.7	4,139	2.7	4,143	2.7	4,129	2.7	4,140	2.7
Woodlands	5,467	3.5	5,087	3.3	4,951	3.2	4,856	3.1	4,770	3.1
Unused Rural and										
Other Open Land	5,440	3.5	6,381	4.1	6,020	3.9	6,603	4.3	7,012	4.5
Subtotal	50,320	32.5	44,671	28.8	42,131	27.2	39,965	25.8	38,395	24.8
Total	155,077	100.0	155,136	100.0	155,193	100.0	155,193	100.0	155,190	100.0

NOTE: The change in the total area of the County is the net effect of Lake Michigan shoreline erosion and accretion and of landfill activities.

/a includes off-street parking areas of more than 10 spaces.

Table B-3

				Ac	tual Land Us	e				
		63	19	70	19	975	19	80 08	19	185
		Percent		Percent		Percent		Percent		Percent
Land Use Category	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total
Urban										
Residential	7,564	5.0	9,983	6.6	12,090	8.0	13,209	8.8	13,694	9.1
Commercial	264	0.2	327	0.2	382	0.3	428	0.3	470	0.3
Industrial	273	0.2	389	0.3	485	0.3	534	0.4 [577	0.4
Transportation, Communication,	ļ					ĺ				
and Utilities /a	5,971	4.0	6,956	4.6	8,192	5.4	8,548	5.7	8,637	5.7
Governmental and Institutional	690	0.5	866	0.6	929	0.6	1,003	0.7	1,024	0.7
Recreational	905	0.6	1,439	1.0	1,666	1.1	1,746	1.2	1,809	1.2
Unused Urban	912	0.6	1,027	0.7	1,055	0.7	1,073	0.7	1,081	0.7
Subtotal	16,579	11.1	20,987	14.0	24,799	16.4	26,541	17.8	27,292	18.1
Rura)	{	{						. 1		
Agricultural	104,154	69.1	99,161	65.9	95,848	63.7	93.832	62.3	92.650	61.6
Water	1,723	1.1	1,823	1.2	1,953	1.3	1,986	1.3	1,992	1.3
Wetlands	16,357	10.9	16,274	10.8	16,197	10.8	15,988	10.6	15,898	10.6
Woodlands	6,805	4.5	6,664	4.4	6,700	4.5	6,620	4.4	6,600	4.4
Unused Rural and				}				1		
Other Open Land	4,924	3.3	5,546	3.7	4,959	3.3	5,489	3.6	6,024	4.0
Subtotal	133,963	88.9	129,468	86.0	125,657	83.6	123,915	82.2	123,164	81.9
Total	150 542	100.0	164 466	100.0	TEA AEC	100.0	-	100.0	150 455	100.0

LAND USE IN OZAUKEE COUNTY: 1963, 1970, 1975, 1980, and 1985

NOTE: The change in the total area of the County is the net effect of Lake Michigan shoreline erosion and accretion and of landfill activities.

/a Includes off-street parking areas of more than 10 spaces.

Source: SEWRPC.

Table B-4

LAND USE IN RACINE COUNTY: 1963, 1970, 1975, 1980, and 1985

				Ac	tual Land Us	e				
	19	63	19	70	19	75		980	19	985
1		Percent		Percent		Percent		Percent		Percent
Land Use Category	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total
Urban										
Residential	13,144	6.0	15,925	7.3	17,627	8.1	19,082	8.8	19,441	8.9
Commercial	527	0.2	656	0.3	721	0.3	811	0.4	906	0.4
Industrial	664	0.3	1,079	0.5	1,224	0.6	1,319	0.6	1,416	0.6
Transportation, Communication,									,	
and Utilities /a	10,768	4.9	11,795	5.4	12,253	5.6	12,753	5.9	12,973	6.0
Governmental and Institutional	1,271	0.6	1,731	0.8	1,802	0.8	1,814	0.8	1.813	0.8
Recreational	1,628	0.7	2.041	0.9	2,159	1.0	2,354	1.1	2,391	1.1
Unused Urban	1,576	0.7	1,718	0.8	1,593	0.7	1,432	0.7	1,400	0.6
Subtotal	29,578	13.4	34,945	16.0	37,379	17.1	39,565	18.3	40,340	18.4
Rural							}			
Agricultural	148,717	68.4	142,185	65.2	140,464	64.6	138.260	63.3	137,196	63.1
Water	4,772	2.2	5,002	2.3	5,304	2.4	5,173	2.4	5,177	2.4
Wetlands	15,443	7.1	15,398	7.1	15,020	6.9	15.083	6.9	15.056	6.9
Woodlands	13,699	6.3	13,234	6.1	13,165	6.0	12,953	5.9	12.873	5.9
Unused Rural and		1	· · ·				,		,	
Other Open Land	5,745	2.6	7,145	3.3	6,578	3.0	6.879	3.2	7.271	3.3
Subtotal	188,376	86.6	182,964	84.0	180,531	82.9	178,348	81.7	177,573	81.6
Total	217,954	100.0	217,909	100.0	217,910	100.0	217,913	100.0	217,913	100.0

NOTE: The change in the total area of the County is the net effect of Lake Michigan shoreline erosion and accretion and of landfill activities.

/a includes off-street parking areas of more than 10 spaces.

Table B-5

LAND USE IN WALWORTH COUNTY: 1963, 1970, 1975, 1980, and 1985

						_				
				AC	tual Land Us	e				
	19	63	19	70	19	75	19	80	19	985
		Percent		Percent		Percent		Percent		Percent
Land Use Category	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total
Urban										
Residential	11,790	3.2	12,989	3.5	14,773	4.0	16,171	4.4	16,480	4.5
Commercial	581	0.2	659	0.2	704	0.2	753	0.2	776	0.2
Industrial	343	0.1	458	0.1	531	0.1	604	0.2	678	0.2
Transportation, Communication,										
and Utilities /a	10,959	3.0	12,161	3.3	13,916	3.8	14,474	3.9	14,603	4.0
Governmental and Institutional	1,005	0.3	1,189	0.3	1,238	0.3	1,252	0.3	1,259	0.3
Recreational	1,996	0.5	2,941	0.8	3,445	0.9	3,435	0.9	3,541	1.0
Unused Urban	913	0.2	870	0.2	752	0.2	763	0.2	745	0.2
Subtotal	27,587	7.5	31,267	8.4	35,359	9.5	37,452	10.1	38,082	10.4
Rural										
Agricultural	260.647	70.7	257.701	70.0	252.721	68.5	250.659	68.0	249.705	67.6
Water	13,769	3.7	14.025	3.8	14,583	4.0	14.394	3.9	14,381	3.9
Wetlands	28,688	7.8	27,679	7.5	27,512	7.5	26,669	7.2	26,552	7.2
Woodlands	31,516	8.5	31,535	8.5	31,810	8.6	31,382	8.5	31,409	8.5
Unused Rural and		-	ŗ		-		,			
Other Open Land	6,749	1.8	6,749	1.8	6,971	1.9	8,400	2.3	8,827	2.4
Subtotal	341,369	92.5	337,689	91.6	333,597	90.5	331,504	89.9	330,874	89.6
Total	368,956	100.0	368,956	100.0	368,956	100.0	368,956	100.0	368,956	100.0

/a Includes off-street parking areas of more than 10 spaces.

Source: SEWRPC.

Table B-6

LAND USE IN WASHINGTON COUNTY: 1963, 1970, 1975, 1980, and 1985

				Ac	tual Land Us	e				
	19	63	19	970	19	975	19	980	19	985
		Percent		Percent		Percent		Percent		Percent
Land Use Category	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total
Urban										
Residential	7,342	2.6	9,959	3.6	12,701	4.6	15,508	5.6	16,076	5.8
Commercial	279	0.1	377	0.1	451	0.2	508	0.2	547	0.2
Industrial	289	0.1	449	0.2	534	0.2	641	0.2	690	0.2
Transportation, Communication,										
and Utilities /a	10,238	3.7	10,997	3.9	11,693	4.2	12,273	4.4	12,828	4.6
Governmental and Institutional	669	0.2	909	0.3	978	0.4	1,074	0.4	1,087	0.4
Recreational	939	0.3	1,279	0.5	1,684	0.6	1,767	0.6	1,874	0.7
Unused Urban	631	0.2	641	0.2	543	0.2	562	0.2	568	0.2
Subtotal	20,387	7.2	24,611	8.8	28,584	10.4	32,333	11.6	33,670	12.1
Rural							l			
Agricultural	185.894	66.8	178.971	64.2	174.561	62.5	169.575	60.9	168,134	60.3
Water	3,910	1.4	4,085	1.5	4,286	1.5	4,311	1.5	4,345	1.6
Wetlands	41,794	15.0	41,779	15.0	42,062	15.1	41,910	15.0	41,313	14.8
Woodlands	21,008	7.5	20,905	7.5	21,806	7.8	21,540	7.7	21,755	7.8
Unused Rural and			-						-	
Other Open Land	5,840	2.1	8,482	3.0	7,534	2.7	9,164	3.3	9,616	3.4
Subtotal	258,446	92.8	254,222	91.2	250,249	89.6	246,500	88.4	245,163	87.9
Total	278,833	100.0	278,833	100.0	278,833	100.0	278,833	100.0	278,833	100.0

/a Includes off-street parking areas of more than 10 spaces.

Table B-7

LAND USE IN WAUKESHA COUNTY: 1963, 1970, 1975, 1980, and 1985

				Ac	tual Land Us	e				
Γ	19	63	19	970	19	75	19	980	19	985
l · · · · · · · · · · · · · · · · · · ·		Percent		Percent		Percent		Percent		Percent
Land Use Category	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total	Acres	of Total
Urban			_				_			
Residential	30,421	8.2	37,605	10.1	46,678	12.6	53,537	14.4	55,597	15.0
Commercial	945	0.3	1,342	0.4	1,669	0.4	1,832	0.5	1,946	0.5
Industrial	782	0.2	1,437	0.4	1,815	0.5	2,139	0.6	2,427	0.7
Transportation, Communication,										
and Utilities /a	16,836	4.5	19,993	5.4	22,407	6.0	24,338	6.5	24,989	6.7
Governmental and Institutional	2,326	0.6	3,194	0.9	3,422	0.9	3,498	0.9	3,589	1.0
Recreational	3,423	0.9	4,828	1.3	5,369	1.4	5,583	1.5	5,994	1.6
Unused Urban	6,144	1.7	6,244	1.7	4,810	1.3	4,997	1.3	5,003	1.3
Subtotal	60,877	16.4	74,643	20.2	86,170	23.1	95,924	25.7	99,545	26.8
Rural										
Agricultural	200,242	53.8	184,389	49.5	172,558	46.5	161,558	43.6	156,978	42.3
Water	16,076	4.3	16,461	4.4	16,749	4.5	16,753	4.5	16,753	4.5
Wetlands	52,588	14.2	51,660	13.9	51,466	13.9	51,233	13.8	50,790	13.7
Woodlands	31,181	8.4	30,818	8.3	30,455	8.2	29,472	7.9	29,166	7.8
Unused Rural and										
Other Open Land	10,627	2.9	13,620	3.7	14,193	3.8	16,651	4.5	18,359	4.9
Subtotal	310,714	83.6	296,948	79.8	285,421	76.9	275,667	74.3	272,046	73.2
Total	371,591	100.0	371,591	100.0	371,591	100.0	371,591	100.0	371,591	100.0

/a Includes off-street parking areas of more than 10 spaces.

APPENDIX C

EXISTING AND PROPOSED LAND USE IN THE REGION BY COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

Table C-1

EXISTING AND PROPOSED LAND USE IN KENOSHA COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

		2010 Low-Growth							tomadiate	Growth	201	A Llinh Gro			A Lliph Gro	
		2010 8	acommande	d Plan		entralized B	Man	201011	nermetizad E			ortigii>off		201	v High-Gru	
,	Evicting	Planned la	ecommende		Disposed in	ernanzed r		Discussion	Sernianzeu P	HELTI	Olever and he	ernranzeo r			TRIBUZEU FIE	
	LAIStrig	Fairfied in	Data		Flammed in	Cremen	. .	Fianned in	ncrement		Planned in	crement		Planned In	crement	
	1382	1985-	2010	(Ota)	1985-	-2010	Total	1985-	-2010	Total	1985-	2010	Total	1985-	2010	Total
Land Use Category	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Urban					1											
Residential	15,320	4,621	30.2	19,941	1,033	6.7	16,353	1,634	10.7	16,954	5,288	34.5	20,608	4,978	32.5	20.298
Commercial	615	227	36.9	842	135	22.0	750	234	38.0	849	347	56.4	962	331	53.8	946
Industrial	917	567	61.8	1,484	513	55.9	1,430	819	89.3	1,736	1,126	122.8	2,043	1,193	130.1	2,110
Transportation, Communication,													,		1	ł
and Utilities	9,912	2,200	22.2	12,112	870	8.8	10,782	1,280	12.9	11,192	2,772	28.0	12,684	2,648	26.7	12,560
Governmental and Institutional	1,314	155	11.8	1,469	34	2.6	1,348	48	3.7	1,362	178	13.5	1,492	167	12.7	1,481
Recreational	2,749	415	15.1	3,164	272	9.9	3,021	286	10.4	3,035	471	17.1	3,220	438	15.9	3,187
Unused Urban	1,144	(652)	(57.0)	492	(118)	(10.3)	1,026	(304)	(26.6)	840	(752)	(65.7)	392	(742)	(64.9)	402
Subtotal	31,971	7,533	23.6	39,504	2,739	8.6	34,710	3,997	12.5	35,968	9,430	29.5	41,401	9,013	28.2	40,984
Rural																
Residential		84		84	0		0	168		168	168		168	84		84
Agricultural	106,165	(6,057)	(5.7)	100,108	(2,047)	(1.9)	104,118	(3,058)	(2.9)	103,107	(7,740)	(7.3)	98,425	(7,339)	(6.9)	98,826
Other Open Land	40,038	(1,560)	(3.9)	38,478	(692)	(1.7)	39,346	(1,107)	(2.8)	38,931	(1,858)	(4.6)	38,180	(1,758)	(4.4)	38,280
Subtotal	146,203	(7,533)	(5.2)	138,670	(2,739)	(1.9)	143,464	(3,997)	(2.7)	142,206	(9,430)	(6.4)	136,773	(9,013)	(6.2)	137,190
															,	
Total	178,174	0	0.0	178,174	0	0.0	178,174	0	0.0	178,174	0	0.0	178,174	0	0.0	178,174

NOTES: Offstreet parking areas are included in the transportation, communication, and utilities category.

Existing 1985 recreational land use includes the net site area of public and nonpublic recreation sites--that is, the portion of those sites which have been developed for intensive recreational use.

Incremental recreational land use includes only that net site area recommended for public recreational use.

The existing 1985 rural residential area is included as part of the urban residential land use category.

The other open lands category includes woodlands, water, wetlands, unused rural land, and guarries.

() indicates negative number.

Source: SEWRPC.

EXISTING AND PROPOSED LAND USE IN MILWAUKEE COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

					20	10 Long Grou		2010.0		Canuah	201	A Linh Con			A Lifeb. Gra	
		2010 8	acommanda	d Plan	Der	ontrolized R		2010 1	kermediale-	Growin	201	V High-Gro		201	v mgn-Gru	
	Evision	Plagad	accommende		Dismodul	ETAT BALLED	HEF1	Uet	ernranzeo P		Dec	entralized P	ian		autenzed - w	
	1000	1000	2010	T 1	rianneo in	Crement		Planned I	ncrement		Planned In	crement		Planned Ir	crement	
Land Use Courses	1303	1905-	2010	rotar	1985-	2010	lotal	1985-	-2010	Total	1985-	2010	Total	1985-	2010	Total
Land Use Category	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
orban							1									
Residential	47,995	4,387	9.1	52,382	2,360	4.9	50,355	3,497	7.3	51,492	3,551	7.4	51,546	9,518	19.8	57,513
Commerciai	3,454	261	7.6	3,715	110	3.2	3,564	250	7.2	3,704	373	10.8	3,827	304	8.8	3,758
Industrial	5,375	1,211	22.5	6,586	549	10.2	5,924	1,120	20.8	6,495	1.631	30.3	7.006	1.890	35.2	7,265
Transportation, Communication,																
and Utilities	36,337	2,288	6.3	38,625	1,135	3.1	37,472	1,959	5.4	38,296	2,330	6.4	38.667	4,146	11.4	40,483
Governmental and Institutional	7,154	172	2.4	7,326	87	1.2	7,241	134	1.9	7.288	136	1.9	7,290	341	4.8	7,495
Recreational	7,206	932	12.9	8,138	857	11.9	8,063	901	12.5	8,107	878	12.2	8.084	1.091	15.1	8,297
Unused Urban	9,274	(3,172)	(34.2)	6,102	(1,331)	(14.4)	7,943	(2,208)	(23.8)	7.066	(2,520)	(27.2)	6.754	(4.640)	(50.0)	4,634
Subtotal	116,795	6,079	5.2	122,874	3,767	3.2	120,562	5,653	4.8	122,448	6,379	5.5	123,174	12,650	10.8	129,445
												4				
Hesidential		74]	74	74		74	74		74	74		74	74		74
Agricultural	21,128	(4,072)	(19.3)	17,056	(2,380)	(11.3)	18,748	(3,660)	(17.3)	17,468	(4,105)	(19.4)	17.023	(9.383)	(44.4)	11,745
Other Open Land	17,267	(2,081)	(12.1)	15,186	(1,461)	(8.5)	15,806	(2,067)	(12.0)	15,200	(2.348)	(13.6)	14,919	(3.341)	(19.3)	13,926
Subtotal	38,395	(6,079)	(15.8)	32,316	(3,767)	(9.8)	34,628	(5,653)	(14.7)	32,742	(6,379)	(16.6)	32,016	(12,650)	(32.9)	25,745
															<u>·</u> _·/	
Total	155,190	0	0.0	155,190	0	0.0	155,190	0	0.0	155,190	0	0.0	155,190	0	0.0	155,190

NOTES: Offstreet parking areas are included in the transportation, communication, and utilities category.

Existing 1985 recreational land use includes the net site area of public and nonpublic recreation sites--that is, the portion of those sites which have been developed for intensive recreational use.

Incremental recreational land use includes only that net site area recommended for public recreational use.

The existing 1985 rural residential area is included as part of the urban residential land use category.

The other open lands category includes woodlands, water, wetlands, unused rural land, and quarries.

() indicates negative number.

EXISTING AND PROPOSED LAND USE IN OZAUKEE COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

		,	_	-							·					
					201	10 Low-Gro	wih	2010 In	itermediate-	Growth	201	0 High-Gro	wth	201	0 High-Grou	wth
		2010 FI	ecommende	ed Plan	Dec	centralized F	lan	Dec	entralized F	lan	Dec	centralized P	lan	Ce	ntralized Pla	in
	Existing	Planned Ir	ncrement		Planned Ir	norement		Planned Ir	ncrement		Planned in	ocrement		Planned In	crement	
	1985	1985-	-2010	Total	1985-	-2010	Total	1985-	2010	Total	1985-	-2010	Total	1985-	2010	Total
Land Use Category	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Urban																
Residential	13,694	3,703	27.0	17,397	2,869	21.0	16,563	4,677	34.2	18,371	9,605	70.1	23,299	5,097	37.2	18,791
Commercial	470	77	16.4	547	44	9.4	514	106	22.6	576	173	36.8	643	115	24.5	585
Industrial	577	388	67.2	965	375	65.0	952	615	106.6	1,192	891	154.4	1,468	720	124.8	1,297
Transportation, Communication,		1														
and Utilities	8,637	1,205	14.0	9,842	972	11.3	9,609	1,562	18.1	10,199	3,249	37.6	11,886	1,725	20.0	10,362
Governmental and Institutional	1,024	88	8.6	1,112	71	6.9	1,095	110	10.7	1,134	252	24.6	1,276	121	11.8	1,145
Recreational	1,809	272	15.0	2,081	255	14.1	2,064	294	16.3	2,103	485	26.8	2,294	305	16.9	2,114
Unused Urban	1,081	(568)	(52.5)	513	(460)	(42.6)	621	(591)	(54.7)	490	(729)	(67.4)	352	(617)	(57.1)	464
Subtotal	27,292	5,165	18.9	32,457	4,126	15.1	31,418	6,773	24.8	34,065	13,926	51.0	41,218	7,466	27.4	34,758
D																
Rural																
Hesidential		55		55	55		55	110		110	110		110	55		55
Agricultural	92,650	(4,016)	(4.3)	88,634	(3,385)	(3.7)	89,265	(5,474)	(5.9)	87,176	(11,860)	(12.8)	80,790	(6,043)	(6.5)	86,607
Other Open Land	30,514	(1,204)	(3.9)	29,310	(796)	(2.6)	29,718	(1,409)	(4.6)	29,105	(2,176)	(7.1)	28,338	(1,478)	(4.8)	29,036
Subtotai	123,164	(5,165)	(4.2)	117,999	(4,126)	(3.4)	119,038	(6,773)	(5.5)	116,391	(13,926)	(11.3)	109,238	(7,466)	(6.1)	115,698
Total	150,456	0	0.0	150,456	0	0.0	150,456	0	0.0	150,456	0	0.0	150,456	0	0.0	150,456

NOTES: Offstreet parking areas are included in the transportation, communication, and utilities category.

Existing 1985 recreational land use includes the net site area of public and nonpublic recreation sites--that is, the portion of those sites which have been developed for intensive recreational use.

Incremental recreational land use includes only that net site area recommended for public recreational use.

The existing 1985 rural residential area is included as part of the urban residential land use category.

The other open lands category includes woodlands, water, wetlands, unused rural land, and quarries.

() indicates negative number.

Source: SEWRPC.

EXISTING AND PROPOSED LAND USE IN RACINE COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

<u>г</u> т																
					201	0 Low~Gro	wth	2010 In	termediate-	Growth	201	0 High-Gro	wth	201	0 High-Grov	wth j
		2010 R	ecommende	d Plan	Dec	entralized F	lan	Dec	entralized F	'lan	Dec	entralized P	lan	Ce	ntralized Pla	in
	Existing	Planned In	crement		Planned Ir	crement		Planned Ir	crement		Planned Ir	crement		Planned in	crement	
	1985	1985-	2010	Total	1985-	2010	Total	1985-	2010	Total	1985-	-2010	Total	1985-	2010	Total
Land Use Category	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Urban							<u> </u>									
Residential	19,441	4,233	21.8	23,674	594	3.1	20,035	2,778	14.3	22,219	6,589	33.9	26,030	6,180	31.8	25,621
Commercial	906	123	13.6	1,029	70	7.7	976	150	16.6	1,056	249	27.5	1,155	222	24.5	1,128
Industrial	1,416	564	39.8	1,980	508	35.9	1,924	841	59.4	2,257	1.271	89.8	2,687	1.217	85.9	2.633
Transportation, Communication,					i l					,	- ,		-,	.,		.,.
and Utilities	12,973	1,523	11.7	14,496	574	4.4	13,547	1,198	9.2	14,171	2,593	20.0	15,566	2,431	18.7	15,404
Governmental and Institutional	1,813	96	5.3	1,909	10	0.6	1,823	49	2.7	1,862	169	9.3	1,982	158	8.7	1,971
Recreational	2,391	390	16.3	2,781	295	12.3	2,686	335	14.0	2,726	516	21.6	2.907	497	20.8	2,888
Unused Urban	1,400	(748)	(53.4)	652	(289)	(20.6)	1,111	(605)	(43.2)	795	(957)	(68.4)	443	(958)	(68.4)	442
Subtotal	40,340	6,181	15.3	46,521	1,762	4.4	42,102	4,746	11.8	45,086	10,430	25.9	50,770	9,747	24.2	50,087
Bural																
Recidential												1				
		99		99	0		0	198		198	198		198	99		99
Agricultural	137,196	(4,575)	(3.3)	132,620	(1,134)	(0.8)	136,062	(3,324)	(2.4)	133,872	(8,465)	(6.2)	128,731	(7.775)	(5.7)	129,421
Other Open Lano	40,377	(1,704)	(4.2)	38,673	(628)	(1.6)	39,749	(1,620)	(4.0)	36,7 57	(2,163)	(5.4)	38,214	(2,071)	(5.1)	38,306
Suototal	177,573	(6,181)	(3.5)	171,392	(1,762)	(1.0)	175,811	(4,746)	(2.7)	172,827	(10,430)	(5.9)	167,143	(9,747)	(5.5)	167,826
Total	217,913	0	0.0	217,913	0	0.0	217.913	0	0.0	217.913	0	0.0	217.913	0	0.0	217.913

NOTES: Offstreet parking areas are included in the transportation, communication, and utilities category.

Existing 1985 recreational land use includes the net site area of public and nonpublic recreation sites--that is, the portion of those sites which have been developed for intensive recreational use.

Incremental recreational land use includes only that net site area recommended for public recreational use.

The existing 1985 rural residential area is included as part of the urban residential land use category.

The other open lands category includes woodlands, water, wetlands, unused rural land, and guarries.

() indicates negative number.

Source: SEWRPC.

EXISTING AND PROPOSED LAND USE IN WALWORTH COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

					201	10 Low-Grou	wth	2010 In	termediate-	Growth	201	0 High-Gro	win	201	0 High-Gro	wth
		2010 8	ecommende	d Plan	Dec	entralized P	lan	Dec	entralized F	lan	Dec	centralized P	<u>lan</u>	Ce	ntralized Pla	an
	Existing	Planned In	anned Increment		Planned Ir	ncrement		Planned Ir	ncrement		Planned Ir	ncrement		Planned In	crement	
	1985	1985-	1985-2010		1985-	2010	10 Total		2010	Total	1985-	-2010	Total	1985-	2010	Total
Land Use Category	(acres)	Acres Percent		(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Urban								1								
Residential	16,480	3,052	18.5	19,532	1,527	9.3	18,007	4,500	27.3	20,980	8,107	49.2	24,587	4,662	28.3	21,142
Commercial	776	47	6.1	823	22	2.8	798	68	8.8	844	141	18.2	917	77	9.9	853
Industrial	678	494	72.9	1,172	396	58.4	1,074	634	93.5	1,312	1,022	150.7	1,700	760	112.1	1,438
Transportation, Communication,						-						!				
and Utilities	14,603	1,085	7.4	15,688	761	5.2	15,364	1,397	9.6	16,000	2,758	18.9	17,361	1,580	10.8	16,183
Governmental and Institutional	1,259	75	6.0	1,334	48	3.8	1,307	98	7.8	1,357	206	16.4	1,465	111	8.8	1,370
Recreational	3,541	258	7.3	3,799	231	6.5	3,772	281	7.9	3,822	433	12.2	3,974	316	8.9	3,857
Unused Urban	745	(337)	(45.2)	408	(241)	(32.3)	504	(466)	(62.6)	279	(533)	(71.5)	212	(445)	(59.7)	300
Subtotal	38,082	4,674	12.3	42,756	2,744	7.2	40,826	6,512	17.1	44,594	12,134	31.9	50,216	7,061	18.5	45,143
																:
Rural																
Hesidemial		221		221	59		59	442		442	442		442	232		232
Agricultural	249,705	(3,510)	(1.4)	246,195	(2,148)	(0.9)	247,557	(5,150)	(2.1)	244,555	(10,275)	(4.1)	239,430	(5,542)	(2.2)	244,163
Other Open Land	81,169	(1,385)	(1.7)	79,784	(655)	(0.8)	80,514	(1,804)	(2.2)	79,365	(2,301)	(2.8)	78,868	(1,751)	(2.2)	79,418
Subtotal	330,874	0,874 (4,674) (1.4) 320		326,200	(2,744)	(0.8)	328,130	(6,512)	(2.0)	324,362	(12,134)	(3.7)	318,740	(7,061)	(2.1)	323,813
Total	368,956	0	0.0	368,956	0	0.0	368,956	0	0.0	368,956	0	0.0	368,956	0	0.0	368,956

NOTES: Offstreet parking areas are included in the transportation, communication, and utilities category.

Existing 1985 recreational land use includes the net site area of public and nonpublic recreation sites--that is, the portion of those sites which have been developed for intensive recreational use.

Incremental recreational land use includes only that net site area recommended for public recreational use.

The existing 1985 rural residential area is included as part of the urban residential land use category.

The other open lands category includes woodlands, water, wetlands, unused rural land, and quarries.

() indicates negative number.

Source: SEWRPC.

EXISTING AND PROPOSED LAND USE IN WASHINGTON COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

		2010 Recommended P			201	0 Low-Gro	wth	2010 In	termediate-	Growth	201	0 High-Gro	wth	2010 High-Growth			
		2010 R	2010 Recommended Pla Planned Increment		Dec	entralized P	lan	Dec	centralized F	lan	Dec	centralized P	lan	Ce	Intralized Pla	n	
	Existing	Planned Ir	lanned Increment		Planned Ir	crement		Planned Ir	ncrement		Planned Ir	ncrement		Planned Ir	crement		
	1985	1985-	1985-2010		1985-	2010	Total	1985-	-2010	Total	1985-	-2010	Total	1985-	2010	Total	
Land Use Category	(acres)	Acres	Acres Percent		Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	
Urban																	
Residential	16,076	3,869	24.1	19,945	2,285	14.2	18,361	7,304	45.4	23,380	11,817	73.5	27,893	7,142	44.4	23,218	
Commercial	547	66	12.1	613	26	4.8	573	100	18.3	647	153	28.0	700	102	18.6	649	
Industrial	690	777	112.6	1,467	592	85.8	1,282	947	137.2	1,637	1,359	197.0	2,049	1,148	166.4	1,838	
Transportation, Communication,													-				
and Utilities	12,828	1,539	12.0	14,367	1,160	9.0	13,988	2,638	20.6	15,466	4,346	33.9	17,174	2,730	21.3	15,558	
Governmental and Institutional	1,087	102	9.4	1,189	75	6.9	1,162	202	19.6	1,289	346	31.8	1,433	208	19.1	1,295	
Recreational	1,874	605	32.3	2,479	622	33.2	2,496	749	40.0	2,623	995	53.1	2,869	755	40.3	2,629	
Unused Urban	568	(299)	(52.6)	269	(178)	(31.3)	390	(330)	(58.1)	238	(379)	(66.7)	189	(344)	(60.6)	224	
Subtotal	33,670	6,659	19.8	40,329	4,582	13.6	38,252	11,610	34.5	45,280	18,637	55.4	52,307	11,741	34.9	45,411	
Rurat																	
Residential		68		68	22		22	136		136	136		136	68		68	
Agricultural	168.134	(4,900)	(2.9)	163.234	(3.559)	(2.1)	164.575	(9.284)	(5.5)	158.850	(15.611)	(9.3)	152.523	(9.431)	(5.6)	158.703	
Other Open Land	77,029	(1,827)	(2.4)	75,202	(1,045)	(1.4)	75,984	(2,462)	(3.2)	74,567	(3,162)	(4.1)	73.867	(2.378)	(3.1)	74,651	
Subtotal	245,163	(6,659)	(2.7)	238,504	(4,582)	(1.9)	240,581	(11,610)	(4.7)	233,553	(18,637)	(7.6)	226,526	(11,741)	(4.8)	233,422	
									, ,		·	<u> </u>		. , ,			
Total	278,833	0	0.0	278,833	0	0.0	278,833	0	0.0	278,833	0	0.0	278,833	0	0.0	278,833	

NOTES: Offstreet parking areas are included in the transportation, communication, and utilities category.

Existing 1985 recreational land use includes the net site area of public and nonpublic recreation sites--that is, the portion of those sites which have been developed for intensive recreational use.

Incremental recreational land use includes only that net site area recommended for public recreational use.

The existing 1985 rural residential area is included as part of the urban residential land use category.

The other open lands category includes woodlands, water, wetlands, unused rural land, and quarries.

() indicates negative number.

Source: SEWRPC.

EXISTING AND PROPOSED LAND USE IN WAUKESHA COUNTY: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

						2010 Low-Growth										
					201	10 Low-Gro	wth	2010 in	termediate-	Growth	201	0 High-Gro	wth	201	0 High-Gro	wth
		2010 R	2010 Recommended Pla		Dec	entralized F	Man	Dec	entralized F	lan	Dec	entralized P	lan	Ce	ntralized Pla	un
	Existing	Planned Ir	anned Increment		Planned Ir	orement		Planned in	ocrement		Planned Ir	orement		Planned Ir	crement	
	1985	1985-	1985-2010		1985-2010 1		Total	1985-	2010	Total	1985-	-2010	Total	1985-2010		Total
Land Use Category	(acres)	Acres	Acres Percent (i		Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)	Acres	Percent	(acres)
Urban													· · · ·			
Residential	55,597	13,111	23.6	68,708	8,502	15.3	64,099	19,537	35.1	75,134	27,312	49.1	B2,909	19,383	34.9	74,980
Commercial	1,946	519	26.7	2,465	332	17.1	2,278	673	34.6	2,619	881	45.3	2,827	701	36.0	2,647
Industrial	2,427	1,185	48.8	3,612	1,072	44.2	3,499	1,674	69.0	4,101	2,286	94.2	4,713	2,113	87.1	4,540
Transportation, Communication,																
and Utilities	24,989	4,720	18.9	29,709	3,522	14.1	28,511	6,913	27.7	31,902	9,688	38.8	34,677	7,117	28.5	32,106
Governmental and Institutional	3,589	354	9.9	3,943	266	7.4	3,855	527	14.7	4,116	732	20.4	4,321	533	14.9	4,122
Recreational	5,994	1,217	20.3	7,211	1,251	20.9	7,245	1,513	25.2	7,507	1,773	29.6	7,767	1,541	25.7	7,535
Unused Urban	5,003	(2,624)	(52.4)	2 <u>,3</u> 79	(1,879)	(37.6)	3,124	(2,859)	(57.1)	2,144	(3,369)	(67.3)	1,634	(3,089)	(61.7)	1,914
Subtotal	<u>99,5</u> 45	18,482	18.6	118,027	13,066	13.1	112,611	27,978	28.1	127,523	39,303	39.5	138,848	28,299	28.4	127,844
riesidentiai		120		120	36		36	240		240	240		240	126		126
Agricultural	156,978	(13,356)	(8.5)	143,622	(10,110)	(6.4)	146,868	(22,173)	(14.1)	134,805	(32,186)	(20.5)	124,792	(22,350)	(14.2)	134,628
Other Open Land	115,068	(5,246)	(4.6)	109,822	(2, 992)	(2.6)	112,076	(6,045)	(5.3)	109,023	(7,357)	(6.4)	107,711	(6,075)	(5.3)	108,993
Subtotal	272,046	(18,482)	(6.8)	253,564	(13,066)	(4.8)	258,980	(27,978)	(10.3)	244,068	(39,303)	(14.4)	232,743	(28,299)	(10.4)	243,747
Total	371,591	0	0.0	371,591	0	0.0	371,591	0	0.0	371,591	0	0.0	371,591	0	0.0	371,591

NOTES: Offstreet parking areas are included in the transportation, communication, and utilities category.

Existing 1985 recreational land use includes the net site area of public and nonpublic recreation sites--that is, the pontion of those sites which have been developed for intensive recreational use.

Incremental recreational land use includes only that net site area recommended for public recreational use.

The existing 1985 rural residential area is included as part of the urban residential land use category.

The other open lands category includes woodlands, water, wetlands, unused rural land, and quarries.

() indicates negative number.

Source: SEWRPC.

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APPENDIX D

EXISTING AND PROPOSED POPULATION, HOUSEHOLDS, EMPLOYMENT, AND URBAN LAND USE IN THE REGION BY PLANNING ANALYSIS AREA: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

Table D-1

EXISTING AND PROPOSED POPULATION IN THE REGION BY PLANNING ANALYSIS AREA: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

					Pop 2010 Low-Growth 2											
Planning					2010 Low-Growth 2 n Decentralized Plan			2010 Int	ermediate	-Growth	2010) High-Gr	owth	2010) High-Gr	owth
Analysis		2010 Re	commen	ded Plan	Dece	entralized	Plan	Dece	entralized	Plan	Dece	entralized	Plan	Cei	ntralized F	Plan
Area		Planned I	ncrement		Planned In	orement		Planned I	ncrement		Planned I	orement	1	Planned In	crement	
(See	Existing	1985	-2010	Total	1985	-2010	Total	1985	-2010	Totai	1985	-2010	Total	1985-	2010	Total
Map D-1)	1985	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010
Ozaukee																
1	5,800	200	3.4	6,000	(400)	(6.9)	5,400	1,700	29.3	7,500	7,100	122.4	12,900	2,600	44.8	8,400
2	15,700	900	5.7	16,600	(2,000)	(12.7)	13,700	3,100	19.7	18,800	13,100	83.4	28,800	5,900	37.6	21,600
3	26,300	4,000	15.2	30,300	(1,400)	(5.3)	24,900	8,000	30.4	34,300	30,500	116.0	56,800	12,700	48.3	39,000
4	19,700	7,200	36.5	26,900	3,900	19.8	23,600	12,700	64.5	32,400	33,100	168.0	52,800	17,700	89.8	37,400
Subtotal	67,500	12,300	18.2	79,800	100	0.1	67,600	25,500	37.8	93,000	83,800	124.1	151,300	38,900	57.6	106,400
Washington																
5	5,900	300	5.1	6,200	(600)	(10.2)	5,300	1,400	23.7	7,300	4,800	81.4	10,700	2,200	37.3	8,100
6	33,000	8,600	26.1	41,600	(100)	(0.3)	32,900	14,100	42.7	47,100	31,200	94.5	64,200	20,800	63.0	53,800
7	4,400	300	6.8	4,700	(400)	(9.1)	4,000	1,300	29.5	5,700	2,100	47.7	6,500	1,500	34.1	5,900
8	5,000	1,400	28.0	6,400	600	12.0	5,600	3,000	60.0	B,000	5,900	118.0	10,900	3,700	74.0	8,700
9	15,900	3,700	23.3	19,600	(300)	(1.9)	15,600	7,600	47.8	23,500	18,100	113.8	34,000	9,900	62.3	25,800
10	12,000	10,200	85.0	22,200	6,600	55.0	18,600	15,500	129.2	27,500	25,400	211.7	37,400	19,500	162.5	31,500
11	11,000	0	0.0	11,000	(1,900)	(17.3)	9,100	4,500	40.9	15,500	10,300	93.6	21,300	4,200	38.2	15,200
		00700	-	444 744	0.000		04 4 6 6	47 404	644	104 500	07 000	110.0	105 444	£4 004	70.0	140 444
Subtotal	87,200	24,500	28.1	111,700	3,900	4.5	91,100	47,400	54.9	134,600	97,800	112.2	185,000	61,800	70.9	149,000
Milwaukee	60 000	(0.404)		65 000	110 700	(1E T)	67.600	/E 100	(7 5)	63 200	500		60.000	5 200	7.0	70 600
12	68,300	(2,400)	(3.5)	65,900	(10,700)	(15.7)	463 700	(112 000)	(1.8)	499 000	/EA 400)	(0.9	557 500	5,300	1.0	13,600
13	170 100	(26,100)	(4.3)	173 200	(139,200)	(20.0)	145 300	(12,000)	(10.3)	160 300	2 900	(0.3)	175 900	30,300	11 6	192,000
14	173,100	100	0.1	173,200	(27,000)	(10.1)	145,300	(12,000)	(105)	4 500	2,000	(1.0)	49 100	£ 100	10.2	53,200
16	17 500	15 100	(3.4)	32 600	8 700	49.7	26 200	15 900	90.9	33,400	19 200	109.7	36 700	33 100	199.1	54,000
17	19 100	9 400	49.3	29 500	4 900	25.7	24 000	10,700	56.0	29 800	13,700	71 7	32,800	44 700	234 0	63,800
	13,100	3,400	43.4	10,000	4,500		21,000	,					,		104.0	03,000
Subtotal	939 600	(5.600)	(0.5)	934,000	(193,500)	(20.6)	746.100	(108.500)	(11.5)	831,100	(18,700)	(2.0)	920,900	159,200	16.9	1 098 800
Waukesha	333,000	(3,000)	(0.0)		(130,000)	(/		(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<u>,</u>		((=)			10.5	1,050,000
18	30.000	9.000	30.0	39.000	1,300	4.3	31,300	13,900	46.3	43,900	27,100	90.3	57,100	19,700	65.7	49,700
19	44,300	5 200	11.7	49,500	(5,600)	(12.6)	38,700	7,100	16.0	51,400	13,600	30.7	57,900	13,600	30.7	57,900
20	30,700	12,300	40.1	43,000	3,900	12.7	34,600	17,800	58.0	48,500	32,700	106.5	63,400	24,100	78.5	54,800
21	15,800	4,200	26.6	20,000	200	1.3	16,000	6,700	42.4	22,500	13,700	86.7	29,500	9,700	61.4	25,500
22	12,900	4,100	31.8	17,000	2,400	18.6	15,300	8,500	65.9	21,400	15,900	123.3	28,800	9,900	76.7	22,800
23	46,100	11,400	24.7	57,500	3,400	7.4	49,500	23,200	50.3	69,300	44,000	95.4	90,100	27,400	59.4	73,500
24	72,400	26,600	36.7	99,000	5,200	7.2	77,600	39,100	54.0	111,500	65,700	90.7	138,100	51,100	70.6	123,500
25	26,700	4,100	15.4	30,800	3,100	11.6	29,800	15,000	56.2	41,700	24,900	93.3	51,600	15,700	58.8	42,400
26	7,000	1,500	21.4	8,500	1,000	14.3	8,000	4,200	60.0	11,200	6,300	90.0	13,300	4,500	64.3	11,500
Subtotal	285,900	78,400	27.4	364,300	14,900	5.2	300,800	135,500	47.4	421,400	243,900	85.3	529,800	175,700	61.5	461,600
Racine				ł							- A	4				
27	128,600	9,200	7.2	137,800	(25,600)	(19.9)	103,000	(1,800)	(1.4)	126,800	37,200	28.9	165,800	40,800	31.7	169,400
28	26,700	5,000	18.7	31,700	(2,700)	(10.1)	24,000	2,800	10.5	29,500	11,900	44.6	38,600	9,700	36.3	36,400
29	13,900	2,600	18.7	16,500	(1,300)	(9.4)	12,600	1,600	11.5	15,500	6,400	46.0	20,300	5,000	36.0	18,900
Subtotal	169,200	16,800	9.9	186,000	(29,600)	(17.5)	139,600	2,600	1.5	171,800	55,500	32.8	224,700	55,500	32.8	224,700
Kenosha																
30	95,800	16,200	16.9	112,000	(18,200)	(19.0)	77,600	(1,800)	(1.9)	94,000	31,400	32.8	127,200	34,700	36.2	130,500
31	25,300	10,600	41.9	35,900	. (1,100)	(4.3)	24,200	4,000	15.8	29,300	14,300	56.5	39,600	11,000	43.5	36,300
						14.5.5	444.005	0.047		400.045	40.000		100.00-			
Subtotal	121,100	26,900	22.1	147,900	(19, 300)	(15.9)	101,800	2,200	1.8	123,300	45,700	37.7	166,800	45,700	37.7	166,800
Walworth							10.000				E 044		17 100			
32	10,200	1,500	14.7	11,700	(1 200	0.0	10,200	3,400	33.3	13,600	5,900	57.8	16,100	4,700	46.1	14,900
33	13,600	1,500	11.0	15,100	(1,300)	(7.6)	12,300	3,400	25.0	66 400	40 000	101.0	24,200	5,400	39.7	19,000
ېږ	48,400	12,100	25.0	50,500	(800)	0.0	77,500	18,000	31.2	66,400	70,900	101.0	57,300	26,500	54.8	74,900
Subtotal	72 200	15 100	20.9	87 300	(2 100)	(29)	70 100	24 800	34.3	97.000	65 400	90.6	137 600	36 600	50.7	109.900
JUDIDIAI	, 2,200	13,100	20.3	07,000	(=, , , , , , , , , , , , , , , , , , ,	(a. a)	,	,			55,400	20.0				100,000
Total	1 742 700	168 300	97	1.911.000	(225 600)	(12.9)	1.517 100	129 500	74	1.872 200	573 400	32.9	2,316 100	573 400	320	2 316 100
	.,,		a. 1	.,	(,v•)	· · - · · ·			• • •	.,=.=,=	5.5,.50		,	0.0,.00		

NOTE: () indicates negative number.

Table D-2

EXISTING AND PROPOSED HOUSEHOLDS IN THE REGION BY PLANNING ANALYSIS AREA: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

-	i —				Househ 2010 Law-Grawth 2010											
Planning	<u> </u>				201	0 Low-Gr	owth	2010 In	ermediale	e-Growth	2010) High-Gr	owth	201	0 High-G	owth
Analysis	ĺ	2010 R	commen	ided Plan	Dec	entralized	Plan	Dec	entralized	Plan	Dec	entralized	Plan	Ce	ntralized f	lan
Area		Planned I	ncrement		Planned I	ncrement		Planned I	ncrement		Planned I	ncrement		Planned in	crement	-
(See	Existing	1985	-2010	Total	1985	-2010	Totai	1985	-2010	Total	1985	-2010	Totai	1985-	2010	Total
Map D-1)	1985	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010
Ozaukee																
1	1,800	300	16.7	2,100	300	16.7	2,100	900	50.0	2,700	2,400	133.3	4,200	900	50.0	2,700
2	5,200	2 600	20.2	6,200	400	1.1	5,600	1,800	34.6	7,000	4,600	88.5	9,800	2,200	42.3	7,400
4	7 000	3 700	52.9	10,500	3 400	49.6	10,400	5 900	46.1	13,000	10,700	120.2	19,600	4,500	50.6	13,400
1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3,700	52.5	10,700	3,400	70.0	10,400	3,500	64.3	12,900	12,100	172.9	19,100	6,500	92.9	13,500
Subtotal	22,900	7.600	33.2	30,500	5.600	24.5	28 500	12 700	55.5	35 600	29 800	130.1	52 700	14 100	61 6	27 000
Washington				+	-,			,	40.0			100.1	92,700	14,100	01.0	37,000
5	2,000	300	15.0	2,300	200	10.0	2,200	800	40.0	2,800	1,700	85.0	3,700	800	40.0	2.800
6	10,900	4,600	42.2	15,500	2,600	23.9	13,500	6,700	61.5	17,600	10,900	100.0	21,800	7,300	67.0	18,200
7	1,200	300	25.0	1,500	200	16.7	1,400	600	50.0	1,800	700	58.3	1,900	500	41.7	1,700
8	1,600	800	50.0	2,400	800	50.0	2,400	1,500	93.8	3,100	2,400	150.0	4,000	1,500	93.8	3,100
9	5,500	2,300	41.8	7,800	1,200	21.8	6,700	3,800	69.1	9,300	6,600	120.0	12,100	3,700	67.3	9,200
10	4,000	4,400	110.0	8,400	3,800	95.0	7,800	6,300	157.5	10,300	8,600	215.0	12,600	6,700	167.5	10,700
14	3,300	400	12.1	3,700	100	3.0	3,400	1,900	57.6	5,200	3,100	93.9	6,400	1,300	39.4	4,600
Subtoral	28 500	12 100	AC 0	A1 500	0.000	21.2	27 444	01 (00	75.0	FA 144	74 000	110.0	<u></u>			
Milwaukee	20,300	13,100	40.0	41,600	8,900	31.2	37,400	21,600	/5.8	50,100	34,000	119.3	62,500	21,800	76.5	50,300
12	26.800	1.300	4.9	28 100	100	04	26 900	100	04	26 900	100	04	26 900	1 000	67	20 600
13	243,000	12,800	5.3	255.800	(31,200)	(12.8)	211.800	(26.200)	(10.8)	216,800	(21,600)	(8.9)	221 400	25 400	10.5	26,600
14	67,700	6,800	10.0	74,500	1,300	1.9	69,000	1,300	1.9	69,000	1,300	1.9	69.000	7 300	10.5	75 000
15	18,500	1,500	8.1	20,000	0	0.0	18,500	0	0.0	18,500	0	0.0	18,500	2,100	11.4	20,600
16	5,700	6,100	107.0	11,800	4,700	82.5	10,400	6,400	112.3	12,100	6,400	112.3	12,100	10,900	191.2	16,600
17	6,500	4,300	66.2	10,800	3,500	53.8	10,000	4,800	73.8	11,300	4,800	73.8	11,300	14,900	229.2	21,400
		· · · ·														
Subtotal	368,200	32,800	8.9	401,000	(21,600)	(5.9)	346,600	(13,600)	(3.7)	354,600	(9,000)	(2.4)	359,200	62,400	16.9	430,600
Waukesha	44 944													1		
10	10,200	4,500	44,1	14,700	2,900	28.4	13,100	6,400	62.7	16,600	9,400	92.2	19,600	6,900	67.6	17,100
20	9 800	5,300	23.1	17,600	1,200	8.4	15,500	- 4,300	30.1	18,600	4,600	32.2	18,900	4,600	32.2	18,900
21	4,600	2 000	43 6	6 600	1 300	37.6	5 900	2 900	62.0	7 500	4 200	02 5	20,600	8,000	81.6	17,800
22	3,900	2,000	51.3	5 900	1 900	49.7	5,900	3 600	923	7,500	5 400	139 5	9,900	3,000	65.2	7,600
23	15,300	6,000	39.2	21,300	5,300	34.6	20,600	10,700	69.9	26.000	15.500	101.3	30 800	3,400	64.1	7,300
24	25,300	13,400	53.0	38,700	8,400	33.2	33,700	18,200	71.9	43,500	24,400	96.4	49,700	19 100	75.5	44 400
25	7,700	2,200	28.6	9,900	3,000	39.0	10,700	5,800	75.3	13,500	7,700	100.0	15,400	5.000	64.9	12 700
26	2,100	600	28.6	2,700	800	38.1	2,900	1,600	76.2	3,700	1,900	90.5	4,000	1,300	61.9	3,400
													,	,		-,
Subtotal	93,200	39,400	42.3	132,600	28,700	30.8	121,900	61,000	65.5	154,200	84,000	90.1	177,200	61,100	65.6	154,300
Hacine	47.000															
27	47,800	8,300	17.4	56,100	100	0.2	47,900	4,300	9.0	52,100	13,900	29.1	61,700	15,700	32.8	63,500
28	4 900	2,800	32.9	11,300	1,000	11.8	9,500	2,100	24.7	10,600	4,100	48.2	12,600	3,300	38.8	11,800
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1,800	JZ. /	6,500	800	12.2	5,500	1,300	20.5	6,200	2,500	51.0	7,400	1,900	38.8	6,800
Subtotal	61,200	12,700	20.8	73 900	1 700	28	62 900	7 700	12.6	68 900	20 500	77.5	R1 700	20.000	24.2	02 400
Kenosha	,			. 2, 200		2.0		.,				33.5	01,700	20,900	34.2	82,100
30	35,600	9,900	27.8	45.500	1,600	4.5	37.200	3,100	8.7	38,700	11,900	.33.4	47.500	13 500	37.9	49 100
31	8,600	5.000	58.1	13,600	1,700	19.8	10,300	2,600	30.2	11,200	5,200	60.5	13,800	4,000	46.5	12,600
Subtotal	44,200	14,900	33.7	59,100	3,300	7.5	47,500	5,700	12.9	49,900	17,100	38.7	61,300	17,500	39.6	61,700
Walworth																
32	3,200	1,000	31.3	4,200	900	28.1	4,100	1,700	53.1	4,900	2,100	65.6	5,300	1,700	53.1	4,900
33	4,400	1,300	29.5	5,700	800	18.2	5,200	2,200	50.0	6,600	4,400	100.0	8,800	2,300	52.3	6,700
34	18,000	7,700	92.8	25,700	4,000	22.2	22,000	10,000	55.6	28,000	19,700	109.4	37,700	10,700	59.4	28,700
Subtotal	25 600	10.000	20.1	25 600	E 700	22.2	21 200	12 000	64.3	20 5 44	26 344	100.0	F4 044	40.000		
_00.0101		10,000	35.1	33,600	3,700	££.3	31,300	13,500		39,500	20,200	102.3	57,800	14,700	57.4	40,300
Total	643,800	130,500	20.3	774,300	32,300	5.0	676,100	109,000	16.9	752,800	202,600	31.5	846 400	212 500	33.0	955 300

NOTE: () indicates negative number.

Table D-3

EXISTING AND PROPOSED EMPLOYMENT IN THE REGION BY PLANNING ANALYSIS AREA: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

		2010 Low- Growth						Employme	nt							
Planning		2010 Recommended Plan		201	0 Low-Gr	owth	2010 Int	ermediate	-Growth	2010	High-Gr	owth	2010) High-Gr	owth	
Analysis		2010 Re	commen	ded Plan	Dec	entralized	Plan	Dece	entralized	Plan	Dece	entralized	Plan	Cer	ntralized F	lan
Area		Planned Ir	crement	- 1	Planned I	ncrement		Planned l	ncrement		Planned in	ncrement		Planned ind	crement	
(See	Existing	1985-	2010	Total	1985	-2010	Total	1985	-2010	Total	1985-	2010	Total	1985-3	2010	Total
Map D-1)	1985	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010
Ozaukee																
1	1,300	600	46.2	1,900	400	30.8	1,700	1,100	84.6	2,400	2,000	153.8	3,300	1,300	100.0	2,600
2	6,800	2,500	36.8	9,300	1,400	20.6	8,200	3,300	48.5	10,100	4,800	70.6	11,600	3,900	57.4	10,700
3	10,100	2,500	24.8	12,600	2,100	20.8	12,200	9,600	45.5	14,700	12 400	164.0	22 100	9,600	110.9	19,700
- 4	8,700	6,200	11.3	14,900	5,000	51.5	13,700	8,400	70.0	17,100	13,400	134.0	22,100	3,800	110.3	10,300
Subtratal	26 900	11 900	42.9	39 700	8 900	33.1	35.800	17 400	64.7	44,300	29,900	111.2	56.800	20,400	75.8	47.300
Washington	20,300	11,000	45.5	30,700	0,500	55.1	30,000			,			,			
5	2,000	400	20.0	2,400	200	10.0	2,200	600	30.0	2,600	1,200	60.0	3,200	800	40.0	2,800
6	14,800	6,900	46.6	21,700	3,900	26.4	18,700	8,600	58.1	23,400	11,800	79.7	26,600	9,800	66.2	24,600
7	1,000	200	20.0	1,200	100	10.0	1,100	300	30.0	1,300	500	50.0	1,500	400	40.0	1,400
9	1,300	500	38.5	1,800	300	23.1	1,600	600	46.2	1,900	1,100	84.6	2,400	1,200	92.3	2,500
9	7,100	5,500	77.5	12,600	4,000	56.3	11,100	. 7,600	107.0	14,700	12,700	178.9	19,800	8,400	118.3	15,500
10	3,600	3,000	83.3	6,600	1,100	30.6	4,700	3,200	88.9	6,800	5,600	155.6	9,200	4,600	127.8	B,200
11	1,500	100	6.7	1,600	100	6.7	1,600	500	33.3	2,000	1,900	126.7	3,400	400	26.7	1,900
0	01 040	46.585	F0.6	47.000	0 745		81 000	21 400	(0.4	E-1 744	24 000	111.7	66 100	25 604	01.0	56 900
Subtotal	31,300	16,600	53.0	47,900	9,700	31.0	41,000	21,400	68.4	52,700	34,800	111.2	66,100	23,600	01.0	36,900
12	38 200	3 400		41 600	(3 400)	(8.9)	34 800	(300)	(0.8)	37 900	3 400	8.9	41.600	5.000	13.1	43,200
13	333 000	55 600	16.7	388 600	(69,100)	(20.8)	263,900	(11.800)	(3.5)	321,200	57,500	17.3	390,500	78,200	23.5	411,200
14	114,900	10,900	9.5	125,800	(4,900)	(4.3)	110.000	6,400	5.6	121,300	12,400	10.8	127,300	18,100	15.8	133,000
15	21,300	1,100	5.2	22,400	(4,200)	(19.7)	17,100	(1,500)	(7.0)	19,800	1,200	5.6	22,500	2,000	9.4	23,300
16	15,900	10,200	64.2	26,100	3,600	22.6	19,500	8,000	50.3	23,900	13,900	87.4	29,800	20,500	128.9	36,400
17	4,000	4,200	105.0	8,200	1,500	. 37.5	5,500	4,000	100.0	8,000	6,500	162.5	10,500	11,500	287.5	15,500
Subtotal	527,300	85,400	16.2	612,700	(76,500)	(14.5)	450,800	4,800	0.9	532,100	94,900	18.0	622,200	135,300	25.7	662,600
Waukesha	71 644	0.000	40.4	75 5 44	1 000		22.400	E 100	22.6	26 700	7 600	25.2	29 200	- E 600	30.6	29 200
18	21,600	3,900	18.1	25,500	16 200	0.3 AE A	23,400	24 960	23.0	60,900	29 300	91.6	65 200	26 800	74 7	62 700
20	16 600	3,800	22.9	20 400	2 700	16.3	19 300	6 200	37.3	22,800	11,400	68.7	28,000	7,300	44.0	23,900
21	3,000	1,900	63.3	4,900	1.000	33.3	4,000	2,200	73.3	5.200	4,100	136.7	7,100	2,800	93.3	5,800
22	3,700	1,400	37.8	5,100	800	21.6	4.500	2,200	59.5	5,900	3,400	91.9	7,100	2,500	67.6	6,200
23	13,500	4,900	36.3	18,400	5,300	39.3	18,900	10,800	80.0	24,300	19,100	141.5	32,600	12,500	92.6	26,000
24	42,100	19,800	47.0	61,900	12,300	29.2	54,400	24,100	57.2	66,200	35,000	- 83.1	77,100	27,800	66.0	69,900
25	4,100	1,400	34.1	5,500	700	17.1	4,800	2,600	63.4	6,700	5,100	124.4	9,200	3,000	73.2	7,100
26	800	500	62.5	1,300	200	25.0	1,000	800	100.0	1,600	1,300	162.5	2,100	900	112.5	1,700
Subtotal	141,300	58,800	41.6	200,100	41,100	29.1	182,400	78,900	55.8	220,200	116,300	82.3	257,600	90,200	63.8	231,500
rtacine 27	E4 444	10 000	170	73 304	(6 100)	100	E7 30A	0 200	15 4	70 600	22 200	36.2	83 500	30 200	49.2	91 600
27	6 200	4 100	66.1	10 300	3 900	62 0	10 100	5,200	109.7	13 000	11.500	185.5	17,700	9,500	153.2	15,700
29	6 900	2 600	37.7	9,500	1,400	20.3	8,300	3,100	44.9	10,000	4,400	63.8	11,300	3,800	55.1	10,700
	2,200	-,		2,222	.,			-,					•			,
Subtotal	74,500	17,600	23.6	92,100	1,200	1.6	75,700	19,100	25.6	93,600	38,100	51.1	112,600	43,500	58.4	118,000
Kenosha						1										
30	37,600	14,300	38.0	51,900	4,300	11.4	41,900	16,400	43.6	54,000	28,900	76.9	66,500	37,700	100.3	75,300
31	4,900	6,200	1 26 .5	11,100	3,600	73.5	8,500	6,800	138.8	11,700	9,400	191.8	14,300	8,700	177.6	13,600
					_											
Subtotal	42,500	20,500	48.2	63,000	7,900	18.6	50,400	23,200	54.6	65,700	38,300	90.1	80,800	46,400	109.2	88,900
Walworth										0.000			3 466	1 204	73.0	2 404
32	1,800	800	94.4	2,600	400	22.2	2,200 E 000	1,100	22.1	2,900	3 500	66.9 64 A	3,400 p.000	2 200	12.2 40.1	7 000
33 24	5,300	10.000	30.2 47 6	8,900 31.000	5 700	27 4	3,900	11 800	56.2	32 800	22 300	106.2	43,300	14.400	68.6	35,400
34	£1,000	10,000	-1.0	31,000	3,700	27.1	20,700	11,600	30.2	52,000		1.00.2			00.0	55,700
Subtotal	28,100	12,400	44.1	40,500	6,700	23.8	34,800	14,600	52.0	42,700	27,400	97,5	55,500	18,300	65.1	46,400
				,				.,								
Total	871,900	223,100	25.6	1,095,000	(1,000)	(0.1)	870,900	179,400	20.6	1,051,300	379,700	43.5	1,251,600	379,700	43.5	1,251,600

NOTE: () indicates negative number.

Table D-4

EXISTING AND PROPOSED URBAN LAND USE IN THE REGION BY PLANNING ANALYSIS AREA: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

							_	Urban Land Use (Aores) /a								
Planning					201	0 Low-Gr	owth	2010 Int	o Use (Ab	resj/a - Growth	201	High-Gr	owth	201	1 High_ G	owth
Analysis		2010 Re	commen	ded Plan	Dec	entralized	Plan	Dec	entralized	Plan	Dec	entralized	Plan	Ce	ntralized l	Plan
Area		Planned I	ncrement		Planned I	norement		Planned i	ncrement		Planned I	ncrement		Planned In	rement	
(See	Existing	1985	-2010	Total	1985	-2010	Total	1985	-2010	Total	1985	-2010	Total	1985-	2010	Total
Map D-1)	1985	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010
Ozaukee																
1	3,547	445	12.5	3,992	434	12.2	3,981	635	17.9	4,182	1,233	34.8	4,780	658	18.6	4,205
2	5,284	682	12.9	5,966	367	6.9	5,651	930	17.6	6,214	1,921	36.4	7,205	1,082	20.5	6,366
3	8,103	1,502	18.5	9,605	1,070	13.2	9,173	1,852	22.9	9,965	4,133	51.0	12,236	2,014	24.9	10,117
4	10,358	2,536	24.5	12,894	2,255	21.8	12,613	3,356	32.4	13,714	6,639	64.1	16,997	3,712	35.8	14,070
Cuberry 1	07 000		40.0													
Washington	21,272	5,165	18.9	32,467	4,126	15.1	31,418	6,773	24.8	34,065	13,926	51.0	41,218	7,466	27.4	34,758
5	3 049	196	64	2 245	105	24	0.154	400	10.4	0.450	050					0.455
6	9 016	2 147	23.8	11 163	1 227	14 7	10 242	2 1 94	13.4 26.4	12 210	5 200	20.2	3,909	900	13.3	3,455
7	2,731	123	45	2 854	58	21	2 789	3,134	33.4	2 004	3,200	51.1 0.6	2 004	3,497	30.0	12,513
8	2,099	317	15.1	2,416	239	11.4	2,705	648	30.9	2,304	1 048	49.9	2,357	673	22.1	2,343
9	6,384	1,583	24.8	7,967	1.098	17.2	7,482	2,506	39.3	8,890	4.323	67.7	10,707	2 5 27	39.6	8 911
10	4,556	1,951	42.8	6,507	1,609	35.3	6,165	3.071	67.4	7.627	4,505	98.9	9.061	3.385	74.3	7 941
11	5,835	342	5.9	6,177	146	2.5	5,981	1,529	26.2	7,364	2,438	41.8	6,273	1.035	17.7	6.870
							· ·							.,		-,
Subtotal	33,670	6,659	19.8	40,329	4,582	13.6	38,252	11,610	34.5	45,280	18,637	55.4	52,307	11,741	34.9	45,411
Milwaukee																
12	13,411	66	0.5	13,477	(9)	(0.1)	13,402	4	0.0	13,415	13	0.1	13,424	371	2.8	13,782
13	57,340	1,075	1.9	58,415	479	0.8	57,819	1,065	1.9	58,405	1,169	2.0	58,609	1,543	2.7	58,883
15	26,707	329	1.2	27,036	1	0.0	26,714	19	0.1	26,726	40	0.1	26,747	363	1.3	27,060
16	6,834	2 734	2.2	7,043	1 040	0.0	6,894	0	0.0	6,894	0	0.0	6,894	180	2.6	7,074
17	6 352	1 720	27.4	0,012	1,343	32.0	8,040	2,/19	99.6	8,605	3,076	50.5	9,167	4,704	11.2	10,795
	0,002	1,735	27.4	6,031	1,341	£1.1	7,093	1,001	23.1	6,203	2,001	32.8	8,433	5,437	86.6	11,851
Subtotal	116,795	6,079	5.2	122,874	3,767	3.2	120,562	5,653	4.8	122,448	6,379	5.5	123,174	12,650	10.8	129,445
Waukesha											· · ·					
18	9,562	1,754	19.3	11,316	1,208	12.6	10,770	2,467	25.8	12,029	3,774	39.5	13,336	2,636	27.6	12,198
19	16,150	1,559	9.7	17,709	745	4.6	16,895	1,799	11.1	17,949	2,042	12.6	18,192	1,923	11.9	18,073
20	10,259	1,738	16.9	11,997	1,218	11.9	11,477	2,546	24.8	12,805	4,075	39.7	14,334	2,818	27.5	13,077
21	5,074	923	18.2	5,997	595	11.7	5,669	1,402	27.6	6,476	2,190	43.2	7,264	1,668	32.9	6,742
22	4,482	741	16.5	5,223	707	15.8	5,189	1,363	30.4	5,845	2,051	45.8	6,533	1,304	29.1	5,786
23	18,859	3,413	19.1	22,272	2,719	14.4	21,578	5,876	31.2	24,735	8,656	45.9	27,515	5,493	29.1	24,352
24	17,843	5,836	32.7	23,679	3,721	20.9	21,564	7,931	44.4	25,774	10,831	60.7	28,674	8,368	46.9	26,211
25	12,968	1,947	15.0	14,905	1,760	13.6	14,718	3,611	27.9	16,569	4,511	34.8	17,469	3,183	24.6	16,141
26	4,358	571	13.1	4,929	393	9.0	4,751	983	22.6	5,341	1,173	26.9	5,531	906	20.8	5,264
Subtotal	99.545	18,482	18.6	118.027	13 066	131	112 611	27 978	28.1	127 523	39 303	39.5	138 949	28 299	29.4	127 044
Racine					,	70.1		27,310	20.1	121,020	03,000	33.5	100,040	20,233	20.4	127,044
27	23,856	3,471	14.5	27,327	546	2.3	24,402	2,357	9.9	26,213	6,273	26.3	30,129	6,372	26.7	30,228
28	12,283	1,923	15.7	14,206	898	7.3	13,181	1,652	13.4	13,935	2,927	23.8	15,210	2,388	19.4	14.671
29	4,201	797	18.7	4,988	318	7.6	4,519	737	17.5	4,938	1,230	29.3	5,431	987	23.5	5,188
Subtotal	40,340	6,181	15.3	46,521	1,762	4.4	42,102	4,746	11.8	45,086	10,430	25.9	50,770	9,747	24.2	50,087
Kenosha																
30	18,597	5,118	27.5	23,715	1,766	9.5	20,363	2,545	13.7	21,142	6,814	36.6	25,411	6,874	37.0	25,471
31	13,374	2,415	19.1	15,789	973	7.3	14,347	1,452	10.9	14,826	2,616	19.6	15,990	2,139	16.0	15,513
Subtotal	31 971	7 5 3 2	23.6	29 504	2 720	9.6	24 714	3 907	135	25.000	0 424	39.5	A1 AA4	0.010	20.5	40.004
Walworth	31,371	7,533	£3.8	53,804	2,139	đ.Đ	34,710	3,997	12.5	35,968	9,430	£7.8	41,401	9,013	28.2	40,984
32	5,835	784	13.4	6.619	506	8.7	6.341	1.021	17.5	6.856	1 201	20.6	7.036	1.018	174	6 852
33	5,345	540	10.1	5.885	265	5.0	5.610	885	16.6	6.230	1.795	33.6	7.140	941	17.6	6 286
34	26,902	3,350	12.5	30,252	1,973	7.3	29,875	4,606	17.1	31,508	9,138	34.0	36.040	5,102	19.0	32.004
							-	·					, -			-,
Subtotal	38,082	4,674	12.3	42,756	2,744	7.2	40,826	6,512	17.1	44,594	12,134	31.9	50,216	7,061	18.5	45,143
Tar																
10(4)	387,695	54,773	14.1	442,468	32,786	8.5	420,481	67,269	17.4	454,964	110,239	28.4	497,934	85,977	22.2	473,672

/a Urban land uses include residential; commercial; industrial; transportation, communication, and utility; governmental and institutional; and recreational land uses and unused urban lands.

NOTE: () indicates negative number.

Source: SEWRPC.



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Appendix E

QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS UTILIZED IN REGIONAL LAND USE PLAN PREPARATION

Maps E-1 through E-7 show the configuration of quarter sections utilized to approximate the major commercial and industrial centers in the Region under the year 2010 recommended land use plan and year 2010 alternative futures land use plans. Table 154 in Chapter XI identifies those sites which would have major commercial center status in the year 2010 under the recommended plan and alternative futures plans. Table 155 identifies those sites which would have major industrial center status in the year 2010 under the recommended plan and alternative futures plans. Table 155 identifies those sites which would have major industrial center status in the year 2010 under the respective plans.

QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS IN KENOSHA COUNTY





Map E-2 QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR

Source: SEWRPC.

QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS IN OZAUKEE COUNTY



Source: SEWRPC.

QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS IN RACINE COUNTY



QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS IN WALWORTH COUNTY



MAJOR INDUSTRIAL CENTER

AND OF THE OTHER

MAJOR COMMERCIAL CENTER

Source: SEWRPC.

 \times

QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS IN WASHINGTON COUNTY



QUARTER SECTION APPROXIMATIONS OF PLANNED MAJOR COMMERCIAL AND INDUSTRIAL CENTERS IN WAUKESHA COUNTY



APPENDIX F

EXISTING AND PROPOSED POPULATION IN THE REGION BY SEWER SERVICE AREA: 1985, 2010 RECOMMENDED LAND USE PLAN, AND 2010 ALTERNATIVE FUTURES LAND USE PLANS

	ļ	F			20	10 Low Gro	Population	2010 /	termediate	Growth	201	In High-Gro	wth	-		
		2010 R	ecommend	ed Plan	Dec	centralized F	lan	Dec	entralized F	Plan	Dee	centralized F	Plan	20 C	entralized Pl	an
	Existing	Planner 198	d Increment 5-2010	Total	Planner 198	1 Increment 5-2010	Total	Planned 198	l Increment 5-2010	Total	Planned 198	d Increment 5-2010	Total	Planne 198	1 Increment 5-2010	Total
Sewer Service Area Name	1985	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010	Number	Percent	2010
Bristol /a	1,190	1,320	110.9	2,510	390	32.8	1,580	690	58.0	1,880	1,550	130.3	2,740	1,550	130.3	2,740
Bristol/Pleasant Prairie Kenosha	1,570 85,770	3,940 15,160	251.0 17.7	5,510 100,930	750 (14,750)	47.8 (17.2)	2,320 71,020	1,190	/5.8 1.2	86,830	4,890	311.5	113,920	4,890 31,540	311.5 36.8	6,460 117,310
Paddock Lake Pleasant Prairie South	2,250	1,730	76.9	3,980	240	10.7 23.3	2,490 370	650 120	28.9 40.0	2,900	2,070 2,800	92.0 933.3	4,320 3,100	1,650	73.3 933 3	3,900 3 100
Powers Lake (part)											1,270		1,270			
Racine (part) Salem /b	610 4.730	340 4,560	55.7 96.4	950 9,290	(120) 610	(19.7) 12.9	490 5,340	0 1,500	0.0	610 6,230	540 5,420	88.5 114.6	1,150	540 3,820	88.5 80.8	1,150 8,550
Silver Lake	1,590	1,270	79.9	2,860	210	13.2	1,800	650	40.9	2,240	1,570	98.7	3,160	1,280	80.5	2,870
Twin Lakes Sewered Subtotal	3,760	3,280	87.2 32.9	135,260	(12,460)	(12.2)	89,310	6,970	29.5 6.8	108,740	51,870	51.0	153,640	50,830	49.9	152,600
Nonsewered	19,390	(6,750)	(34.8)	12,640	(6,900)	(35.6)	12,490	(4,830)	(24.9)	14,560	(6,230)	(32.1)	13,160 166,800	(5,190)	(26.8)	14,200
Milwaukee County	121,100	20,740			(12,000)	(
Milwaukee Metropolitan Sewerage District	912,580	90	0.0	912,670	(185,670)	(20.3)	726,910	(101,490)	(11.1)	811,090	(13,610)	(1.5)	898,970	162,720	17.8	1,075,300
South Milwaukee	20,480	(640)	(3.1)	19,840	(3,910)	(19.1)	16,570	(2,160)	(10.5)	18,320	(200)	(1.0)	20,280	1,740	8.5	22,220
Nonsewered	933,060	(5,020)	(0.1)	932,510	(3,890)	(59.8)	2,620	(4,820)	(74.0)	1,690	(4,860)	(74.7)	1,650	(5,230)	(80.3)	1,097,520
County Total	939,570	(5,570)	(0.6)	934,000	(193,470)	(20.6)	746,100	(108,470)	(11.5)	831,100	(18,670)	(2.0)	920,900	159,230	16.9	1,098,800
Belgium	950	50	5.3	1,000	(50)	(5.3)	900	450	47.4	1,400	1,720	181.1	2,670	600	63.2	1,550
Cedarburg Fredonia	9,630 1,650	2,820	29.3 11.5	12,450 1.840	410	4.3 1.2	10,040 1,670	4,920 990	51.1 60.0	14,550	18,210 3,220	189.1 195.2	27,840 4,870	7,080 1,400	73.5 84.8	16,710 3,050
Grafton	9,380	2,090	22.3	11,470	170	1.8	9,550	4,120	43.9	13,500	14,740	157.1	24,120	5,990	63.9	15,370
Lake Church Meguon/Thiensville	16,610	450	47.6	450 24,510	90 4,880	29.4	90 21,490	460 13,450	81.0	460 30,060	1,230 33,930	204.3	1,230	510 18,270	110.0	34,880
Newburg (part)	90	10	11.1	100	0	0.0	90	10	11.1	100	100	111.1	190	10	11.1 49.4	100
Fon wasnington Saukville	8,900 3,530	1,000	11.2 20.4	9,900 4,250	(300) (300)	(10.6) (8.5)	7,960 3,230	2,430	27.3 39.9	4,940	5,060	143.3	8,590	2,260	64.0	5,790
Waubeka Sewored Subtotal	 E0 740	450		450	410		410	640 28 890		640 79 620	1,590	177 2	1,590	720 41.150		720 91.890
Nonsewered	16,730	(3,350)	(20.0)	13,380	(4,560)	(27.3)	12,170	(3,350)	(20.0)	13,380	(6,070)	(36.3)	10,660	(2,220)	(13.3)	14,510
County Total Racine County	67,470	12,330	18.3	79,800	130	0.2	67,600	25,530	37.8	93,000	83,830	124.2	151,300	38,930	57.7	106,400
Bohner Lake											1,690	 20.0	1,690	5 040		15 600
Burnington /C Caddy Vista	10,550 900	2,920	2 <i>1.</i> 7 1.1	13,470 910	(390) (170)	(3.7) (18.9)	10,160	1,930	18.3	910	0,570 100	б2.3 11.1	1,000	100	11.1	1,000
Eagle Lake	1,070	110	10.3	1,180	(100)	(9.3) (19.4)	970	110	10.3	1,180	750	70.1	1,820	240 42 290	22.4 34.8	1,310 163 760
Union Grove /d	3,790	2,080	54.9	5,870	1,030	27.2	4,820	2,100	55.4	5,890	4,330	114.2	8,120	3,240	85.5	7,030
Waterford/Rochester /e Wind Lake	3,320 3 170	5,360	161.4	8,680 4 780	2,160	65.1 (10.1)	5,480 2,850	4,130 350	124.4 11.0	7,450 3.520	7,310 2,100	220.2 66.2	10,630 5,270	7,030 2.100	211.7 66.2	10,350
Sewered Subtotal	144,270	(24,020)	(16.6)	167,320	(68,470)	(47.5)	122,870	(38,620)	(26.8)	152,720	14,400	10.0	205,740	12,970	9.0	204,310
Nonsewered County Total	24,920 169,190	(6,240)	(25.0)	18,680	(8,190)	(32.9)	16,730	(5,840) 2,610	(23.4)	19,080 171,800	(5,960) 55,510	(23.9) 32.8	18,960 224,700	(4,530) 55,510	(18.2) 32.8	20,390 224,700
Walworth County								600	50.0	1 700	1 450	105.5	2.520	700	73.0	1 960
Darien Delavan/Delavan Lake	1,070 8,480	460 3,360	43.0 39.6	1,530	780	10.3 9.2	1,180 9,260	4,760	56.1	13,240	13,450	158.6	21,930	6,740	79.5	15,220
East Troy #	3,720	1,780	47.8	5,500	1,370	36.8	5,090	3,510	94.4 59.7	7,230	5,440	146.2	9,160	4,400	118.3 82.2	8,120 9,530
Fontana	5,230	2,360	45.1 35.9	2,270	100	6.0	1,770	3,070 950	56.9	2,620	1,950	116.8	3,620	1,260	75.4	2,930
Geneva National/Lake Como Genera City		430		430 1 800	370		370 1 380	590 810	 69.2	590 1.980	3,140 1,820	155.6	3,140 2,990	660 1.010	86.3	660 2.180
Lake Geneva	5,550	3,660	65.9	9,210	1,540	27.7	7,090	4,530	81.6	10,080	11,280	203.2	16,830	6,550	118.0	12,100
Lyons /g Pell Lake	530	840	158.5	1,370	460	86.8	990	980	184.9	1,510	1,700 2,680	320.8	2,230 2,680	1,220	230.2	1,750
Powers Lake (part)							1 250			2 100	440		440 2 920	1 030	80.5	2 310
Sharon Walworth	1,280 1,660	680 680	39.1 41.0	2,340	150	9.0	1,810	1,000	60.2	2,660	2,140	128.9	3,800	1,390	83.7	3,050
Whitewater (part) Williams Bay	9,000	1,580	17.6 55.4	10,580	(390) 340	(4.3) 18.5	8,610 2,180	3,340 1,380	37.1 75.0	12,340 3,220	10,160 2,570	112.9 139.7	19,160 4,410	5,130 1,870	57.0 101.6	14,130 3,710
Sewered Subtotal	41,200	(132,240)	(321.0)	59,100	(144,470)	(350.7)	46,870	(123,770)	(300.4)	67,570	(81,070)	(196.8)	110,270	(113,790)	(276.2)	77,550
Nonsewered County Total	31,000	(2,800)	(9.0) 20.9	28,200 87,300	(7,770) (2,100)	(25.1) (2.9)	23,230	(1,570) 24,800	(5.1) 34.3	29,430 97,000	(3,670) 65,400	(11.8) 90.6	27,330	250 36,600	50.7	108,800
Washington County	970		24.0	1 160	200	22.2	1 050	1 1 70	126.0	2 030	1 5 3 0	177 9	2 390	1 1 0 0	127.9	1.960
Allenton Big Cedar Lake		670	34.9	670	540		540	670		670	3,820		3,820	820		820
Germantown Hartford /b	7,480 7,660	10,790	144.3 62.3	18,270 12,430	7,810	104.4 21.3	15,290 9.290	17,150 8.150	229.3 106.4	24,630 15,810	27,800 16,320	371.7 213.1	35,280 23,980	21,070 9,210	281.7 120.2	28,550 16,870
Jackson	1,810	1,660	91.7	3,470	1,220	67.4	3,030	3,230	178.5	5,040	5,990	330.9	7,800	3,720	205.5	5,530
Kewaskum Little Cedar Lake	2,440	500	20.5	2,940	150	6.1	2,590	1,620	66.4 	4,060	4,700	192.6	7,140	2,030	83.Z	4,470
Newburg (part)	750	200	26.7	950	130	17.3	880	570	76.0	1,320	1,010	134.7	1,760	710	94.7	1,460
Richfield Slinger	 1,570	1,100	70.1	2,670	610	38.9	2,180	1,640	104.5	3,210	2,860	182.2	4,430	2,420	154.1	3,990
West Bend /i	22,850	9,680	42.4	32,530	1,830	8.0	24,680	14,920	65.3	37,770	30,910	135.3	53,760 155,640	20,850	91.2 (170.8)	43,700
Nonsewered	41,830	(5,220)	(12.5)	36,610	(10,270)	(24.6)	31,560	(9,310)	(22.3)	32,520	(12,470)	(29.8)	29,360	(6,600)	(15.8)	35,230
County Total Waukesha County	87,250	24,450	28.0	111,700	3,850	4.4	91,100	47,350	54.3	134,600	97,750	112.0	185,000	61,750	70.8	149,000
Beaver Lake											2,140		2,140			
Big Bend Brookfield East	16,050	580	3.6	16,630	(2,460)	(15.3)	13,590	880	5.5	16,930	3,340	20.8	19,390	3,340	20.8	19,390
Brookfield West	18,770	8,650	46.1	27,420	1,450	7.7	20,220	10,910	58.1	29,680	14,750	78.6 1 E	33,520	14,040	74.8	32,810
Butter Delafield /j	1,950 3,660	(80) 4,360	(4.1) 119.1	1,870 8,020	(270) 3,230	(13.8) 88.3	1,680 6,890	(80) 6,560	(4.1) 179.2	10,220	10,690	292.1	14,350	7,600	207.7	11,260
Denoon Lake	740	280	37.8	1,020	20	2.7	760	600 2 800	81.1 156.4	1,340	710	95.9 211.7	1,450	740 2.910	100.0 162.6	1,480 4,700
Eagle	1,750										2,790		2,780			
Elm Grove Hartland	5,670 6,500	(530)	(9.3) 56.3	5,140 10.160	(1,030) 2,340	(18.2) 36.0	4,640 8,840	(340) 5,300	(6.0) 81.5	5,330 11,800	380 7,630	6.7 117.4	6,050 14,130	6,520	ы.7 100.3	13,020
Menomonee Falls	17,230	14,500	84.2	31,730	8,110	47.1	25,340	18,470	107.2	35,700	30,280	175.7	47,510	23,570	136.8	40,800
Mukwonago Muskego	4,330 12,810	3,150 4,550	35.5	7,480 17,360	4,750 810	109.7	9,080 13,620	6,900	204.2 53.9	13,170	13,690	109.8	26,880	9,620	75.1	22,430
New Berlin	23,420	13,090	55.9	36,510	5,600	23.9	29,020	18,730	80.0	42,150 970	35,640	152.2	59,060 1,370	25,230 710	107.7	48,650 710
North Prairie											3,640		3,640			
Oconomowoc Lake Oconomowoc /k	10.620	460 6.690	63.0	460 17.310	120 5.810	54.7	120 16.430	460 12.210	 115.0	460 22,830	890 17,680	 166.5	890 28,300	510 13,810	130.0	510 24,430
Okauchee Lake		5,100		5,100	4,010		4,010	6,650		6,650	8,700		8,700	5,140		5,140
Pewaukee /1 Pine Lake	10,300	13,030	126.5	23,330	6,670	64.8 	16,970	19,580	190.1	29,880 	30,770 610	298.7	41,070 610	23,140	ZZ4.1 	33,440
Rainbow Springs /m										47 400	1,240	 697 F	1,240	14 200	 257 5	18 200
Sussex/Lannon/Lisbon Wales	4,000	8,290 3,570	207.3	12,290 3,570	ь,550 3,770	163.8	10,550 3,770	5,730	J27.5 	5,730	25,500 7,850	6.16a 	7,850	6,300		6,300
Waukesha Sowers of Subtorn	53,500	20,810	38.9	74,310	5,190	9.7 20 0	58,690 249 310	31,090	58.1 99 5	84,590	52,350 295 770	97.9 154.6	105,850	40,390	75.5 108.6	93,890 399.100
Nonsewered	94,560	(33,700)	(35.6)	60,860	(42,070)	(44.5)	52,490	(33,860)	(35.8)	60,700	(51,870)	(54.9)	42,690	(32,060)	(33.9)	62,500
County Total Region	285,900	78,400	27.4	364,300	14,900	5.2	300,800	135,500	47.4	421,400	243,900	85.3	529,800	175,700	61.5	461,600
Sewered	1,507,800	231,340	15.3	1,739,140	(141,990)	(9.4)	1,365,810	193,040	12.8	1,700,840	664,490	44.1	2,172,290	628,940	41.7	2,136,740
Nonsewered Total	234,940	(63,080) 168,260	(26.8) 9.7	1 / 1,860 1,911,000	(83,650) (225,640)	(35.6) (12.9)	1,517,100	(63,580) 129,460	(27.1) 7.4	1,872,200	(91,130) 573,360	(38.8)	2,316,100	573,360	(23.7) 32.9	2,316,100

/a Includes George Lake. /b Includes Camp Lake, Center Lake, Cross Lake, Hooker Lake,

Montgomery Lake, Rock Lake, and Wilmot.

/c includes Browns Lake.

/d Includes Southern Wisconsin Center.

/e Includes Tichigan Lake.

/f Includes Alpine Valley, Army Lake, and Potter Lake. /g Includes Country Estates Sanitary District.

/h Includes Pike Lake.

/i Includes Silver Lake.

/j Includes the Village of Nashotah and Nashotah and Nemahbin Lakes.

/k Includes the Village of Lac La Belle and Silver Lake.

A Includes Pewaukee Lake, Pewaukee Town, and Pewaukee Village. Im Includes Eagle Spring Lake and Mukwonago County Park.

NOTE: () indicates negative number.

NOTE: The sewered population levels for each sewer service area under the 2010 recommended and alternative futures land use plans includes sewered population within the sewer service area in 1985, unsewered population within the sewer service area in Includes sewered population within the sewer service area in 1965, discussed population within discussed service area in 1985 which is envisioned to be provided with public sanitary sewer service by the year 2010, and incremental new population which is envisioned to occur within the sewer service area between 1985 and 2010. The size of each sewer service area will be dependent upon the anticipated population levels envisioned to reside within the sewer service area under the recommended and alternative futures land use plans.