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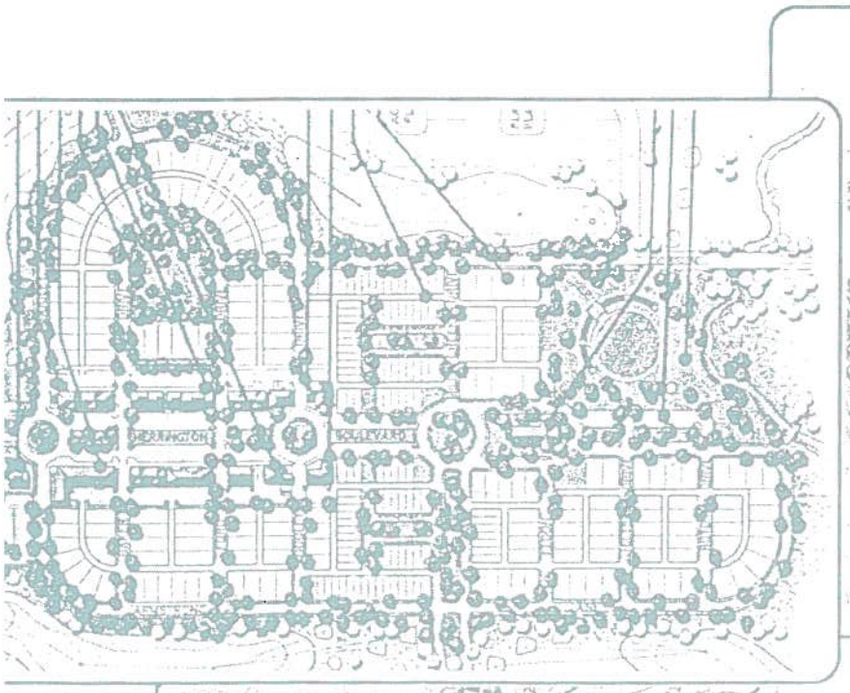

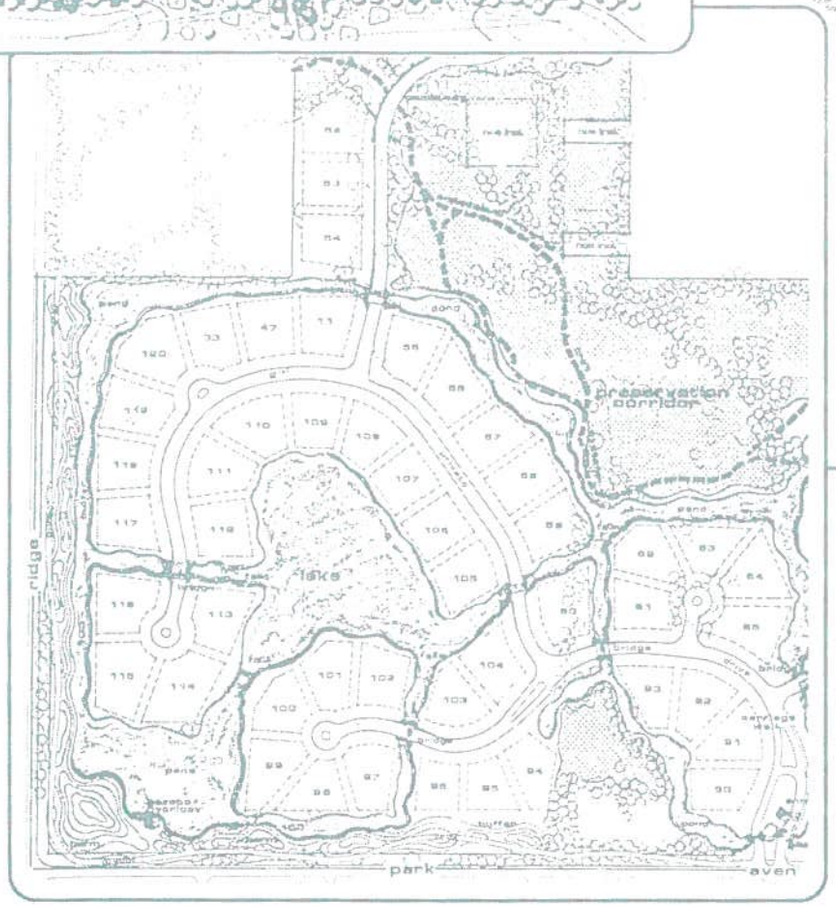

A Manual for Local Officials

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A Manual for Local Officials

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A Manual for Local Officials

March 1994

Northeastern Illinois Planning Commission

Developed in Cooperation with the
Environmental Stewardship Working Group

of the

Strategic Plan Implementation Task Force

$14.00

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PREFACE

There is a growing citizen awareness and appreciation of the importance of environmental resources in determining the quality of life in our communities. Federal, state, and local regulations have also been updated to preserve environmental resources that are now recognized as having a direct impact on public health, safety, and welfare. Many developers throughout the region have gone beyond compliance with regulations and have taken the initiative to creatively plan developments so that they integrate the natural resources and character of a given site as positive amenities into their development. When the planning process is undertaken comprehensively, it can reduce development costs, increase market appeal, and contribute to the long-term viability of the places where we live, work, shop and recreate.

This manual has been prepared in response to recommendations from the *Strategic Plan for Land Resource Management* adopted by the Northeastern Illinois Planning Commission in June 1992. In particular, recommendation 58 from the Strategic Plan states that *"NIPC, with input and endorsements from national, state, and local planning and intergovernmental associations, should develop and widely distribute guidelines which municipal and county governments can use as a reference in preparing and implementing comprehensive plans, programs, and regulatory ordinances affecting land resource management."*

The Strategic Plan places a major emphasis on the stewardship of the region's environmental resources. Twenty-two of the Plan's seventy-two recommendations specifically address environmental stewardship. This manual focuses specifically on the environmental considerations identified in the Strategic Plan.

The purpose of this manual is to provide local elected and appointed officials and planners with useful materials to help them plan for the future of their communities. In particular, the manual emphasizes environmental problems and opportunities. The first several chapters provide an introduction to the purpose and legal foundations of environmental planning at the local level; guidance on the tools and process for achieving the objectives of planning; and a regional perspective on comprehensive plans and forecasts.

Each of the remaining chapters presents detailed information on topics frequently encountered in the planning process and in the review of development proposals. For each of these, there is an introductory section that talks about the values and issues associated with the subject. This is followed by definitions of terms commonly used and answers to commonly asked questions. Another subsection describes applicable laws, programs and standards. This, in turn, is followed by recommendations for local planning strategies and examples of where such strategies have been successfully employed. Each chapter concludes with a list of agencies and reference materials that can be contacted for additional information.

This manual is presented in a three-ring binder format to make it easy to update as laws and standards change, new techniques are developed and successful case studies are completed.

ACKNOWLEDGEMENTS

The Commission is grateful to all of those who contributed to the development of this manual. Members of the Environmental Stewardship Working Group (listed below) guided the overall development of the manual and provided detailed comments on draft chapters through a series of monthly meetings. Authorship of the chapters was provided by Working Group members, members of the Commission's Strategic Plan Implementation Task Force, and NIPC staff. Working Group and Task Force authorship was provided on a volunteer basis.

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Introduction

Chapter I

INTRODUCTION

by Pete Pointner, AIA, AICP

A. WHY PLAN?

Most people realize that they must plan in order to accomplish what they want. They save money, grow in knowledge and develop skills according to plans, which may take hours, months, or years to accomplish. We know that planning can help us get the most out of scarce resources, time, and money. We plan our weekends, the purchase of a home, an education, career, family, and retirement. Although many good things may happen to us by chance, many of our goals can only be realized through careful planning and wise decision-making over a long period of time.

Why do municipalities have comprehensive plans, and what is included in such a plan? Communities, like individuals, have limited resources with which to meet their responsibilities and accomplish their objectives. The powers of municipalities to plan are set by the authority granted to them by state statutes as discussed in Section C of this chapter. The main focus of a comprehensive plan is to identify how land resources can best be used for the benefit of both individual property owners and all of the citizens within the planning jurisdiction. For instance, a plan with an environmental perspective could be developed to try to achieve the following goals:

- *Preserve and protect prime agricultural land, important environmental resources, and the natural character of the landscape;*
- *Set aside enough land for permanent open space to serve the recreational needs of future residents;*
- *Set aside land best suited for new commercial and industrial growth that will increase job opportunities and provide a tax base for maintaining public services and facilities;*
- *Identify site design approaches which will minimize both environmental impacts and costs of development while providing for safe, efficient living and working environments;*
- *Identify areas most appropriate for new residential growth that can be supported in a cost-effective manner by public services and facilities, and which will not pollute surface or groundwater resources or destroy the character of the area;*

- *Provide a comprehensive transportation system to safely and efficiently serve future land uses, considering travel by road, rail, water, air, public transportation, bicycle and foot.*

In conclusion, planning strives to: solve and avoid problems; create new opportunities for living, working and recreating; and identify a pattern of compatible land uses that will meet future needs in an environmentally-senstive and cost-effective manner.

B. PLANNING AND ENVIRONMENTAL QUALITY

Everything we eat, live in, wear or use either utilizes natural resources and elements or synthetic copies. The quality of the air we breathe, the water we drink and the areas we go to for recreation and inspiration are important features in determining the quality of life in a given area. All of these, in turn, affect the social, economic and aesthetic character of the communities that take shape within a given area. The quality of the human community and the natural and manmade environments are, therefore, closely interwoven. Problems that affect any one of these three aspects of the environment inevitably affect the others. Consequently, one of the broad purposes of planning, therefore, is to create a balance between the human, natural and manmade environments.

Based on state statutes and common practice, planning focuses on land use, infrastructure (water supply, wastewater treatment, roads, etc.) and more recently, on the protection and enhancement of natural environmental features. How then do you plan to achieve the quality that everyone wants with the resources available? How do you generate the revenues necessary to maintain public facilities, services and programs that can be viewed as "social infrastructure?"

These questions are being asked by many communities feeling the negative effects of rapid and unplanned or poorly planned growth resulting from new residential, commercial and industrial projects. These negative effects can include flooding, water and air pollution, high real estate taxes, conflicts between existing residential areas and new development, inadequate or inefficient public services, lack of affordable housing and the loss of open space, character and identity. Some of the most notable consequences of new growth are those related to traffic. If a community does not provide a balance between places of employment and affordable housing opportunities, workers are forced to drive farther and farther between their home and their place of employment. This creates congestion, pollutes the air, reduces the safety of local roadways and frequently diverts overflow traffic, and its noise, through residential areas. In some cases, a single project may not seem to create significant problems. However, the overall effect of many individual projects may have unexpected and unwanted consequences. It is for this reason that

both Lake and DuPage counties have developed impact fee ordinances so that developers must make a contribution, in proportion to their traffic impact, to a fund used to upgrade the areawide transportation network to handle these increasing loads. There are also **model ordinances** that have been adopted by groups such as the DuPage Mayor's and Manager's Conference, which are available to local municipalities so that they have a consistent way of evaluating new projects in terms of their transportation and traffic impacts. The conclusion is that land use has a far reaching impact on all aspects of environmental quality. This leads us to the question of how we go about planning.

C. THE LEGAL BASIS OF PLANNING

All cities, towns and villages receive their power to plan from the state. A **non-home rule municipality** receives its authority from the Illinois Municipal Code, (65 ILCS 5/11-12 and 13), which authorizes municipalities and counties to prepare local land resource management plans in order to protect and conserve natural resources. A **home rule municipality** is one with 25,000 population or more, or one of any size that votes to become home rule. Home rule communities have additional powers that are derived from the Illinois Constitution. The state confers the following powers to all municipalities: the establishment of plan commissions and the preparation of plans and development ordinances; the establishment of a zoning board and the power to create zoning ordinances and districts; requirements for open meetings; annexation agreements; the recording of plats; and intergovernmental cooperative agreements. Plan commissions typically guide the preparation and updating of comprehensive plans, zoning and subdivision ordinances. They serve as an advisory body to the elected officials and make recommendations on subdivisions, planned developments and special uses. The zoning board, often referred to as the zoning board of appeals (ZBA), hears petitions for variances form the zoning standards and appeals of administrative interpretations and actions by staff. They are also a recommending body to the elected officials. The city council or village board conducts hearings on annexation petitions.

Another important piece of legislation is the **Local Land Resource Management Planning Act** (50 ILCS 805/1-9), which authorizes municipalities and counties to prepare local land resource management plans in order to protect and conserve natural resources. For those interested in reviewing the specific legal basis of planning, and court cases which have helped to define the meaning and application of these laws, the "Zoning Handbook for Municipal Officials with Suggested Forms" by Ronald S. Cope is recommended. It is available from the Illinois Municipal League, P.O. Box 3387, Springfield, Illinois, 62708. Copies of the original state statutes and Illinois Constitution are available for reference at most libraries. On January 1, 1993, the system for referring to these statutes was changed. A guide to link the old statutory references to the new ones is available in most libraries. Local officials should always consult with their professional staff or consultants before attempting to interpret these legal documents and court cases.

CHAPTER II

Environmental Planning- Principles and Process

Chapter II

ENVIRONMENTAL PLANNING - PRINCIPLES AND PROCESS

by Pete Pointner, AIA, AICP

A. DEFINITION AND PRINCIPLES

Planning, from an environmental perspective, can be defined as the process of directing the type, intensity, quality and timing of changes in land use to achieve balanced and self-sustaining communities that nourish and expand human opportunities. To make this work, the municipality must plan for the area beyond the corporate limits and consider a long-term time perspective. Planning should project a desired picture or vision of what the planning jurisdiction will look like at full development. If it is a good plan, it will achieve the community's objectives regardless of the exact rate or ultimate extent of growth.

A good plan will reflect local conditions, concerns, resources, priorities and opportunities in its proposals and design standards. Regardless of the specific goals and objectives at the local level, the following **principles of planning** are widely accepted and provide a guide for the development of a local plan:

- *Protect, enhance and integrate natural resources into the life and future of the community*
- *Maintain diversity and balance in land uses. Diversity is particularly needed in the housing stock and economic base, and in the relationship of the distribution of jobs and housing, and of housing and other daily needs such as schools, parks and shopping*
- *Create efficiency and order in the phasing and design of infrastructure and public service systems*
- *Require quality of design that reinforces individual and community identity and character, minimizes maintenance and environmental costs, adds delight to living, and relates to the natural environment of the site, streetscape, and landscape*

B. TOOLS OF PLANNING

The **comprehensive plan** shows how land resources should be used in the long term. The types or categories of land use, including agriculture and transportation, are general and broad in their definition. The plan shows an overall pattern of land use that the municipality believes will help to achieve their goals. Municipalities can plan for their **planning jurisdiction**, which includes unincor-

porated areas up to 1.5 miles from their corporate boundaries. The land use plan provides a framework that can be used to evaluate developmen tproposals and phase public improvements. It can serve as a guide to set aside land to meet future needs for items such as transportation improvements, public open space, and flood control.

Zoning is a tool for implementing the comprehensive plan within a municipality's corporate limits. The authority for zoning is established by state statute as discussed in Chapter I. Zoning is a specific and detailed control of the type and intensity of land use within carefully defined districts or zones. The entire municipality is divided into districts, and the zoning ordinance text identifies what kind of **land uses are "allowed" outright** in each district. This is to avoid conflict between land uses that may not be compatible. Certain industrial, commercial and agricultural operations, for instance, may not be compatible with a single-family residential subdivision. Other uses are allowed by what is called a "special use permit." **Special uses** are those that are generally compatible with the predominant uses allowed in the district, but have the potential to create negative impacts. For instance, a drive-in commercial establishment may require special consideration of access for cars and trucks to avoid creating safety problems on adjacent roadways or nearby residential development. The zoning ordinance, therefore, is much more specific and detailed than the comprehensive plan, and is the legal tool that determines how land can be used. Zoning also contains what are called "bulk regulations." **Bulk regulations** include such things as minimum yards and setbacks for buildings, maximum building height and buffers between residential and non-residential development. **Special districts** can also be established by ordinance to regulate development for areas such as historic districts and transportation corridors. An **overlay district** is a zoning tool that is used to accomplish very specific objectives within an existing zoning district. It overlays criteria for development that are in addition to the standards and criteria of the base district or districts to which it is applied. Examples of overlay districts are those that superimpose criteria for the preservation of historic resources and supplemental standards along highway corridors. Preservation overlay districts may establish guidelines for new construction and impose design review. Corridor overlay districts may impose additional criteria for setbacks, access limitation and special parkway or landscape treatments along selected highways. Zoning ordinances also typically control off-street parking and loading, the size and location of signs, and requirements for the provision of open space.

Subdivision regulations are another tool for implementing the comprehensive plan authorized by state statute. These regulations set up a process so that proposals for the subdivision of land for development can be reviewed and recorded. Subdivision regulations set standards for public facilities, services and improvements, including: requirements for items such as stormwater management, erosion control plans, standards for street rights-of-way, pavement width and strength, parkway trees, and

provision of public rights-of-way and easements. Requirements for donations of land or cash for schools, parks or other special districts are often included. In some instances, separate ordinances are adopted for special purposes such as floodplain management.

Other **growth management tools** are more complex and require consideration of their potential value on a case-by-case basis. Examples include: funding incentives, such as tax increment financing (TIF); planned unit development provisions within the zoning ordinance to permit **cluster planning** and **density transfer** to protect environmental resources and create more efficient patterns of development; annexation policies; and site plan and appearance review ordinances to shape the quality of development.

Restrictions can be so strict that an owner may feel that the value of his property on the market has been reduced without compensation. For instance, changing the zoning from commercial to low density residential, or designating most of a parcel as open space or conservation could be considered a **taking issue.**

C. PROCESS OF PLANNING AND DEVELOPMENT REVIEW

Planners utilize a process by which to evolve or develop a land resource management plan. The following is a brief listing of some of the specific environmental concerns to be considered during each step in this process.

Data Gathering and Analysis: Certain activities are necessary to start the process. These include the making of base maps on which to record information, and the setting up of a "planning committee" to represent interested and affected parties throughout the process. Some communities appoint a **planning commission**, as authorized under state statute, to accomplish this ongoing liaison and participation in the development of a plan. Information to be gathered, analyzed and summarized include: topography, surface and groundwater, floodplains, wetlands, mature woodlands and mineral resources.

Goals and Objectives: Goals are long-term qualitative statements of desirable conditions and ultimate development. Objectives are more specific steps that can be scheduled, budgeted and accomplished as a means of trying to achieve the long-term goals. Goals and objectives are policy statements as to what a community wants to accomplish with their plan. They provide direction and a basis against which specific land use alternatives can be evaluated. The accomplishment of one set of goals and objectives may require balancing with another set. For instance, industrial development that takes advantage of transportation opportunities along a river may conflict with floodplain protection. Other tasks to be undertaken during this phase include the establishment of **location criteria** for each use (including open space and resource protection areas) and a program that identifies the approximate amount of land to be set aside to meet projected future needs for various uses.

Develop Alternatives: Where there is a large amount of undeveloped land within the planning jurisdiction, it may be difficult to project future needs. One approach is to identify the best use of all land resources at full development, and then refine the amount and distribution to achieve a balance of land uses that respects the natural environment and supports the goals, objectives and location criteria prepared in the previous step. Regardless of whether the alternatives are driven by a program of projected future land use needs or by the capability of the land, alternatives should express differences in priorities and public policy. The key environmental elements of this phase are to identify preservation and conservation areas, to develop a balance in land uses, and a multi-modal transportation system to minimize the absolute dependance upon the automobile for transportation for daily needs.

Evaluate and Refine Concepts: The objective of this phase, working closely with the planning commission or committee, is to evaluate the implications and trade-offs of each of the basic alternatives. Some refinement and modification to the goals and objectives, as well as the distribution of land uses, will result during this step. For each of the alternatives, other policy statements -- which we will call **Planning and Design Guidelines** -- should be developed. These are recommendations that could eventually be incorporated into the zoning and subdivision ordinances. They should reflect contemporary environmental planning standards and relate to details that go beyond the land use plan. For instance, such guidelines may suggest: scenic easements; design of stormwater detention areas to incorporate aesthetic and biological as well as hydrologic criteria; access controls for primary roadways; and identification of areas warranting supplemental controls to protect unique natural or cultural resources.

Public Review: There are three times in the planning process where general public input is most effective. The first is at the outset of the planning process to receive input concerning the public's opinions on problems, needs and opportunities. This can be stimulated by asking those in attendance at a **public meeting** to identify what features they like best and wish to preserve, and what problems or needs they think should receive attention in the planning process. The second point of general public contact is after alternatives have been formulated. A consensus may or may not have been reached by the planning committee concerning a preference among the alternatives. This review is frequently carried out by having an informal **open house**, which covers an afternoon and evening so that people may come at a variety of times and talk with members of the planning committee, staff and, where applicable, the consultant. Since the plan will contain a lot of technical information, there should be handouts and displays that explain the process, goals and objectives and key recommendations of the alternatives. **Comment and/or survey forms** should be available for use by those in attendance. The planning committee will use these to refine the alternatives in response to questions and comments from the public. The planning

committee can then make a recommendation to the elected officials concerning a preferred alternative. Frequently, this is a hybrid plan, incorporating elements of several alternatives, plus new ideas introduced through public contact. The third and final step is an official **public hearing.** Requirements for a public hearing are set up by applicable state statutes. Some communities choose to have another informal workshop for the general public to comment upon the recommendations of the planning committee prior to the hearing.

Components of the Adopted Comprehensive Plan: It is suggested that the officially adopted components of the plans be only those that relate directly to policies and proposals. Data and support information can then be maintained in back-up files to be updated periodically without necessarily revising the adopted plan components. The format for presenting the plan should, therefore, lend itself to clear understanding, broad public endorsement, effective use in review of development proposals and cost-effective revision.

Comprehensive Plan Update: The plan paints a broad and long-range picture of desirable land uses, transportation systems, the character of the natural landscape and public facilities and services. The plan is a guide and not a straightjacket. It should be reviewed periodically to assure that it is responsive to new opportunities, changing conditions, administrative problems, unforeseen events or adjusted priorities. Items warranting consideration or modification should be documented as they are identified for use during a complete formal review. The time interval between revisions depends upon the specific magnitude of the changes that occur in a community, but the duration should be no longer than every five years.

Development Plan Review: The comprehensive plan should provide the basis for evaluating the appropriateness of new development. Following adoption of a plan, the implementation tools previously noted in Section B of this chapter should be developed or modified so that they are consistent with the plan as the guiding document. From an environmental standpoint, the plan should provide the basis for such activities as: open space acquisition; the identification of easements; and the establishment of standards to protect environmental resources from incompatible land uses, destructive construction practices and environmentally damaging maintenance procedures. A sample checklist is provided in the Appendix for site plan review to assist in the comparison of development proposals with recommendations of the comprehensive plan, its policies, and implementation ordinances.

D. PUBLICATIONS

Persons interested in obtaining additional background on any of the planning subjects introduced in the first two chapters can acquire lists of publications, audio and visual tapes from the sources listed on the following page. The greatest selection of planning literature and support material is available from the American Planning Association as follows:

Planners Bookstore, 1313 E. 60th St., Chicago, IL 60637 (312) 955-9100

Specific references suggested for chapters one and two available from the APA include:

> The Job of the Planning Commissioner. Solnit, 1987.
> The Subdivision and Site Plan Handbook. David Listokin and Carole Walker, 1989.
> The Zoning Board Manual. Frederick H. Bair, Jr., 1984.

The Northeastern Illinois Planning Commission also has an extensive collection of data, reports, policy plans, model ordinances, directories, video tapes and aerial photographs. For more information contact:

Northeastern Illinois Planning Commission, 222 S. Riverside Plaza, Suite 1800, Chicago, IL 60606 (312) 454-0400

Municipal libraries should be consulted to review copies of the Illinois compiled statutes. Many libraries will also have copies of the United States Yearbooks of Agriculture in their reference sections. Specifically recommended for an overview of the system of describing and subdividing land is contained in the 1958 edition in the short article entitled, "The Mechanics of Land Transfer."

Recommended reading relative to zoning issues in Illinois is the Zoning Handbook for Municipal Officials by Ronald S. Cope, which is available from:

Illinois Municipal League, P.O. Box 3387, Springfield, IL 62708
(217) 525-1220

CHAPTER III

Regional and County Comprehensive Plans and Forecasts

Chapter III

REGIONAL AND COUNTY COMPREHENSIVE PLANS AND FORECASTS

by Richard Mariner

A. REGIONAL PLANNING -- NORTHEASTERN ILLINOIS PLANNING COMMISSION

Authority and Role: The Northeastern Illinois Planning Commission (NIPC) was created in 1957 by the Illinois General Assembly to be the advisory comprehensive planning agency for the six-county Chicago metropolitan area.

The Northeastern Illinois Planning Act (70 ILCS 1705/1 et seq) gives the Commission three charges: to conduct research and collect data for planning; to advise and assist local government; and to prepare comprehensive plans and policies to guide the development of the counties of Cook, DuPage, Kane, Lake, McHenry and Will.

Regional planning deals with general development policies, not specific local land use detail. The Commission supports and adds perspective to county and municipal planning. In responding to its mandate, the Commission publishes and makes available to the public numerous reports, maps and other information products.

Regional Planning and the Environment: Because of its comprehensive planning charge, the Commission integrates environmental concerns into all of its policy-making and advisory functions. Its environmental policies, as well as other types of policies, are major inputs into the development of regional forecasts of population and employment change. Adopted plans and policies guide the Commission's environmental research activities and provide a basis for technical assistance. The Commission reviews plans and projects of federal, state, other regional, and local jurisdictions, as well as privately sponsored projects. Environmental policies adopted by the Commission are employed in these review activities.

NIPC adopted the *Comprehensive General Plan* in 1968 (updated in 1977). Most recently, the Commission adopted the *Strategic Plan for Land Resource Management* (1992). During the years between these plans, NIPC has developed and adopted plans for land use, greenways, recreation and open space, transportation, overbank flooding and stormwater drainage, water quality management, solid waste management, septage disposal, and water supply. These plans all have significant environmental content, and support the *Comprehensive General Plan*. The *Strategic Plan for Land Resource Management* is an action document intended to improve the region's ability to plan effectively. It contains

twenty-two recommendations on environmental stewardship. This manual is one product of the implementation program for the Strategic Plan.

Regional Plans: Selected NIPC plans, as briefly described below, address environmental issues broadly. Other plans are described in other sections of this manual which deal with specific environmental concerns.

- *Comprehensive General Plan* - this was the first policy document adopted by the Commission (1968 and updated in 1977); it is comprehensive in its approach to land use, environment, transportation and metropolitan services issues.

- *Regional Land Use Policy Plan* - adopted in 1978, updated in 1984, this plan establishes the Commission's policy on land use with an emphasis on the role of county and municipal planning, critical environmental areas, forecasts and municipal services, major public investments (including open space), developments of regional impact and opportunity areas, and intergovernmental relations.

- *Areawide Water Quality Management Plan* - adopted in 1979; this plan contains comprehensive regional and watershed recommendations for protecting water quality from the effects of wastewater discharges and runoff from developed land.

- *Regional Recreation and Open Space Policy Plan* - updated in 1980; this plan sets forth policies and recommendations for the preservation and management of open space and recreational facilities.

- *Strategic Plan for Land Resource Management* - adopted in 1992; it contains strategic recommendations for improving land resource planning and management, including environmental stewardship and greenways.

- *Northeastern Illinois Regional Greenways Plan* - adopted in 1992; it contains recommendations for creating a 1000 mile network of regional linear open spaces for resource management, recreation, and aesthetic benefits.

Regional Forecasts: NIPC develops regional forecasts, in part, as an expression of the plans and policies adopted by the Commission. Therefore, implicit in the forecasts are assumptions regarding lands that are unsuitable for development because of environmental constraints or because they are recommended for preservation as open space, agricultural areas, etc. Regional forecasts for population, households and employment for the year 2010 have been previously developed and endorsed by NIPC. Forecasts are available at the regional, county, township, municipal and quarter-section levels.

As of 1993, NIPC began a two-year process for a comprehensive forecast update for the year 2020. At the writing of this manual, NIPC was developing the forecasting methodology to determine how regional policy would determine the forecast process results. Such factors as the *Regional Greenways Plan*, open space plans (regional, county, local) and environmentally sensitive features will constrain the amount of land available for development. Transportation accessibility and plans for development by counties and municipalities are factors that will suggest the growth and urban conservation areas where most population and employment change will be forecasted to occur.

B. COUNTY COMPREHENSIVE PLANNING

Authority and Role: The six counties of northeastern Illinois (Cook, DuPage, Kane, Lake, McHenry and Will) all maintain county-level planning programs. They have developed and adopted plans as authorized by the State of Illinois. Counties, except for Cook, undertake planning through commissions constituted under authority granted for regional planning commissions (50 ILCS 5/5-14001). Cook County undertakes planning using general county planning authority. Counties are required to submit county plans to NIPC for review with regard to consistency with NIPC plans (50 ILCS 5/5-14007).

County plans are advisory in function and help direct the decision-making process of the counties as they relate to land use, environmental management, development of infrastructure, and provision of public services. Depending upon situations unique to each county, county plans may focus on land resources policy for the unincorporated areas or they may more broadly address county-wide environmental and county-municipal land resource policy. Counties have no direct land use control within municipalities, while municipalities have certain standing with respect to land use decisions in the 1.5 mile extra-jurisdictional area immediately outside municipal boundaries.

County plans may be developed under the authority of the Illinois Local Land Resource Management Planning Act ((50 ILCS 805/1 et seq). This has been done in Will and Kane counties.

County plans address the stewardship of environmental resources through policy and mapping techniques. Typically, they identify environmentally sensitive areas and contain policies for the protection of environmental resources. They may make specific recommendations for implementation of environmental policies. County plan maps may or may not illustrate planned land use as designated by municipalities for incorporated areas. They may or may not illustrate locations of environmentally sensitive areas and locations for open space preservation.

County Plans: Counties, through their planning departments, periodically review and update their county land use plan documents.

Cook County: *Cook County Comprehensive Land Use and Policies Plan*, 1976, map revisions to 1984

DuPage County: *Land Development Policy Plan for DuPage County*, adopted 1993

Kane County: *Kane County Comprehensive Land Use Plan 1982/2000*, adopted 1982

Lake County: *Lake County Framework Plan*, updated 1987

McHenry County: *McHenry County Land Use Plan: Year 2010 Update*, adopted 1993

Will County: *Will County Land Resource Management Plan*, 1990

County planning departments should be consulted regarding current county land use and environmental policy.

C. CONTACTS

Northeastern Illinois Planning Commission, 222 South Riverside Plaza Suite 1800, Chicago, IL 60606 (312) 454-0400

Cook County Department of Planning and Development, 118 North Clark Street, Chicago, IL 60602 (312) 443-4297

DuPage County Development Department, 421 North County Farm Road, Wheaton, IL 60187 (708) 682-7230

Kane County Development Department, 719 Batavia Avenue, Geneva, IL 60134 (708) 232-3480

Lake County Department of Planning, Zoning & Environmental Quality, 18 North County Street, Waukegan, IL 60085 (708) 360-6350

McHenry County Planning Department, 2200 North Seminary Street, Woodstock, IL 60098 (815) 337-3720

Will County Land Use Department, 501 Ella Avenue, Joliet, IL 60433 (815) 727-8638

CHAPTER IV

Land Use and Water Resources Planning

Chapter IV

LAND USE AND WATER RESOURCES PLANNING

by Dennis Dreher

Water resources - streams and floodplains, lakes, wetlands, and groundwater resources - represent both assets to communities and potential obstacles to land development. These resources provide recreation and greenway opportunities, natural storage and attenuation of floods, water supplies, habitat for wildlife, pollutant filtering and groundwater recharge functions, and aesthetic enhancements which can stimulate community development.

At the same time, the locations of these resources are often inconvenient to subdivision layouts and road and utility construction. As a result, in the historical development of the northeastern Illinois region, water resource amenities and functions have often been sacrificed. With the arrival of farming and urban development, many of the region's wetlands were drained or filled. Meandering streams were channelized to improve drainage. Floodplains were filled and developed.

The construction of buildings, roads, and parking lots replaced porous prairie soils with impervious surfaces, producing greater quantities of runoff as well as sediment and pollutants. Flood damages increased in direct response to upstream development. Higher velocities of runoff water moving through stream channels caused accelerated bank erosion and flushed out aquatic organisms. The billions of dollars spent in northeastern Illinois on wastewater treatment plants, intended to make streams and lakes once again "fishable and swimmable," has often failed to achieve this objective due to the effects of polluted urban runoff and habitat destruction. Ongoing development, without effective planning and control, continues to degrade valuable amenities and places an economic burden on local, state, and federal governments to remediate future problems.

Several factors are leading to a more progressive, holistic approach to community water resource planning, however. Particularly in the last five to ten years, communities have recognized that unwise development will result in unwanted future tax burdens (e.g., for flood remediation). Communities are now more aware that federal and state regulatory programs are limited in both scope and manpower. Communities also recognize the benefits of natural areas and greenways to property values and community aesthetics. Finally, there is a greater acceptance of the need to address water quality and habitat considerations along with traditional concerns about flooding in the implementation of local development regulations. An increased awareness by local governments is evidencing itself in the development of comprehensive plans which identify sensitive water resource areas such as wetlands, stream corridors, floodplains, and groundwater recharge areas. It is leading to the reevaluation and strengthening of local development plans and ordinances resulting in a more comprehensive,

coordinated approach which balances protection of water resources, avoidance of property damage, and the need to promote cost-effective community development. This chapter addresses the concerns of **stream, lake, and wetland protection, floodplain management, stormwater drainage and detention,** and **groundwater protection** in individual sections.

Section 1. STREAM, LAKE, AND WETLAND PROTECTION

A. INTRODUCTION

Streams, lakes, and wetlands are valuable natural features in northeastern Illinois, providing picturesque variations and buffers in a sometimes monotonous landscape. While the principal natural function of stream systems is to drain runoff and floodwaters from the landscape, streams and rivers also provide for fishing, aquatic and wildlife habitat, water supply, nature study, and aesthetic enhancement. Further, streams and rivers served as the principal transportation route of the region's settlers and continue to serve commercial and recreational navigation needs.

Northeastern Illinois is particularly rich in natural lakes, many created when the glaciers melted. Lakes are focal points for water-based recreation, particularly swimming, fishing, and boating. Major lakes, notably Lake Michigan and the Fox Chain O'Lakes, are prominent tourist attractions and contribute to the economic vitality of the region.

Wetlands - swamps, marshes, bogs, meadows, and fens - also are common elements of the landscape, often bordering lakes and streams. Wetlands function as nature's kidneys, filtering contaminants from agricultural and urban runoff. Wetlands store vast quantities of floodwater, releasing it slowly to protect downstream areas. Wetlands also help to maintain consistent baseflows and water levels in streams and lakes and some recharge underground aquifers. Finally, wetlands are highly productive ecological systems, providing habitats for exceptionally diverse communities of plants and wildlife.

Because of their predominance and location in the landscape, however, waterbodies and wetlands have historically been altered and destroyed by man. Wetlands were drained and filled to accommodate agricultural and urban development. Streams were straightened and deepened to speed the drainage of runoff and to lower water tables. Lakes functioned as sinks for sediments, nutrients, and other pollutants, resulting in severe water quality impairments.

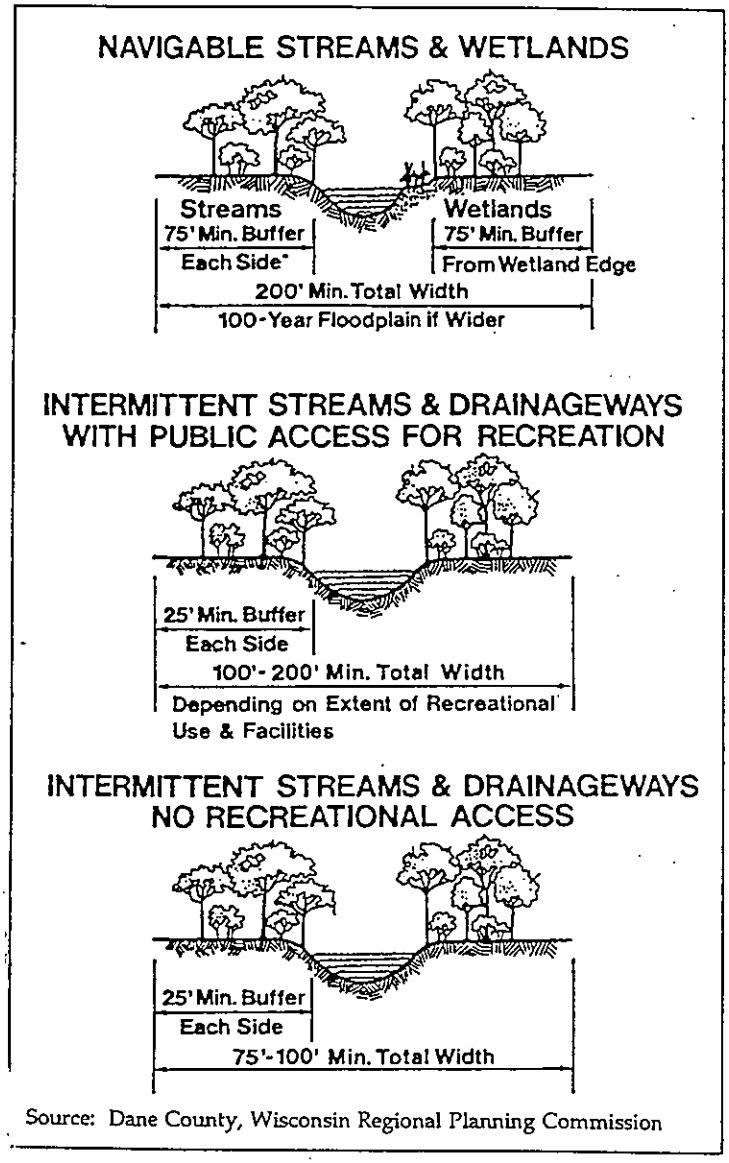
While a better awareness of these problems has led to more protective federal and state regulations, streams, lakes, and wetlands continue to be threatened by development-related impacts. This section will describe opportunities for local governments to supplement existing regulations with effective programs and ordinances.

B. IMPORTANT DEFINITIONS

Buffer: A protected strip of land along the edge of a stream, lake, or wetland usually maintained in natural or native vegetation. A buffer provides wildlife

habitat, protects shores and banks from erosion, filters water pollutants, and screens sensitive areas from potential adverse effects of development activity. (See Figure IV-1.)

Figure IV-1
Buffer Strip Examples



Source: Dane County, Wisconsin Regional Planning Commission

Channelization: Modification of a stream channel resulting in a change in the channel cross-section and typically involving straightening or relocation of the channel.

Setback: The horizontal distance between a structure or development activity and the edge of a sensitive area such as a waterbody or wetland.

Wetland: Transitional land between upland and aquatic systems where the water table is usually at or near the surface and shallow ponding sometimes exists. Typical wetland types include marshes, bogs, swamps, wet meadows, floodplain forests, and fens.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *Don't federal and state regulations adequately protect local stream and wetland resources?*

A: Federal regulations address fill activities in wetlands, including some stream channels. Many other damaging activities, such as draining, impoundment, removal of vegetation, and stormwater discharges are not adequately covered. The State does not regulate private development activities in wetlands and its stream-related regulations only address flooding and navigation concerns. As a result, development activities continue to adversely affect the region's streams and wetlands.

Q: *Can local governments legally limit development in stream corridors, wetlands, and buffers?*

A: Municipalities and counties have the authority to protect the health, safety, and welfare of their residents through reasonable regulations. In particular, local governments are authorized by Illinois' basic zoning enabling legislation to protect sensitive areas and to enforce development setbacks.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

The **U.S. Army Corps of Engineers (Corps)**, under Section 10 of the Rivers and Harbors Act, regulates construction in navigable waters which include major waterways and Lake Michigan. The Corps also has authority under Section 404 of the Clean Water Act to issue permits for the deposition of dredged and fill materials and excavation in waters of the United States. Waters of the U.S. include most wetlands and streams. The Corps regulations are generally effective in protecting wetlands from major development activities. However, as noted above, Corps authority is limited to activities involving the deposition of fill material. The overall effectiveness of its regulatory program is affected by resource limitations which constrain its ability to address small wetlands.

In addition to its regulatory powers, the federal government supports several programs directed at wetland and stream protection. The U.S. Department of Agriculture, **Soil Conservation Service (SCS)**, has mapped wetlands throughout northeastern Illinois on a county-by-county basis. SCS and companion **Soil and Water Conservation Districts (SWCDs)** also maintain county soils inventories

which are useful in identify areas of likely wetland soils. The **U.S. Fish and Wildlife Service (USFWS)** operates an urban wetlands office in northeastern Illinois which provides special technical assistance in wetland protection and restoration to local governments and other entities. The **U.S. Environmental Protection Agency (USEPA)** also supports important wetland and stream protection programs. USEPA provides oversight for the Corps' regulatory program and also has sponsored Advanced Identification (ADID) studies in DuPage and Lake counties to identify high quality wetlands.

The **Illinois Division of Water Resources (IDWR)** in the Department of Transportation regulates activities in the floodplain, including many stream modifications, under the authority of the Rivers, Lakes, and Streams Act of June 1911 (615 ILCS 5/4.9 et seq.). Under current policy, IDWR does not consider environmental impacts in its review of projects, except for certain projects on public water bodies such as the Fox River. The **Illinois Department of Conservation (IDOC)** has no regulatory authority over streams and wetlands, but does advise the IDWR and the **Illinois Environmental Protection Agency (IEPA)** regarding aquatic and wildlife habitat concerns. IDOC, through the state Wetlands Program, sponsored the statewide production of **National Wetland Inventory (NWI)** maps which are useful in identifying likely wetland locations for planning purposes. Finally, the IEPA plays a limited role in regulating wetlands. As authorized under Section 401 of the Clean Water Act, IEPA reviews Corps Section 404 permits for consistency with water quality regulations.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

Communities are encouraged to implement local measures to protect important wetland and waterbody resources. The intent of these measures is to identify sensitive areas which are generally unsuitable for development and to implement specific strategies for protecting and restoring these resources.

Identify and Map Important Stream, Lake, and Wetland Resources: The locations of significant streams, lakes, and wetlands should be mapped in the environmental section of the comprehensive plan. Streams and lakes are identified on U.S. Geological Survey (USGS) 7.5 minute topographic maps. These maps are reasonably accurate, except that recent stream channel relocations may not be reflected. Maps of significant wetlands (i.e., larger than 1-2 acres) are available from two sources. The National Wetland Inventory (NWI) identifies wetland locations on USGS quad maps. NWI maps were prepared in the early to mid-1980s and may be obtained through NIPC's Publications Department. Wetlands also are identified on county inventories prepared by the SCS. The SCS inventories were prepared in the early 1990s and may be more

accurate than NWI maps in their identification of wetland locations and boundaries. It should be understood, however, that both inventories are based on remote sensing information and require field verification of actual wetland locations.

Establish Comprehensive Protection Policies: A community must first evaluate the relative significance of stream, lake, and wetland resources within its jurisdiction and then determine its intent to protect these assets. The comprehensive plan should include a statement of policy which forms the basis for stream, lake, and wetland protection strategies. The policy statement should reflect the relevant functions of waterbodies and wetlands which are important to the community, considering natural flood storage and attenuation, open space and recreation, aquatic and wildlife habitat, water quality protection, water supply, and enhancement of property values and community development. Communities should consider incorporating their stream, lake and wetland protection recommendations with a system of local and regional greenways. The comprehensive plan map should illustrate the greenway location. NIPC's *Model Stream and Wetland Protection Ordinance* includes a statement of purpose and intent which embraces this holistic protection approach.

Identify Open Space Opportunities and Acquisition Priorities: The surest way to protect sensitive waterbodies and wetlands is through public acquisition. Because of funding limitations and other constraints, it will not be feasible or desirable to acquire all identified resources. The comprehensive plan should identify a procedure for prioritizing important acquisitions. Priorities should be established considering resource quality, existing or future development-related threats, and availability. Stream corridor acquisition priorities should consider local and regional greenway plans. Wetland quality can be evaluated on the basis of important local priorities such as stormwater storage and wildlife habitat. Acquisition may involve actual purchase by park or forest preserve districts or donation by developers to satisfy required park contributions. Conservation easements also are effective and are particularly appropriate for linear resources such as stream corridors and greenways. (These techniques are discussed at length in Chapter IX: Land Use and Open Space.)

Implement Effective Stream, Lake, and Wetland Protection Regulations: The degree to which local governments choose to regulate waterbody and wetland resources will generally depend on the quality of the resource and perceived development-related threats. At a minimum, local governments should establish setback requirements between construction activities and all significant streams, lakes, and wetlands. It also is recommended that natural buffers, preferably vegetated with native plants, be protected or established along the edges of natural waterbodies and wetlands. The *Model Stream and Wetland Protection Ordinance* suggests setbacks of 75 feet and vegetated buffers of 25 feet and defines the types of activities which may be allowed in these areas. Local regulations also should prohibit adverse modifications of natural stream channels and shorelines. If adequate expertise is available, a community may wish to establish more elaborate procedures for evaluating resource quality and determining mitigation require-

ments on a case-by-case basis. Local stream, lake, and wetland regulations may be implemented through existing subdivision codes or through zoning-based approaches such as the lowland conservancy overlay district contained in the *Model Stream and Wetland Protection Ordinance.* Stream protection requirements can be implemented separately in a community's floodplain ordinance, as described in Section 2 of this Chapter.

Identify Opportunities for Stream and Wetland Restoration: It is important to recognize that many existing streams and wetlands in northeastern Illinois have been adversely affected by over a century of agricultural drainage and urban development activities. Local governments should identify opportunities for enhancing or restoring severely degraded ecosystems, ideally on a watershed-by-watershed basis. Where degraded systems exist on public property, restoration will typically require public funds. However, opportunities may exist to utilize offsite wetland mitigation or mitigation banking to restore degraded wetlands as a tradeoff for permitting the destruction of small, low quality wetlands on development sites. Where degraded streams or wetlands exist on development sites, developers may be authorized and encouraged to design restoration measures into their site plans. Restoration might entail stream de-channelization, replanting stream banks with native vegetation, or creating open water areas in sedimented wetlands. These types of restoration measures also benefit the developer by enhancing the appearance of the site and enhancing property values.

F. GOOD EXAMPLES

The DuPage County Stormwater Management Committee has implemented perhaps the most comprehensive wetland protection program in northeastern Illinois. Their program includes a countywide wetland protection ordinance and an Advanced Identification study of high quality wetlands. The county is currently establishing a wetland banking program to mitigate for lost wetlands at centralized locations. Banking can provide opportunities for wetland restoration and effective, long-term management.

Several municipalities in the region, notably Barrington Hills and Long Grove, have a long history of protecting wetland and stream complexes to preserve the natural character of their communities. Naperville and the Naperville Park District have embarked on an ambitious stream corridor acquisition and enhancement program which includes the renowned downtown Riverwalk.

G. CONTACTS

Northeastern Illinois Planning Commission, Natural Resources Department and Publications Department, 222 South Riverside Plaza, Suite 1800, Chicago, IL, 60606 (312) 454-0400

U.S. Army Corps of Engineers, Chicago District, Regulatory Branch, 111 N. Canal Street, Chicago, IL 60606-7206 (312) 353-2308

U.S.D.A. Soil Conservation Service/Soil and Water Conservation Districts. County offices in:

Kane-DuPage County, 545 S. Randall Road, St. Charles, IL 60174
(708) 584-7961
Lake County, 70 S. US Highway 45, Suite 205, Grayslake, IL 60030
(708) 223-1057
McHenry County, 1143 N. Seminary Ave., Woodstock, IL 60098
(815) 338-0049
North Cook County, 675 North Court, Suite 120, Palatine, IL 60067
(708) 991-1189
Will-South Cook County, 100 Manhattan Rd., Joliet, IL 60433
(815) 723-5078

U.S. Fish and Wildlife Service, 1000 Hart Rd., Suite 180, Barrington, IL (708) 381-2253

U.S. Environmental Protection Agency, Region 5, Wetlands and Watershed Section, 77 W. Jackson Blvd., Chicago, IL (312) 886-6115

H. SUGGESTED REFERENCES

Landscaping Techniques and Materials for Urban Illinois Stream Corridors and Wetland Edges. Mariner, R.D. and L. Mertz-Erwin, Northeastern Illinois Planning Commission, for the Illinois Department of Energy and Natural Resources, 1991.

Manual of Conservation Engineering Guidelines. Illinois Department of Conservation, 1983.

Model Flood Plain Ordinance. Illinois Department of Transportation, Division of Water Resources and Northeastern Illinois Planning Commission, 1989.

Model Stream and Wetland Protection Ordinance. Northeastern Illinois Planning Commission, 1988.

Stream and Wetland Protection: A Natural Resource Management Priority in Northeastern Illinois. Dreher, D.W., R.D. Mariner, and C. Hunt, Northeastern Illinois Planning Commission, 1988.

Section 2. FLOODPLAIN MANAGEMENT

A. INTRODUCTION

Floodplains are commonly viewed as constraints to development but are also natural assets. The primary purpose of floodplains is to store and attenuate floods. Without human intervention, streams and rivers overflow their banks onto floodplains on a regular basis, on average once every year or two. Flooding becomes a problem only when human activities are placed in floodplains.

Floodplains and their associated stream, wetland, and shoreline areas provide other valuable functions. The edges of streams and rivers are the natural habitat of wildlife, songbirds, and many native plants. Strips of natural vegetation adjacent to streams, especially native grasses and trees, are also highly effective in filtering sediment and other pollutants washing off of adjacent lands. Many floodplains are effective recharge zones for underlying groundwater aquifers.

Historically, the value of floodplains has not been appreciated. Government agencies responded to flooding problems by instituting structural controls such as dams, levees, and channel enlargements. Only in the last two or three decades have government agencies implemented serious programs to control development in floodplains. Currently, both the state and federal government provide minimum regulations for new development in floodplains.

There is a clear role in floodplain management for local governments - in fact, state and federal agencies encourage more stringent regulations at the local level. Floodplain management should consider more than prevention of flood damages, however. Local floodplain management also should address the environmental attributes of floodplains, water quality concerns, and open space opportunities.

B. IMPORTANT DEFINITIONS

Floodplain: The land typically adjacent to a body of water which is inundated by a flood. In Illinois, the official regulatory floodplain is the **100-year floodplain** which is the land that would be inundated by the estimated **100-year flood.**

100-year Flood: The flood having a predicted one percent chance of occurring or being exceeded in a given year and which on average occurs once in 100 years. Also known as the base flood.

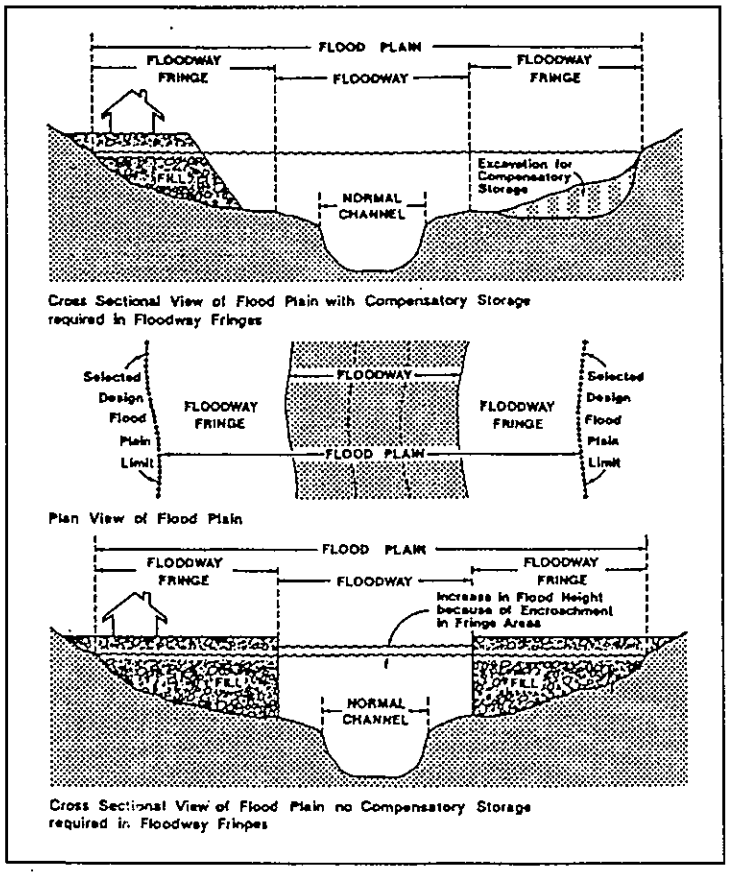
Floodway: The portion of the 100-year floodplain adjacent to a stream or watercourse. The floodway boundary is based on a determination of the area which is needed to store and convey the 100-year flood,

assuming the outer portion of the floodplain is filled, without causing more than a 0.1 foot increase in the flood stage.

Flood Fringe: The portion of the floodplain outside the floodway.

Freeboard: An increment of elevation (e.g., 1-2 feet) added to the 100-year, or base flood, elevation to provide a safety factor for placing new structures in the floodplain.

Figure IV-2
Floodplain/Floodway/Flood Fringe Diagram



C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *What are floodplain maps and how accurate are they?*

A: Maps of the 100-year floodplain are issued by the Federal Emergency Management Agency (FEMA). These maps indicate the expected boundaries and approximate elevations of the 100-year flood. Most of the current maps were prepared based on information available in the 1970s and 1980s. Many of these maps are no longer accurate because of

increased flooding due to recent development in upstream watersheds and because of outdated technical assumptions.

Q: *Don't federal and state agencies regulate development in floodplains - why should local governments get involved?*

A: State and federal regulations provide minimum standards for development in floodplains aimed at preventing increases in flood damages - their programs do not address many local situations or environmental concerns. Decisions to alter floodplains, and especially floodways and streams, should be the result of a careful planning process, which considers the full range of floodplain functions and accurately evaluates future risks and liabilities.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

Federal and state programs address several aspects of flood plain management. FEMA provides for insurance of flood prone structures through the National Flood Insurance Program (NFIP). FEMA also regulates the placement of new structures in the floodplain, requiring that buildings be elevated to the level of the 100-year flood. FEMA provides assistance during and after flood disasters, including funds for the acquisition of frequently damaged buildings.

The Illinois Department of Transportation, Division of Water Resources (IDWR) coordinates floodplain management efforts with FEMA. IDWR's principal concern is the prevention of offsite damages as a result of development in the floodplain. IDWR has established rules for development activities in the floodway and, in conjunction with NIPC, developed a *Model Flood Plain Ordinance for Communities Within Northeastern Illinois.* IDWR has delegated much of its regulatory authority to local governments, particularly in the flood fringe, and encourages local governments to adopt more stringent standards than the state minimums.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

Local governments can choose from an array of management programs to protect new development from flood damages and to preserve and enhance floodplain values. These strategies should be identified in a comprehensive plan.

Accurately Identify the Floodplain: The location of the floodplain should be identified prominently in the environmental section of the

comprehensive plan. The accuracy of the floodplain map in depicting current flood risks should be reviewed with IDWR. NIPC recommends upgraded standards for floodplain mapping in the *Model Flood Plain Ordinance*. In particular, floodplain mapping should reflect expected future watershed flooding conditions and should include significant storage areas in headwater zones (less than 1 square mile drainage) which are not generally identified on regulatory floodplain maps or regulated by IDWR. Additional information on unmapped floodplains may be obtained from county soils maps (generally available from Soil and Water Conservation Districts) and U.S. Geological Survey Hydrologic Atlas (HA) maps showing historical floods of record.

Establish Comprehensive Floodplain Management Policies: The comprehensive plan should concisely state the policies which form the basis for floodplain planning and regulation. The policy statement should reflect the comprehensive functions of floodplains in naturally storing and attenuating floods, protecting water quality, providing habitat and open space opportunities, and enhancing community development. The *Model Flood Plain Ordinance* reflects this comprehensive philosophy in its purpose statement.

Identify Appropriate Floodplain Uses and Zoning: Effective land planning for floodplains must reflect a wise balance between community development needs and the protection of natural functions. This may be accomplished by zoning which identifies **appropriate uses** of the floodway, as recommended in the *Model Flood Plain Ordinance*. Appropriate uses should not impair natural floodplain functions and should not increase a community's liability for flood damages. Identified appropriate uses might include golf courses, passive recreation, lawns, and water dependent activities. Prohibited uses of the floodway should include parking lots, buildings, most roadways (except where necessary for crossing a stream), and new wastewater treatment facilities. Sensitive areas adjacent to watercourses may be provided additional protection by requiring buffers of native vegetation.

Identify Open Space Opportunities: Targeting local open space acquisitions to floodplains is an effective and popular option in many municipalities. Floodplain acquisitions should be coordinated with local and regional open space and greenway planning and with the plans of countywide stormwater management agencies. Floodplains can be acquired by outright purchase or by mandated park donations from developers. Because of the regulatory constraints on developing floodplains, particularly floodways, the cost of floodplain land may be much lower than surrounding property. Another effective mechanism for protecting floodplain open space is a conservation easement. Finally, acquisition of frequently damaged floodplain buildings can be accomplished with the assistance of FEMA and IDWR. Acquired buildings can be moved or demolished and the land converted to open space.

Implement Effective Floodplain Ordinances: Nearly all local governments participate in the National Flood Insurance Program and are thereby required to enforce local ordinances consistent with the minimum requirements of the IDWR/

NIPC *Model Flood Plain Ordinance.* This ordinance provides for the elevation of new structures and buildings; requires compensatory storage for fill activities in the floodway; and limits development in the floodway to appropriate uses. Both FEMA and IDWR, however, are limited to regulating the quantitative aspects of flooding and flood damage - they do not address habitat and water quality considerations. Both agencies encourage local governments to implement more stringent local standards. Some of the additional controls recommended in the model ordinance by NIPC include the following:

- *requiring compensatory storage in the entire floodplain - IDWR only requires compensation for fill in the floodway*
- *discouraging certain uses of the floodway which are considered appropriate under State rules, including wastewater treatment facilities, garages and sheds, parking lots, and roadways which run parallel to a watercourse*
- *discouraging modifications of natural streams and requiring environmental mitigation for unavoidable impacts*
- *requiring a vegetated buffer strip for development activities within 25 feet of a stream channel*

Many of these additional controls for floodplain development have been incorporated in recent ordinances adopted by local municipalities and by the countywide stormwater management committees in DuPage and Lake counties.

Educate Residents about Flood Risks: Because of the complexity of issues surrounding floodplain management, local governments should make special efforts to educate residents about important topics such as floodplain maps and flood insurance availability. Helpful educational materials are available from IDWR and FEMA.

F. GOOD EXAMPLES

Communities in the Butterfield Creek watershed in south Cook County have joined together through a Steering Committee to develop a comprehensive approach to floodplain management. The municipalities of Flossmoor, Homewood, Matteson, Olympia Fields, and Richton Park have adopted the *Model Floodplain and Stormwater Management Code* developed by the Steering Committee. This ordinance conservatively regulates floodplain development consistent with most of NIPC's ordinance recommendations. The Steering Committee is actively pursuing the implementation of a *Flood Hazard Mitigation Plan* which calls for the adoption and use of updated floodplain maps, the acquisition of natural flood storage areas, the implementation of a stream mainten-

ance program, and the floodproofing of frequently damaged structures. (Contact: Village of Flossmoor, 2800 Flossmoor Road, Flossmoor, IL 60422 Tel:(708) 798-2300.)

G. CONTACTS

Federal Emergency Management Agency (FEMA), Region 5, 175 W. Jackson, 4th Floor, Chicago, IL 60604 (312) 408-5500

Illinois Department of Transportation, Division of Water Resources (IDWR), 201 W. Center Court, Schaumburg, IL 60196 (708) 705-4341

Northeastern Illinois Planning Commission, Natural Resources and Publications Departments. 222 South Riverside Plaza, Suite 1800, Chicago, IL, 60606 (312) 454-0400

County Stormwater Management Committees (SMCs)

Cook County SMC, c/o Northwest Municipal Conference, 1616 E. Golf Rd., Des Plaines, IL 60016 (708) 296-9200

DuPage County SMC, c/o Environmental Concerns Department, 421 N. County Farm Rd., Wheaton, IL 60087 (708) 682-7130

Kane County SMC, c/o Development Department, 719 Batavia Ave., Geneva, IL 60134 (708) 232-3497

Lake County Stormwater Management Commission, 333-B Peterson Rd., Libertyville, IL 60048 (708) 918-5260

McHenry County SMC, c/o Department of Planning and Development, 2200 N. Seminary St., Woodstock, IL 60098 (815) 334-4560

U.S.D.A. Soil Conservation Service/Soil and Water Conservation Districts County offices in:

Kane-DuPage County, 545 S. Randall Road, St. Charles, IL 60174
(708) 584-7961
Lake County, 70 S. US Highway 45, Suite 205, Grayslake, IL 60030
(708) 223-1057
McHenry County, 1143 N. Seminary Ave., Woodstock, IL 60098
(815) 338-0049
North Cook County, 675 North Court, Suite 120, Palatine, IL 60067
(708) 991-1189
Will-South Cook County, 100 Manhattan Rd., Joliet, IL 60433
(815) 723-5078

H. SUGGESTED REFERENCES

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Our Community and Flooding: A Report on the Status of Floodwater Management in the Chicago Metropolitan Area. Resource Coordination Policy Committee, 1991.

Section 3. STORMWATER DRAINAGE AND DETENTION

A. INTRODUCTION

Runoff rates from natural landscapes such as prairies and woodlands are quite low due to the absorptive capacity of the soil and the evaporative uptake of lush vegetation. When surface runoff does occur, it often is temporarily stored in adjacent depressions and wetlands. During very wet periods, surface overflow leaves the landscape via small swales and streams, eventually reaching large rivers.

Agricultural development has significantly increased runoff volumes and rates, primarily due to the draining of wetlands and the tiling of fields, speeding runoff quickly into artificial ditches and channels. Urban development has an even more dramatic effect on stormwater runoff, primarily due to **impervious surfaces** such as streets, parking lots, and roofs. On an annual basis, impervious surfaces generate three to five times as much runoff as pervious areas. Runoff also is increased from urban pervious areas (i.e., lawns) due to soil compaction and the conversion from deep-rooted prairie grasses and forests to shallow-rooted turf grass.

The construction of storm sewers and artificial channels further increases the rate and velocity of runoff. Historically, many natural storage areas, swales, and wetlands have been completely eliminated by urban development. This alone can increase downstream flooding by 30-50 percent by forcing more water into overburdened conveyance systems and floodplains. The obvious effect of uncontrolled urbanization is a substantial increase in the magnitude and duration of flooding and resultant flood damages. Studies have shown that the 100-year flood may increase by 100 percent or more as a watershed urbanizes. Increased runoff rates caused by urbanization also tend to destabilize downstream channels, causing streambank erosion which threatens buildings, bridges, and property.

In addition to identified flooding and streambank erosion problems, urban stormwater runoff causes severe water quality problems in the form of **nonpoint source** pollution. Urban runoff, especially from streets and parking lots, is contaminated with heavy metals, bacteria, nutrients, and petroleum byproducts. During construction, erosion from uncontrolled development sites contributes massive quantities of sediment. Urban runoff pollutants degrade receiving streams and lakes by killing sensitive aquatic life, impairing aesthetic conditions, and making swimming unsafe. Fortunately, with sound site planning and the implementation of stormwater **best management practices (BMPs)**, most urbanization impacts can be greatly reduced.

Unlike the regulations for floodplain management and stream and wetland protection, there are relatively few state and federal requirements for local stormwater management. However, for the last 20 years many local governments

in northeastern Illinois have required stormwater detention for new developments in an attempt to limit increases in downstream flooding. Improved awareness of stormwater impacts since major floods in 1986 and 1987 has led to significant improvements in stormwater drainage and detention requirements. Furthermore, water quality considerations also are beginning to be addressed in the implementation of new stormwater and construction site erosion control requirements.

B. IMPORTANT DEFINITIONS

Best Management Practices (BMPs): Measures used to control the adverse stormwater-related effects of development. BMPs include structural devices which temporarily store or treat urban stormwater runoff to remove pollutants, reduce flooding, and protect aquatic habitats. BMPs also include non-structural approaches, such as public education efforts to prevent the dumping of household chemicals into storm drains.

Detention: The temporary storage and controlled release of stormwater runoff during and after a storm. Detention is effective in controlling peak discharge rates and can provide an opportunity for the settling of stormwater pollutants.

Filter Strip: A well-vegetated strip of land which receives runoff from an adjacent impervious surface, thereby filtering runoff pollutants and providing an opportunity for the infiltration of surface runoff.

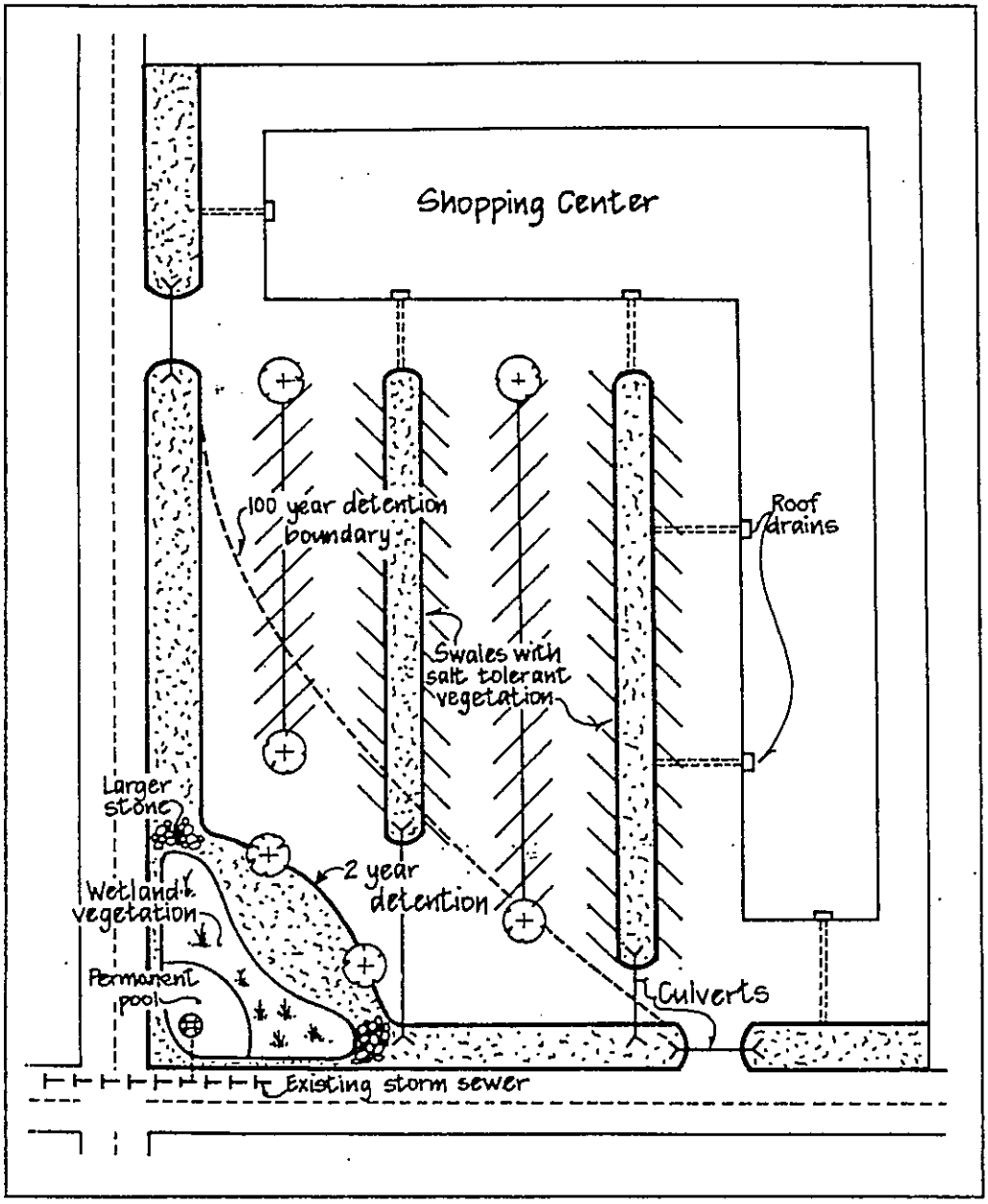
Infiltration: The downward movement of water from the surface into the soil. Practices such as infiltration basins and trenches, filter strips, and swales are effective in infiltrating runoff from impervious surfaces into the soil, thereby reducing runoff volumes and stormwater pollutant loads.

Nonpoint Source Pollution: Pollution which results from diffuse sources, such as runoff from urban and agricultural lands. In addition to urban runoff, urban nonpoint sources include construction site erosion, channelization of streams, and destruction of wetlands.

Release Rate: The allowed rate of discharge in volume per unit time from a detention facility.

Swale: A wide shallow ditch or depression used to temporarily convey, store, and filter runoff.

Figure IV-3
Stormwater BMP Schematic for Commercial Site



Source: BMP Guidebook for Urban Development (NIPC, 1992)

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *How effective is detention in preventing increases in flooding?*

A: Modern detention requirements can be very effective in controlling the effects of urban development on downstream flooding, up to a point.

Because urbanization increases both runoff volumes and rates, and because detention only controls runoff rates, detention will not be fully effective in preventing downstream increases in flooding, particularly in large watersheds.

Q: *Isn't stormwater drainage an engineering problem? How can it be addressed by land use planning?*

A: Traditionally, stormwater drainage has been addressed by engineers whose primary objective was to drain excess water off the land as quickly as possible. Modern stormwater management espouses a more holistic approach which strives to minimize runoff and to retain it onsite. These objectives are accomplished when land use and site plans attempt to minimize new impervious surfaces, protect natural depressions and swales, and direct runoff from impervious surfaces to vegetated swales and filters.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

There are no federal or state requirements to control the quantity of stormwater runoff from new developments, such as for purposes of flood prevention. However, the federal government, through the USEPA, does address the quality of runoff. Permits are required for certain stormwater discharges as defined under Section 402 of the Clean Water Act. IEPA has been delegated the authority to implement the stormwater permit program in Illinois. Of most relevance to local governments in northeastern Illinois is a requirement that all construction activities disturbing five or more acres of land obtain a stormwater permit. Site developers are required to develop a stormwater pollution prevention plan which identifies BMPs for controlling soil erosion and sedimentation during construction and stormwater runoff after the development is completed.

USEPA provides some assistance in the control of urban runoff pollution through Section 319 of the Clean Water Act. This section provides limited grant funds to accomplish demonstration projects, technical assistance, and education (but not for activities required under stormwater permits). This program is administered by IEPA in Illinois and local governments are eligible to submit funding proposals.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

A holistic philosophy for stormwater management program should be established in a community's comprehensive plan. In particular, the plan

should identify principal program objectives and a general strategy for achieving those objectives.

Establish Comprehensive Stormwater Management Policies and Objectives: The comprehensive plan should establish the policy basis for the community's stormwater management program and should address the following objectives:

- ✔ *prevent increases in downstream flooding*
- ✔ *minimize water quality degradation*
- ✔ *minimize downstream channel erosion and habitat loss*
- ✔ *maintain natural baseflows and recharge groundwater*
- ✔ *provide opportunities for multiple use of drainage and storage facilities*
- ✔ *provide for economical, safe, aesthetic, and socially acceptable drainage within new developments*

The recommended stormwater management philosophy encourages stormwater systems which mimic as closely as possible the runoff process of the site in its natural state by preserving natural storage, conveyance, and filtering mechanisms. In addition to achieving the listed objectives, this approach should reduce drainage system construction costs by minimizing the need for expensive capital improvements to convey, store, and treat increased runoff volumes and rates.

Conduct Watershed-based Stormwater Study: An important need to effectively manage stormwater is information on existing conditions, problems, and opportunities. The comprehensive plan should reflect the results of previous stormwater studies. If a comprehensive stormwater study has not been completed, the plan should recommend its initiation. A stormwater study should identify local watershed boundaries and natural and man-made drainage features such as ditches and storm sewers. The study also should identify locations of significant natural storage areas, including depressions and wetlands. The study should describe existing problems related to drainage, local flooding, sedimentation, and stormwater quality. Based on local conditions, the study should identify effective requirements for new development, remediation needs, and opportunities for regional detention facilities or retrofits.

Protect Significant Depressional Storage Areas: The landscape of much of northeastern Illinois is characterized as "poorly drained" by hydrologists. It contains many natural depressions, including wetlands, which pond water for extended periods during wet seasons and after major storm events. These depressions typically are not mapped as regulatory floodplains but should be protected nonetheless. If these areas are developed, substantial water ponding will occur in new developments and if they are allowed to be drained or filled, downstream flooding will increase. Depressions can be identified visually as locally ponded areas, typically in farm fields, during wet spring time conditions. County soils maps also may be useful in identifying depressions. Significant depressions can be mapped on zoning overlays and designated as unsuitable for

development. Another protection approach is to require compensatory storage for any fill or draining of identified depressional areas.

Implement Effective Control Practices for New Development: Requirements for stormwater management contained in local ordinances or subdivision regulations should embody a comprehensive, holistic stormwater management philosophy. It is recommended that a comprehensive approach include the following key elements which are embodied in NIPC's *Model Soil Erosion and Sediment Control Ordinance* and in the "**runoff reduction hierarchy**" contained in NIPC's *Model Stormwater Drainage and Detention Ordinance.* (Also see Chapter X for additional guidance on recommended site designs.)

1) **Provide effective soil erosion and sediment control during construction.** Sediment eroded from construction sites is one of the most important pollutants attributable to urban development. Subdivision codes must include effective erosion and sediment control regulations and must be diligently enforced. Effective construction site controls include: avoidance of highly erosive areas such as steep slopes; minimizing the area and time of disturbance; stabilizing disturbed areas with effective erosion control measures; trapping sediment before it leaves the site; providing routine maintenance and inspection of installed practices; and providing effective enforcement when necessary.

2) **Minimize impervious surfaces on the development site,** consistent with the needs of the project. This objective can be accomplished by minimizing required street widths, reducing house setbacks, and other techniques which are described in Chapter X.

3) **Attenuate flows in natural swales, depressions, and waterways.** This objective encourages site designs which, to the extent practicable, utilize the existing natural stormwater conveyance and storage features to infiltrate runoff and to filter out pollutants. This is in contrast to "modern" design practices which often fill depressions and replace natural swales with underground sewers and lined channels. Protection of natural drainage features can be accomplished by careful site planning and by planned unit developments (PUDs) which cluster development away from sensitive areas.

4) **Infiltrate and filter runoff from impervious surfaces.** This is accomplished by draining rooftops, streets, and parking lots onto adjacent lawns, filter strips, and swales, where feasible. This approach maximizes the use of the green areas of a development for stormwater management. Unfortunately, many existing subdivision codes discourage or prohibit this natural drainage approach by mandating the use of curb/gutter/storm

sewer systems. Such systems minimize opportunities for contact between impervious runoff and pervious landscaping.

5) **Provide effective stormwater detention.** Accepted stormwater detention standards have evolved significantly since the late 1980s. Recommended detention storage volumes have increased based on new information on statistical rainfall amounts and evaluations of detention performance. Detention release rates should be based on the natural carrying capacity of downstream channels and floodplains. Release rates also should be controlled for smaller storms such as the 2-year event to reduce the occurrence of downstream channel erosion. Detention should be designed to remove stormwater pollutants through improved settling, filtering, and biological uptake. These functions are achieved in basins designed like natural wetlands or ponds. Recommended detention design standards are contained in the *Model Stormwater Drainage and Detention Ordinance.*

6) **Construct storm sewers,** where necessary. This is the least preferred element of the runoff reduction hierarchy because storm sewers do not accomplish runoff infiltration, pollutant filtering, or flow attenuation; their only purpose is to convey runoff. While storm sewers are necessary on many developments, there is an over-reliance on them in many communities.

Educate Residents about Natural Drainage Approaches: The stormwater drainage approach recommended in this manual will result in visible water flowing and temporary ponding on the ground surface in designed swales and detention facilities. While this approach resembles the natural system, some residents and property owners may be disturbed because water does not "magically" disappear immediately after every rain. Public education will be helpful in conveying the rationale for this approach and in keeping inappropriate activities (e.g., fences) out of drainage easements.

F. GOOD EXAMPLES

The Lake County Stormwater Management Commission has implemented a comprehensive, countywide stormwater management program which embraces the natural drainage philosophy recommended in this manual. The Stormwater Commission was motivated by its concern over the effects of rapid development on sensitive streams, lakes, and wetlands. The Stormwater Commission also is developing watershed plans for the Lake Michigan and Flint/Mutton Creek watersheds to identify remediation and protection strategies for urban runoff and other water quality problems. (Contact: Lake County Stormwater Management Commission, 333-B Petersen Road, Libertyville, IL 60048 Tel:(708) 918-5260.)

Communities in the Butterfield Creek watershed in south Cook County also have incorporated the natural drainage philosophy into a new model stormwater code

in an attempt to minimize flooding, streambank erosion, and water quality problems. (Contact: Village of Flossmoor, 2800 Flossmoor Road, Flossmoor, IL 60422 Tel:(708) 798-2300.)

The Village of Lake in the Hills has worked out a memorandum of understanding with the McHenry County Soil and Water Conservation District (SWCD) for assistance in the administration of its erosion and sediment control ordinance. Via this exemplary arrangement, the SWCD provides valuable technical assistance in several areas, including reviewing erosion and sediment control plans, inspecting active construction sites, and advising the Village on ordinance compliance, maintenance requirements, and possible enforcement needs. (Contact: McHenry County Soil and Water Conservation District, 1143 N. Seminary Avenue, Woodstock, IL 60098 Tel: (815) 338-0049.)

G. CONTACTS

Northeastern Illinois Planning Commission, Natural Resources Department. 222 South Riverside Plaza, Suite 1800, Chicago, Illinois, 60606, (312) 454-0400

County Stormwater Management Committees

Cook County SMC, c/o Northwest Municipal Conference, 1616 E. Golf Rd., Des Plaines, IL 60016 (708) 296-9200

DuPage County SMC, c/o Environmental Concerns Department, 421 N. County Farm Rd., Wheaton, IL 60087 (708) 682-7130

Kane County SMC, c/o Development Department, 719 Batavia Ave., Geneva, IL 60134 (708) 232-3497

Lake County Stormwater Management Commission, 333-B Peterson Rd., Libertyville, IL 60048 (708) 918-5260

McHenry County SMC, c/o Department of Planning and Development, 2200 N. Seminary St., Woodstock, IL 60098 (815) 334-4560

U.S.D.A. Soil Conservation Service/Soil and Water Conservation Districts. County offices in:

Kane-DuPage County, 545 S. Randall Road, St. Charles, IL 60174 (708) 584-7961
Lake County, 70 S. US Highway 45, Suite 205, Grayslake, IL 60030 (708) 223-1057
McHenry County, 1143 N. Seminary Ave., Woodstock, IL 60098 (815) 338-0049

North Cook County, 675 North Court, Suite 120, Palatine, IL 60067
(708) 991-1189
Will-South Cook County, 100 Manhattan Rd., Joliet, IL 60433
(815) 723-5078

Illinois Department of Transportation, Division of Water Resources (IDWR), 310 S. Michigan, Suite 1606, Chicago, IL 60604 (312) 793-3864

Illinois Environmental Protection Agency, Division of Water Pollution Control, 2200 Churchill Rd., P.O. Box 19276, Springfield, IL 62794-9276
Permits Section - (217) 782-0610
Nonpoint Source Program - (217) 782-3362

H. SUGGESTED REFERENCES

Best Management Practice Guidebook for Urban Development. Northeastern Illinois Planning Commission, 1992.

Model Soil Erosion and Sediment Control Ordinance. Northeastern Illinois Planning Commission, 1991.

Model Stormwater Drainage and Detention Ordinance. Northeastern Illinois Planning Commission, 1990.

Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMP's. Schueler, T.R., Metropolitan Washington Council of Governments. Washington, D.C., 1987.

The Florida Development Manual: A Guide to Sound Land and Water Management. Florida Department of Environmental Regulation, Stormwater/Nonpoint Source Management Section, February, 1992.

Protecting Water Quality in Urban Areas, Best Management Practices for Minnesota. Minnesota Pollution Control Agency, Division of Water Quality. October, 1989.

Residential Stormwater Management. Urban Land Institute, American Society of Civil Engineers, National Association of Home Builders, 1975.

CHAPTER V

Land Use and Wastewater Facilities

Chapter V

LAND USE AND WASTEWATER FACILITIES

by Dennis Dreher
and
Helen Jost

A. INTRODUCTION

The planning of wastewater service needs is central to effective comprehensive planning. Wastewater facilities planning should take into consideration existing and projected development and associated service needs, the locations and timing of development relative to sewer lines and treatment capacities, cost-effective alternatives for treatment facilities and corresponding financial requirements, and water quality impacts. Clearly, to effectively accommodate projected development wastewater facilities must be planned, approved, and constructed on a timely basis.

Onsite wastewater, or septic, systems are the most basic form of wastewater treatment. Onsite treatment is most common in areas of low density with suitable soils and is generally satisfactory for household domestic wastes (e.g., human fecal waste, clothes washing, etc.) and domestic wastes of certain businesses. From a planning perspective, onsite wastewater systems are the easiest to implement because there typically is no need for public financing, state permits, and coordination of sewer extensions and treatment facility expansions.

More typical development densities found in smaller lot urban/suburban areas require central wastewater facilities for the collection, treatment, and discharge of wastewater to protect the quality of surface and groundwater. These centralized wastewater facilities have defined service areas and extensive, planned networks of interceptor sewers.

To facilitate effective wastewater facilities planning and to protect water quality, **facility planning areas (FPAs)** have been established with the authorization of the federal Clean Water Act. For each FPA, a **designated management agency** (e.g., a municipality, county, or sanitary district) is required to develop a **facility plan** documenting the existing and projected land use, population, and wastewater service needs within the FPA. The plan also analyzes wastewater treatment alternatives and recommends a preferred cost-effective alternative which is adequate to meet designated discharge standards.

The boundaries of most FPAs were initially established in the early to mid-1970s. Boundaries were established based on a number of factors, including: natural drainage boundaries (to accommodate gravity flow sewers), political boundaries, locations of existing treatment facilities, and cost-effectiveness assessments of regional treatment. In general, FPAs are sized based on the projected wastewater

service needs for a reasonable planning period (i.e., 20 years). Within a typical FPA, there may be one or more public treatment facilities as well as areas designated for no central wastewater service (e.g., served by onsite systems). Some FPAs also include designated sub-areas served by land treatment systems.

The amendment procedure for facility plans sometimes becomes the forum for boundary disputes between local governments. Municipalities seeking prized development parcels sometimes vie to expand their FPA boundaries far beyond existing service areas. If expansion requests are not based on sound planning principles and reasonable intergovernmental cooperation, the resultant wastewater decisions may not be the most cost-effective or sufficiently protective of water quality.

B. IMPORTANT DEFINITIONS

Designated Management Agency (DMA): An agency responsible for provision of wastewater service. DMAs include units of local government, sanitary districts, and wastewater utilities. Some FPAs have multiple DMAs including entities which provide wastewater treatment and others which may be responsible only for wastewater conveyance (e.g., sanitary sewers).

Facility Plan: A plan which comprehensively assesses wastewater service needs for a designated area and identifies a cost-effective strategy for existing and future service which meets water quality objectives.

Facility Planning Area (FPA): The area designated for wastewater planning in a facility plan. An FPA has legally defined boundaries which specify the limits of wastewater service.

Sewerable Density: The density of development which can be cost-effectively served by sanitary sewers. Very low densities require excessively long sewer lines and service connectors which are expensive to construct and maintain. While there is no universally accepted criterion, a rule of thumb is that residential lots should be smaller than one acre to achieve an effective sewerable density. Large lot developments are typically served by onsite wastewater systems due to lower costs and the availability of adequate land for wastewater infiltration.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *How are wastewater facility planning areas (FPAs) created?*

A: Most FPAs were initially created in the 1970s as a condition for receiving federal grants for the construction of wastewater treatment facilities. FPA creation, or amendment, requires the preparation of a facility plan, submittal of the plan for review by NIPC, and approval by IEPA.

Q: *What are the roles of NIPC and IEPA in the review of FPA amendments?*

A: NIPC, under contract to IEPA, reviews request for FPA boundary changes and treatment plant expansions. These requests are reviewed for consistency with the Illinois Water Quality Management Plan and with local and regional plans, forecasts, and policies. NIPC makes its recommendation to IEPA which has the final authority to approve amendments.

Q: *What is basis for decisions on the expansion of wastewater facilities?*

A: Requests for FPA expansions are judged based on their consistency with state and regional plans and policies, their effect on water quality and beneficial uses, their consistency with adopted population forecasts, their cost effectiveness and financial soundness, and their effect on adjoining units of government.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

Federal authorization for wastewater facilities planning is provided in **Section 201 of the Clean Water Act.** Section 208 of the Act also called for the development of coordinated **Areawide Water Quality Management Plans.** In addition to requiring the identification of wastewater treatment needs over a twenty-year period, sections 201 and 208 also dictate that plans address both point and nonpoint sources of pollution and identify open space and recreational opportunities expected to result from improved water quality. In 1979 NIPC completed the 208 Plan for northeastern Illinois and included in this plan by reference all adopted wastewater facility plans.

The State of Illinois is delegated by USEPA to regulate wastewater dischargers under the **National Pollutant Discharge Elimination System (NPDES).** Illinois has designated the IEPA (415 ILCS 5/39) as the state's pollution control agency responsible for implementation of the Clean Water Act. IEPA's authority includes the enforcement of water quality and wastewater discharge standards, approval of facility design and construction, and disbursement of federal construction grants and revolving loan funds. IEPA has the ultimate authority for the approval of FPA amendment requests. IEPA also maintains an extensive monitoring and reporting program for wastewater effluent quality.

Because wastewater facility planning sometimes conflicts with the goal of farmland protection, it should be noted that there are several laws which are intended to minimize the unnecessary conversion of farmland to nonagricultural

uses. These laws include the federal Farmland Protection Policy Act and the Illinois Farmland Protection Act. Both are described in detail in Chapter VI.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

Coordination Between Comprehensive Planning and Wastewater Facility Planning: Coordination is important, but not always accomplished in reality. Land use and population projections should be consistent in both plans. This may be particularly challenging in the case of a sanitary district or a regional FPA which includes multiple management agencies. Projections also should be current to facilitate timely amendments of FPA boundaries and treatment facility capacities. Proactive facility planning should reduce the likelihood of treatment facilities exceeding design capacities and thereby contaminating receiving waters with poorly treated effluent. Because facility plans are prepared for a 20-year planning horizon, and because actual growth and wastewater needs can change dramatically over 20 years, there may be a need to update the facility plan on a periodic basis.

Components of a Facility Plan: A comprehensive facility plan should include the following components:

- ✔ *description of the FPA, including boundary and existing and future population and land use*
- ✔ *description of existing water quality and use impairments*
- ✔ *description of effluent standards and performance of existing facilities*
- ✔ *discharge options for wastewater and residual sludge and water quality impacts*
- ✔ *boundaries for present and future wastewater service*
- ✔ *existing and future wastewater service needs (i.e., capacities)*
- ✔ *wastewater treatment options*
- ✔ *cost-effectiveness analyses and assessment of financial capabilities of the management agency(s)*
- ✔ *recommended treatment facilities and interceptor sewers*
- ✔ *a documented public participation process*

Several of these merit additional discussion.

FPA boundaries: The establishment of FPA boundaries should be closely coordinated with comprehensive plans. A general principle is that sound plans should direct development rather than plans and boundaries responding unpredictably to perceived, sometimes short-term development pressures. FPA boundaries

generally should follow watershed divides so that sewers can flow by gravity to treatment facilities. Needs for wastewater pumping, which is both more expensive and less reliable than gravity flow, should be minimized. Boundary decisions also should be supportive of contiguous development to minimize sprawl and avoidable interferences with farming activities.

Wastewater service areas: Within an FPA, existing and future wastewater service boundaries should be identified. Future service should be phased-in in an orderly fashion to promote contiguous development. Certain areas should not be served by sewers because of development limitations or alternative service options. Recommended non-service areas include wetlands, floodplains, state-designated natural areas, critical groundwater recharge areas, agricultural protection areas, and public open space. Non-service areas and areas more suitably served by onsite systems or land treatment should be identified in the comprehensive plan.

Discharge location: In general, wastewater facilities should be located near the lowest point in the service area. The determination of a discharge location should consider the assimilative capacity of potential receiving waterbodies. Discharges to lakes and small, high quality streams should be avoided. It is often preferable to provide treatment at a regional facility which discharges to a larger stream or river to take advantage of available dilution.

Detailed guidance on the preparation of facility plans is contained in *Construction Grants 1985*, listed under "Suggested References."

Intergovernmental Cooperation: A particular need in facility planning is intergovernmental coordination to decide issues of service expansion and boundary changes in a rational, cost effective manner. Boundary agreements should be established between communities in advance of the FPA amendment process. Cooperation is also critical in coordinating plans for regional treatment alternatives among multiple political entities. Regional treatment often has significant economic and water quality advantages but also involves a sharing of control among individual governments.

Watershed Protection: Development pressures and resultant wastewater service demands are sometimes in direct conflict with protection of high quality streams and lakes. Based on historical stream use data, it is known that sensitive, high quality waterbodies are generally intolerant of substantial urbanization in their watersheds. The presence of sensitive waterbodies should be taken into account in considering FPA expansions. Further, sewer service should not be extended to environmentally sensitive lands such as wetlands or floodplains. In addition, nonpoint source control measures as described in Chapter IV should be rigorously implemented to minimize adverse waterbody impacts.

F. CONTACTS

Northeastern Illinois Planning Commission, Project Review Department and Natural Resources Department, 222 South Riverside Plaza, Suite 1800, Chicago, IL (312) 454-0400

Illinois EPA, Division of Water Pollution Control, Planning Section, 2200 Churchill Rd., P.O. Box 19276, Springfield, IL 62794-9276 (217) 782-3362

G. SUGGESTED REFERENCES

Construction Grants 1985. U.S. Environmental Protection Agency, Washington, D.C., July 1984.

Illinois Water Quality Management Plan. Illinois Environmental Protection Agency, Springfield, IL, July 1991.

Water Quality Management Plan Amendment Process and Procedures. Northeastern Illinois Planning Commission, September, 1992.

CHAPTER VI

Land Use and Farmland Protection

Chapter VI

LAND USE AND FARMLAND PROTECTION

by Ed Weskerna
and
Dave Brandt
and
Steve Lazzara

A. INTRODUCTION

Agriculture is an industry that contributes significantly to the economic, environmental and social vitality of the region, particularly in rural communities. At the same time, the conversion of agricultural land has long been considered a necessity for economic development and growth. However, **prime farmland** often is converted prematurely with little consideration of the impacts to remaining agricultural infrastructure. This leads to speculation on other lands and often removes the incentive for farmers to reinvest into their farming operations. Substantial development in the midst of an agricultural area also may interfere with farming operations, including the movement of farm equipment on local roads. Further, new residents unaccustomed to practices such as manure spreading or nighttime harvesting may seek to limit such activities.

Unrestrained, the conversion of farmland occurs in a haphazard, unplanned pattern which may cause increased demands upon municipal services and infrastructure. Scattered, unplanned development that is not functionally related to adjacent land uses is often referred to as "sprawl." Sprawl is costly to taxpayers, erosive to the social values of small and moderately sized towns, and detrimental to environmental concerns such as air and water quality, flooding, stormwater management and open space preservation.

This chapter describes some strategies which may be implemented by local governments to enhance farmland preservation. These strategies recognize that planned growth that is compact and contiguous to the existing infrastructure is protective of farmland, reduces sprawl, and yet allows for economic expansion to take place. Strategies for reducing conflicts between urban activities and farm operations also are discussed.

B. IMPORTANT TERMS AND DEFINITIONS

Agricultural Areas Conservation and Protection Act (Ag Areas): Landowners can voluntarily enroll land into Ag Areas for a minimum of ten years initially. The minimum acreage allowable is 350. Ag Areas provide a certain degree of protection from nuisance complaints derived from normal farming operations.

Agricultural Infrastructure: Infrastructure needed for the support of agricultural activities, including agricultural service centers, labor housing, transportation, grain drying and storage facilities.

Prime Farmland: The U.S.D.A. Soil Conservation Service has defined Prime Farmland as land that has the best combination of physical and chemical characteristics for producing food, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion as determined by the Secretary. Prime farmland also includes land that possesses the above characteristics but is being used currently to produce livestock and timber. It does not include land already in or committed to urban development or water storage.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *What are some of benefits of preserving farmland?*

A: The principal benefit of farmland preservation is protection of the long-term productivity of the soil. Other benefits include preserving open space environs, minimizing stormwater and flooding impacts, protecting groundwater resources and natural systems, stabilizing property taxes, and protecting air and water quality and the aesthetic value of rural landscapes.

Q: *What techniques are available to prevent the premature conversion of farmland?*

A: One of the most obvious strategies is zoning. Zoning ordinances create the due process of public hearings and allow input from affected parties, including farm owners. The adoption of land use plans can also help by directing development away from prime farmland to less productive farmland or non-farm areas and can minimize leap-frog development.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

Federal Farmland Protection Policy Act, Public Law 97-98 - Effective December 22, 1981: The purpose of this subtitle is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that, to the extent practical, will be compatible with state, local government, and private programs and policies to protect farmland. This act specifically discourages locating wastewater facilities on significant agricultural lands, except when necessary to serve existing residential users.

Illinois Farmland Protection Act, PA 82-945 - Effective August 19, 1982: This act charges the **Department of Agriculture (D.O.A.)** with reviewing plans when federal or state money is involved with the conversion of farmland. When state funding is committed to a project affecting the conversion of farmland, the Illinois D.O.A. will determine if the project is in compliance with the agency's policy statements.

Agricultural Areas Conservation & Protection Act, PA 81-1173 - Effective July 1980: This Act establishes that it is the policy of the State to conserve, protect and encourage the development and improvement of its agricultural lands for the production of food and other agricultural products. It is also the policy of the State to conserve and protect agricultural lands as valued natural and ecological resources which provide needed open spaces for clean air sheds as well as for aesthetic purposes.

Protection of Farming Operations from Nuisance Suits, PA 82-509 - Effective September 16, 1981: When non-agricultural land uses extend into agricultural areas, farms often become the subject of nuisance suits. As a result, farms are sometimes forced to cease operations and farmers may be discouraged from making investments in farm improvements. It is the purpose of this Act to reduce the loss to the State of its agricultural resources by limiting the circumstances under which farming operations may be deemed a nuisance.

Illinois Soil and Water Conservation District Act - Effective July 9, 1937: This Act declared it to be in the public interest to provide for (a) the conservation of the soil, soil resources, water and water resources of this State, (b) the control and prevention of soil erosion, (c) the prevention of air and water pollution, and (d) the prevention of erosion, floodwater and sediment damages, and thereby to conserve natural resources, control floods, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers and harbors, conserve wildlife and forests, protect the tax base, protect public lands and protect and promote the general welfare of the people of this State. To implement these objectives, the Act authorized the establishment of county Soil and Water Conservation Districts throughout the state.

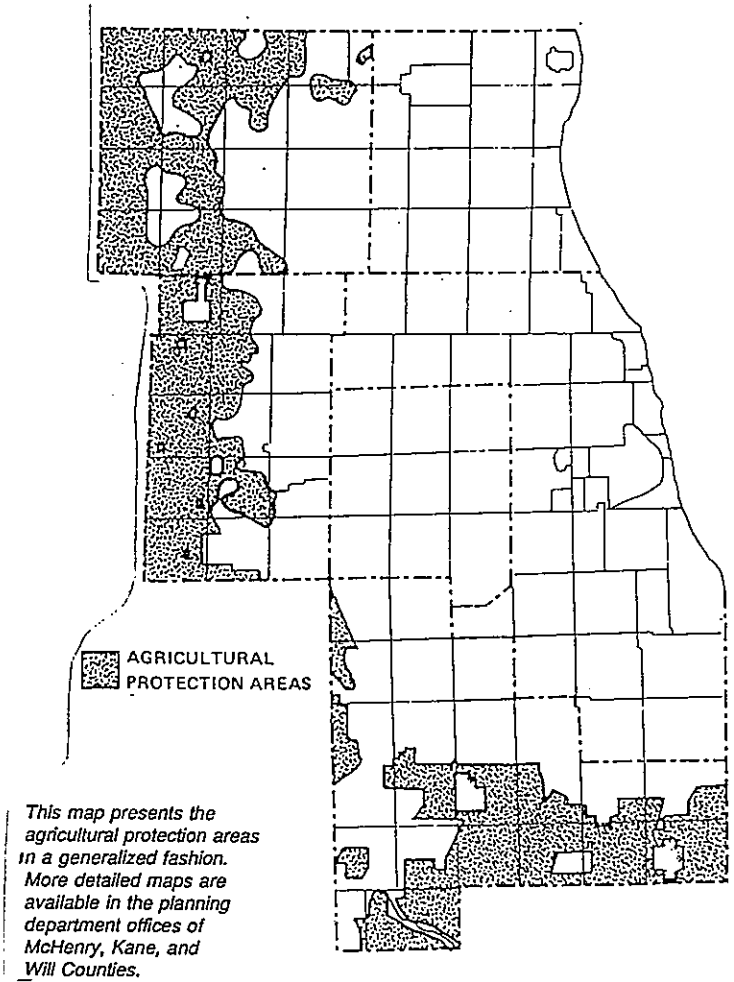
E. LOCAL PLANNING STRATEGIES

The following recommended strategies are intended to minimize the premature development of farmland and to reduce conflicts between new development and the farm community.

Agricultural Protection Areas: NIPC's *Strategic Plan for Land Resource Management* has adopted Agricultural Protection Areas which have been identified for protection by Kane, McHenry, and Will counties. See Figure VI-1 on the following page. When expansion of a wastewater facility planning area (FPA) into a designated Agricultural Protection Area is proposed, the applicant must demonstrate that the proposed FPA amendment has been planned in a manner that will minimize adverse impacts on agricultural resources and farming

operations. A finding and recommendation by NIPC will be based on the degree to which the proposal satisfies all of the following criteria: 1) a minimum amount of Agricultural Protection Area is included in the FPA amendment; 2) expansion of the FPA into the Agricultural Protection Area is necessary in order to accommodate growth consistent in amount with Commission forecasts; 3) the FPA expansion is based upon a comprehensive planning process which considers farmland protection; 4) the FPA expansion is required in order to accommodate an economic development opportunity of regional significance not provided for in a county or municipal plan; and 5) the applicant provides assurances that the proposed wastewater treatment and development regulations will protect water quality in the expanded FPA and in Agricultural Protection Area that could be affected by development within an expanded FPA.

Figure VI-1
Agricultural Protection Areas



Source: Strategic Plan for Land Resource Management (NIPC, 1992)

Adoption of Farmland Preservation Ordinances and Incorporation of Farmland Preservation into Land Use Plans: The first step in developing a farmland preservation ordinance is to identify those lands that are best suited for that purpose. Information concerning prime and important farmland soils can be found at the local U.S.D.A. Soil Conservation Service field office. Once these lands have been identified for protection they should be included in the text of the master land use plan. The plan also should state the goals, objectives and policies of farmland protection, based upon technical and economic criteria such as soil capabilities, existing land uses, and the extent to which municipal services exist. The resultant map will show those lands best suited for protection and those best suited for future development. Land use regulations are sometimes controversial and legal challenges may result when private lands are assumed to be devalued by land use regulations. While local governments can regulate land use when it is considered to be for the general welfare of the community, a "taking" can result if land use regulations preclude all economic use of a property, thereby rendering the property valueless. Agricultural zoning should not present this type of concern as long as farming is economically viable in these areas.

Purchase of Development Rights (PDR): Full land ownership is commonly referred to as "fee simple." Property rights often include the right to use the land for farming or forestry purposes or the right to build structures on the property and are frequently referred to as "development rights." State and local governments can protect highly valuable farmland parcels through the purchase of development rights where the development rights are purchased and then retired. The land owner is compensated for a one time buy out for the difference between the fair market value of the land and its potential development value. Consider the following example: A parcel is worth $20,000/acre fee simple (or with development rights). The farmland value has been determined to be $3,000/acre; therefore, the purchase of the development rights would cost $17,000/acre.

Transfer of Development Rights (TDR): The transfer of development rights is similar to the purchase of development rights, except that it allows the transferral of development rights use in another location. This may allow the owner of the development rights a higher density of development elsewhere. Due to the complexity of this program and the lack of clear enabling legislation it is not widely used.

Creation of Agricultural Areas: Ag Areas (as they are generally termed) are voluntary, legally recognized, geographic areas intended to create long term farming incentives. These incentives include protection from nuisance ordinances, protection from differential tax assessment and protection from state agency regulations that may hinder farming operations. In some cases there are tax incentives to keep land in agricultural production, such as those in Wisconsin. Ag Areas are approved by a county board and recorded on the property deed.

Conservation Easement: A conservation easement is a documented agreement through which landowners may voluntarily restrict their land to a specific use such as recreation, forestry, or farming in exchange for tax benefits.

Adoption of a Land Evaluation and Site Assessment (L.E.S.A.) Process: L.E.S.A. is a tool that can be used by decision makers to determine the suitability of a land use change as it relates to agricultural lands. L.E.S.A. includes a set of standards based on numerical ratings adopted by a county or municipality. The L.E.S.A. process produces a numerical rating of a parcel as it relates to the local government's growth policies, land use plans, and zoning ordinances. L.E.S.A. is applied by county Soil and Water Conservation District (SWCD) offices when preparing natural resource information reports for proposed land use changes for a county.

SWCDs provide numerous other services which can facilitate the implementation of farmland protection policies. For example, they can provide information to land owners and local governments on soils, wetlands, floodplains, geology, drainage, and runoff and erosion control. Educational materials are also available.

F. GOOD EXAMPLES

McHenry County emphasizes long-term preservation of farmland in its comprehensive plan and encourages compact, contiguous development to prevent premature farmland conversion and interruptions of farming operations. McHenry County's zoning ordinance requires a minimum residential lot size of 160 acres in agriculture-designated zones. The zoning ordinance also contains nuisance provisions to protect farming operations from potential complaints from residents in agricultural areas. The county also has adopted the L.E.S.A. system (described above) for reviewing proposed changes in land use in agricultural areas. Finally, to ensure effective implementation of these programs, the county provides strong legal support when challenges arise. (Contact: McHenry County Department of Planning and Development, 2200 North Seminary Avenue, Woodstock, Illinois, 60098. (815) 334-4560.)

G. CONTACTS

Illinois Department of Agriculture, Division of Natural Resources. Bureau of Farmland Protection, Illinois State Fairgrounds, P.O. Box 19281, Springfield, IL 62794-9281 (217) 782-6297

American Farmland Trust, Center for Agriculture and the Environment, Northern Illinois University, 148 N. 3rd St., DeKalb, IL 60115 (815) 753-9347

U.S.D.A. Soil Conservation Service/Soil and Water Conservation Districts. County offices in:

Kane-DuPage County, 545 S. Randall Road, St. Charles, IL 60174
(708) 584-7961
Lake County, 70 S. US Highway 45, Suite 205, Grayslake, IL 60030
(708) 223-1057
McHenry County, 1143 N. Seminary Ave., Woodstock, IL 60098
(815) 338-0049
North Cook County, 675 North Court, Suite 120, Palatine, IL 60067
(708) 991-1189
Will-South Cook County, 100 Manhattan Rd., Joliet, IL 60433
(815) 723-5078

H. SUGGESTED REFERENCES

Illinois Compiled State Statutes. Volume 1, Chapter 5. 1993.

McHenry County Land Evaluation and Site Assessment System. McHenry County Planning and Development Department, adopted 1986..

Planning and Zoning for Farmland Protection: A Community Based Approach. American Farmland Trust, January 1987.

USDA-SCS General Manual, Section 310. April 1984.

CHAPTER VII

Land Use, Transportation, and Air Quality

Chapter VII

LAND USE, TRANSPORTATION, AND AIR QUALITY

by Elisa Hoekwater

A. INTRODUCTION

Over the last twenty years the region's population increased by only 4.1 percent, while land consumption for residential development increased by an estimated 46 percent, and commercial/industrial land increased by 74 percent. This development has occurred primarily in suburban communities. Decentralization, with accompanying development of land for transportation facilities and an increased reliance on the automobile, has contributed to traffic congestion and poor air quality, as well as other environmental problems.

Federal requirements of the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Clean Air Act Amendments (CAAA) are forcing the regional planning process to reconsider the relationships between land use, transportation, and air quality. The integration of land use and transportation plans is intended in particular to improve the efficiency of the transportation network and reduce pollutant emissions. Northeastern Illinois has an excellent existing transportation system and if maintained and improved upon, this system should provide the means to achieve air quality goals. If the northeastern Illinois region does not take steps to comply with these federal requirements, sanctions could be imposed on Illinois, including the withholding of federal funds for the Illinois transportation program. Complying with these federal requirements will require the cooperative effort of state, regional, county, and local governments and agencies.

At the community level, coordinating land use with the design of transportation facilities can mitigate environmental impacts. Consideration can be given to landscaping with native vegetation, reducing the number of parking spaces required for commercial and office developments, and reducing noise and visual impacts. Reviewing site designs with regard to traffic circulation can also improve the function of collector and arterial roadways, and encourage alternative modes of transportation.

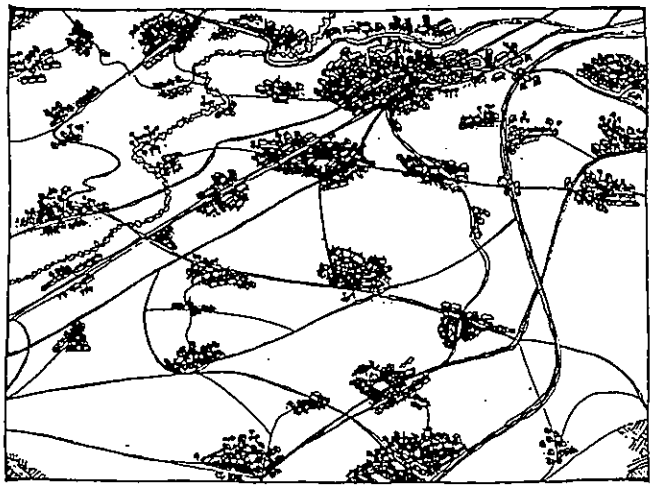
Communities can help to promote alternative modes of travel (walking, bicycling, public transportation) by encouraging land use densities which make alternative modes feasible and attractive. Municipalities can also revise land use plans to encourage a variety of land uses which complement each other. For example, commercial and office developments located within close proximity to residential areas can provide people with the option of walking, riding a bicycle, or taking a bus to work or to shopping. Also, once at work, if services and amenities are within a reasonable walking, bicycling, or transit trip, it would not be necessary to make solo auto trips during the work day. This has the additional advantage

of promoting transit or "pooling" options to and from work. Other strategies, such as site design modifications, land use and street patterns (e.g., "grid system"), and concepts such as diversified regional centers, also work to reduce reliance on automobile trips and improve air quality for overall trip making behavior.

B. IMPORTANT DEFINITIONS

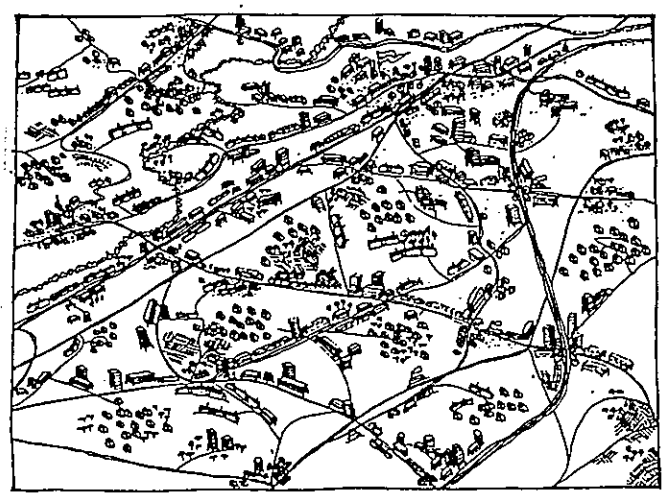
Cluster Site Design: In cluster developments units are grouped on particular areas of a site, leaving the remaining land as common open space. Cluster residential subdivisions require smaller lots, reduce infrastructure costs and may include more units. Clustering can also improve energy efficiency and air quality by reducing the amount of roadways needed to serve a development and by enhancing the efficiency of transportation services.

Figures VII-1, VII-2



The pattern of development outlined in the New Jersey State Plan clusters growth, preserving open space and aiding the development of public transit markets.

Source: The New Jersey State Planning Commission, 1988.



The current pattern of development consumes open space and is difficult to serve with mass transit.

Land Use Densities: Residential Density - the number of dwelling units per acre. In northeastern Illinois, small lot/multi-family residential areas average more than ten dwelling units per net residential acre and generally consist of attached, semi-attached, and multifamily dwellings. Medium residential densities range between 4.1 and 10.0 dwelling units per acre, and low-medium density residential development typically consists of detached single family homes with an average of 1.1 to 4.0 dwelling units per acre. Densities with between one dwelling unit per acre and one dwelling unit per four or five acres are generally classified as estate areas. Countryside areas are composed of residential densities of more than four or five acres per dwelling unit. **Employment Density** - the number of employees per quarter square mile. High intensity regional employment areas are developments where employment densities are expected to exceed 1,000 employees per quarter square mile. Developments where employment densities are expected to be less than 1,000 employees per quarter square mile are classified as low intensity regional employment areas. Employment areas with fewer than 1,000 employees per quarter square mile and employment establishments with fewer than 250 employees are considered to be of local significance.

Mixed Land Use: A mixture of land uses (such as office, residential and commercial) which are functionally integrated in the same building, site, or development complex. Revising zoning ordinances to permit a variety of mixed-use developments in or near a central business district or employment center is a method to promote walking when conveniently connected by sidewalks, and to promote bicycling and the use of public transportation.

Vehicle Miles Traveled (VMT): A measure of travel which is the product of the traffic volume (average weekday volume) and the length of roadways in miles. At the regional level, VMT is monitored and forecasted by the Chicago Area Transportation Study as part of the long range planning process. VMT is also estimated by the Illinois Department of Transportation. Together, these estimates of vehicle miles of travel are used with speed estimates to calculate air emissions for the northeastern Illinois region.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *How do the actions of local municipalities affect regional transportation and land use?*

A: Local decisions establish the type and density of development that impact whether regional transportation systems are needed and whether they can function effectively. Local decisions regarding land use and site design influence pedestrian and bicycle accessibility, the feasibility of providing transit service (based upon service criteria), and the volume of vehicular traffic on roads and highways. The cumulative effects of these decisions can quickly result in decreased accessibility, traffic congestion, and poor air quality.

Q: *What impact does the mix of land uses have on air quality?*

A: Locating a mix of land uses within close proximity to each other provides people with the option of walking or bicycling, or taking public transportation to their destinations rather than using a personal car. When residential areas are separated from office campuses or commercial areas, for example, the automobile is often chosen to be the most attractive alternative.

Q: *What relationship is there between low density development and air pollution?*

A: Low density development can contribute to air pollution by discouraging the use of alternative modes of transportation (walking, bicycling, and public transportation) and increasing reliance on the personal automobile. Low densities generally do not foster the mixing of land uses. If development is spread out over a larger area with inconvenient trip destinations, people will travel longer distances, prohibiting the option of walking or biking. Public transportation is more efficient where the pattern of development provides corrdiors and nodes of higher density residential and employment uses.

Q: *What guidelines are available to assist municipal governments with land use and site design decisions?*

A: Municipalities with commuter rail stations can look to a report by Metra and NIPC which recommends land use guidelines to integrate commuter stations with the surrounding community. Pace has also produced development guidelines to accommodate public transportation in development design. NIPC's Local Development Policy Task Force has produced a set of development guidelines that promote pedestrian access and safety and bicycle use. In addition, the Task Force has produced a guide for local officials regarding access management on arterial roadways. Reports for each of these and additional documents on the following topics are available at the Northeastern Illinois Planning Commission: balancing jobs and housing, diversified regional centers, and right-of-way protection.

Q: *What are the benefits of traffic signalization, and how might a municipality determine locations where traffic signals are appropriate?*

A: If properly designed, installed, and maintained, traffic signals can help reduce right-angle collisions, opposing left-turn collisions, and enhance pedestrian and bicycle safety. Traffic signals can be installed at high-volume driveways in order to separate conflicting maneuvers and to reduce traffic delays. They can also be installed to slow highway speeds and to create gaps which

permit turning vehicles to merge with traffic. Maintaining steady traffic flows enables vehicles to operate at design speeds and reduces the emissions that result from vehicles idling in traffic congestion. Traffic signals may be warranted where traffic volumes or accidents exceed state and local standards. Along urban and suburban Strategic Regional Arterial (SRA) routes, new traffic signals should be spaced no less than 1,320 feet and no less than one-half mile on rural routes. Recognizing that a major tradeoff associated with traffic signals is the increased delay to through vehicles, the Operation GreenLight program has explored interconnecting traffic signals as a means of avoiding unnecessary delays on SRA routes.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

The relationship between land use, transportation and air quality is being investigated as a means of complying with new federal requirements. Passed in 1991, the **Intermodal Surface Transportation Efficiency Act** (ISTEA) contains new planning requirements for metropolitan areas, a Congestion Mitigation and Air Quality Improvement Program for air quality non-attainment areas, and a portion of funding for "transportation enhancement activities," which include pedestrian and bicycle facilities. ISTEA also requires that the process for developing the long-range transportation plan be coordinated with requirements of the Clean Air Act Amendments. ISTEA requires that land use and air quality be considered as the northeastern Illinois region develops its long range transportation plan. Not only will the northeastern Illinois region be required to demonstrate the likely effect of transportation policy decisions on land use and development, but consistency between transportation plans and programs with land use and development must now be considered.

Transportation System Development (TSD) Plan: A long range regional transportation plan which provides a vision of the region's future transportation system, identifies regional goals and objectives, and directs transportation investments based on forecasted growth. Community support is needed as the Plan must be consistent with the region's development policies and it must also reduce vehicle emissions to conform with federal requirements of the CAAA and ISTEA. In order to reduce vehicle miles traveled (VMT) and vehicle emissions, communities can implement Transportation Control Measures (TCM). TCM's are air quality oriented strategies and measures designed to increase ridesharing, public transit, bicycling, and walking, and to improve the efficiency of land use and transportation facilities and services. Mixed land uses and land use densities are among the TCM's being investigated for the northeastern Illinois region.

The **Clean Air Act Amendments of 1990** require that air emissions be reduced by fifteen percent in northeastern Illinois (by the year 1996), and that emissions be reduced by an additional three percent annually between the years 1996 and 2007 or until the Chicago area reaches attainment for the federal ozone standard.

In addition, the Clean Air Act Amendments require that a **State Implementation Plan (SIP)** be developed. A SIP is a program of steps, projects, and programs that will ensure that a state will meet the national ambient air quality standards. Each state's plan must be approved by the U.S. Environmental Protection Agency. In northeastern Illinois, SIP revisions must be developed which "identify and adopt specific transportation control strategies and transportation control measures to offset any growth in emissions from growth in vehicle miles traveled or number of vehicle trips." On January 12, 1993, the Illinois General Assembly passed legislation entitled the Employee Commute Options (ECO) Act in direct response to a federal mandate of the Clean Air Act Amendments. This legislation requires employers in northeastern Illinois with 100 or more employees to submit a plan describing strategies to reduce the number of employees who drive alone to work. Municipalities can assist in complying with this legislation by working with employers and developers to design sites that facilitate non-automotive modes of travel.

Operation GreenLight is a program initiated by the Illinois Department of Transportation. The program is designed to reduce traffic congestion through specific highway, public transit, and land use actions in northeastern Illinois.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

Municipal governments can mitigate negative environmental impacts and improve air quality by integrating land use and transportation planning and decision making. The following list is a sample of activities that might be undertaken by local municipalities.

Incorporate regional land use policy and transportation facilities into long-range comprehensive plans: When preparing long range comprehensive plans, municipalities can incorporate regional land use policy and transportation facilities. Land use and site design regulations can also be used to encourage compatibility between roadways, particularly strategic regional arterials, and adjacent land. It should be noted that the Strategic Regional Arterial (SRA) Network is a 1350 mile network of arterial roadways identified in the Transportation System Development Plan to supplement the existing freeway system in northeastern Illinois.

When incorporating regional transportation facilities into comprehensive plans, local municipalities can identify rights-of-way for major facilities contained in the revised *2010 TSD Plan*, the *Pace Capital Operating Plan*, and coordinate with long-range plans of other transportation agencies. Consideration should also be given to coordinating local street plans with adjacent communities to optimize traffic flow, to ensure that

arterial roadways have adequate width for transit, and to ensure that sidewalks are installed on at least one side of residential streets.

Coordinate with subregional councils, corridor planning councils, and other intergovernmental efforts: Local governments should coordinate transportation improvement proposals through the Council of Mayors. Intergovernmental agreements may also be formed regarding future land use and design guidelines to ensure that plans are implemented.

Give priority to maintaining existing public infrastructure: Land use management strategies should stimulate redevelopment and infill, as well as compact and contiguous new development. For example, one of the major principles contained in the Planning Principles for Chicago's Central Area is to "direct high density development to where transit exists; limit parking in those areas where transit services are most available; and provide or improve transit service and facilities in developing and already developed areas to increase ridership." This reduces pressures on environmental resources in undeveloped areas and promotes the use of alternative modes of travel (walking, biking, transit) rather than auto use required with lower density patterns of development.

By promoting redevelopment and infill, local municipalities can help to make the existing transportation system more efficient by maximizing its use. Redevelopment and infill also helps to discourage further metropolitan decentralization.

Review site designs with regard to traffic circulation and access management: In order to improve the function of collector and arterial roadways and to encourage alternative modes of transportation, local municipalities should review site designs with regard to traffic circulation and with regard to the functional classification system for local and regional roadways. Access management coordinates the location of driveway access with adjacent land uses and the design of arterial roadways. Limiting access and/or turning movements along major arterial roadways, such as Strategic Regional Arterials, is a strategy to reduce traffic congestion resulting from traffic collisions and from vehicles entering/exiting the roadway. The survey of a cross access easement in Orland Park (described in Section F) is an example of how access management can reduce vehicle emissions by improving the internal site circulation at two adjacent shopping centers. Additional site design strategies include considerations for transit, bicycle and pedestrian accessibility, and providing priority parking for carpools and vanpools.

Promote use of public transportation: Through transit-friendly site designs, access to stations and bus routes can be improved. Mixing land uses is a land use management strategy (described in Section F) which enables people to use public transportation and walk or bike to their destinations. An additional strategy to facilitate public transportation access is to encourage the development of residential or employment clusters, as well as higher density corridors that transit can service more efficiently than lower density areas.

Promote walking and biking: Municipalities can promote walking and bicycling by first reviewing the existing street and pedestrian systems for suitability. Separate facilities for walking and biking can be provided where most appropriate. Municipalities should consider incorporating pedestrian and bicycle elements into comprehensive plans and promote intermodal alternatives to reduce reliance on the automobile and improve air quality.

Implement local air pollution controls: Municipalities can regulate or prohibit the burning of waste materials, leaves, and other yard waste on an individual's property. They can require individuals to obtain a permit from the Illinois Environmental Protection Agency, require that fires be contained in approved waste burners, and they can specify setback distances between fires and residences.

Reduce parking requirements: Off-street parking requirements are often an integral part of many zoning ordinances. Modifications in the number of spaces and the type of material required for parking lot construction may be environmentally beneficial: replacing or augmenting minimum parking space requirements with maximum limits may encourage people to use alternative modes of travel (such as public transportation, walking, or bicycling), and minimizing surface runoff by incorporating greenspaces into parking lot designs or by encouraging parking lot construction with porous materials, where appropriate. Developers also benefit from lower maintenance expenses. Adopting provisions for land banking is an approach that permits municipalities to review parking requirements for commercial and office development and alter the number of parking spaces required. Municipalities may also modify parking requirements to promote shared parking facilities among multiple uses. This approach is most effective when adjacent land uses have different peak characteristics. An additional strategy is to encourage employers to offer cash allowances to employees that do not park at work and instead ride transit, carpool, or find other ways to commute. This "Cash-out" strategy has been enacted by the California Legislature and is currently being proposed by the Clinton Administration.

Promote an effective jobs-housing balance: Local municipalities can also work to create a balance between jobs and housing. This objective of providing employment and affordable housing is designed to shorten commute distances, reduce traffic congestion and reduce vehicle emissions by providing people with the option of living and working in the same community. This option also offers the possibility of walking and bicycling or taking public transportation rather than driving a personal vehicle. NIPC's *Jobs-Housing Balancing and Regional Mobility* is an informative report explaining this concept in more detail.

Enhance transportation efficiency via greenways: The *Northeastern Illinois Regional Greenways Plan*, developed by the Northeastern Illinois Planning Commission and the Openlands Project, recommends a regional network of greenways. Regional, as well as local greenways can include

trails which may serve transportation as well as recreation needs. Local municipalities can assist with the coordination of plans and designs of greenways with transportation facilities to take advantage of opportunities for joint uses of rights-of-way and to encourage growth of native vegetation.

Implement Diversified Regional Centers (DRC's): A DRC is a large-scale concentrated area of mixed land uses, including employment and housing, which is planned in order to support a diversified internal transportation system as well as excellent regional transportation linkages. DRCs are intended to promote economic development, reduce suburban sprawl, mitigate regional traffic congestion and air pollution, improve job-housing imbalances, and increase cultural opportunities. Buildings within DRC's are situated to facilitate pedestrian movement, to reduce trip lengths, and to provide convenient access to public transportation. Although it is not appropriate for all communities to develop the densities recommended for diversified regional centers, the guidelines for transit accessible site design and complementary land uses are applicable throughout the region.

F. GOOD EXAMPLES

Within the northeastern Illinois region there are many good examples of land use and site design strategies which can be used to improve air quality. NIPC staff surveyed a number of municipalities which had implemented the following transportation control measures (TCM's).

Mixed Use Developments: In the Village of Lombard, residents who moved into the Park Avenue Apartments (which is two blocks from the Metra commuter station, shopping, and recreational facilities) changed modes from driving alone (10 percent) and reduced the weekly number of vehicle miles travelled for work and non-work trips. The Elmhurst Place Apartments (located within a block of the Elmhurst commuter rail station, shopping, restaurants and other facilities) also have a positive impact on air quality. A survey of residents found that 14 percent of the people who previously drove to work now take the train, and the distance driven to work and other destinations is shorter - reducing vehicle emissions. (Contacts: Village of Lombard, 255 East Wilson Avenue, Lombard, IL 60148, Tel: (708) 620-5700; Village of Elmhurst, 209 North York, Elmhurst, IL 60126, Tel: (708) 530-3000.)

Similar air quality benefits have resulted when employers relocate from suburban locations to central business districts which are transit accessible. One survey of the Bank Administration Institute (formerly in Rolling Meadows and now in Chicago) found that 100 percent of the people who previously drove now take the train to work. In Evanston, the Altschul Group moved from the outskirts of Evanston to downtown Evanston. Though there were fewer shifts from driving to other travel modes (15 percent) and vehicle miles travelled (VMT) actually increased slightly due to longer trips, a large percentage of employees have switched from driving alone to walking for non-work related trips (errands,

shopping, and other business). (Contacts: Northeastern Illinois Planning Commission, Planning Services Department, 222 S. Riverside Plaza, Suite 1800, Chicago, IL 60606, Tel: (312) 454-0400. City of Evanston, 2100 Ridge Avenue, Evanston, IL 60204, Tel: (708) 328-2100.)

Site Design Strategies: The Village of Downers Grove constructed a new sidewalk to connect the Metra commuter rail station at Belmont Avenue with an adjacent neighborhood (including residences, a school, an industrial park, and other facilities), and found that over 25 percent of the pedestrians utilizing this sidewalk previously drove to the station. In the Villages of Deerfield and Schaumburg, bicycle storage facilities installed at commuter rail stations have also been found to encourage people to commute by bicycle rather than drive. (Contacts: Village of Downers Grove, Civic Center - 801 Burlington Avenue, Downers Grove, IL 60515, Tel: (708) 964-0300. Village of Deerfield, 850 Waukegan Road, Deerfield, IL 60015, Tel: (708) 945-5000. Village of Schaumburg, 101 Schaumburg Court, Schaumburg, IL 60193, Tel: (708) 894-4500.)

The Village of Orland Park has had a positive impact on air quality by requiring that developers install a cross-access easement between two shopping centers. This form of access management improves traffic flows on major roadways and reduces vehicle emissions. Vehicles may now travel from one shopping center to another without having to use major roadways. The Village of Schaumburg has also required this type of easement agreement for the past seven years and has been successful in obtaining cross-access. (Contacts: Village of Orland Park, 14700 Ravinia Avenue, Orland Park, IL 60462, Tel: (708) 403-6100. Village of Schaumburg, 101 Schaumburg Court, Schaumburg, IL 60193, Tel: (708) 894-4500.)

Land Development With Bicycle Considerations: The Villages of Orland Park and Schaumburg have developed bicycle plans as elements of their official comprehensive plans. Orland Park has stipulations within its land development code requiring the construction of bicycle paths when new development occurs adjacent to a proposed bikeway. Developers may either construct or help to finance these bicycle facilities. In Schaumburg, developers are required to finance or construct bicycle paths in the same manner as they might provide sidewalks, street lighting, or landscaping. Schaumburg also requires the installation of bicycle parking facilities at all commercial (office/retail) developments, and lists these requirements in its zoning ordinance.

Land Banking For Parking Management: The Villages of Lake Zurich and Bloomingdale are two communities which have adopted provisions for land banking. As mentioned in section E, land banking is an approach that permits municipalities to review parking requirements for commercial and office development and alter the number of spaces required. (Contacts: Village of Lake Zurich, 70 East Main St., Lake

Zurich, IL 60047, Tel: (708) 438-5141. Village of Bloomingdale, 201 South Bloomingdale Rd., Bloomingdale, IL 60108, Tel: (708) 893-7000.)

Intergovernmental Land Resource Planning: Recently, there have been a number of intergovernmental corridor-wide planning councils formed to coordinate anticipated growth and transportation improvements. The first of these intergovernmental councils was initiated in central Lake County to coordinate all aspects of anticipated growth and to anticipate the potential impacts of a proposed expressway. The Corridor Planning Council of Central Lake County is a good example of corridor-wide, intergovernmental land resource planning which has resulted in coordinated transportation and development design standards. Municipalities of central Lake County have worked to achieve a common vision of future development and to address the planning needs surrounding the proposed construction of the Lake-Will Expressway North. The revised *2010 Transportation System Development Plan* and the *Strategic Plan for Land Resource Management* recommend that this process of intergovernmental land resource planning be employed for all major expressway and transit facilities. (Contact: Northeastern Illinois Planning Commission, Planning Services Department, 222 S. Riverside Plaza, Suite 1800, Chicago, IL 60606. Tel: (312) 454-0400.)

G. CONTACTS

Chicagoland Bicycle Federation, 343 S. Dearborn, Suite 1017, Chicago, IL 60604 (312) 427-3325

Chicago Lung Association, 1440 West Washington St., Chicago, IL 60607 (312) 243-2000

Lake Michigan Air Directors Consortium, 2350 East Devon Avenue, Des Plaines, IL 60018 (708) 296-2181

Northeastern Illinois Planning Commission, Planning Services Department, 222 S. Riverside Plaza, Suite 1800, Chicago, IL 60606 (312) 454-0400

Metra, 555 W. Jackson, Chicago, IL 60606 (312) 322-6900

Pace, 550 W. Algonquin Rd., Arlington Heights, IL 60005 (708) 364-8130

Sierra Club, 506 South Wabash St., Chicago, IL 60605 (312) 431-0158

H. SELECTED REFERENCES

Clean Air Act Amendments of 1990: The Illinois Employee Commute Options Legislation. Chicago Area Transportation Study. 1993.

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CHAPTER VIII

Land Use and Energy Conservation

Chapter VIII

LAND USE AND ENERGY CONSERVATION

by Toby Sachs

A. INTRODUCTION

The availability of an adequate energy supply is an important national and international policy issue. Energy usage also is an important local issue to the extent that it affects cost of living and regional economic competitiveness. Recent national trends show substantial increases in energy usage. Between 1973 and 1992, total energy consumption increased by 11 percent, and energy consumption for transportation increased 21 percent. Net energy imports during this period increased by 15 percent.

Conservation of energy in its various forms -- natural gas, petroleum, coal, nuclear -- is clearly in the interest of environmental protection and economic viability. Energy conservation can reduce air pollution, global warming, and unnecessary destruction of natural resources. Traditionally, energy conservation concerns have been addressed through national policy decisions such as fuel efficiency standards and oil import fees. Energy conservation also has been affected through personal and corporate decisions related to vehicle usage; and heating, cooling and insulation of buildings.

The actions of local governments also can significantly affect energy conservation. Local land use policy, in particular, substantially affects the use of energy through its effects on the transportation system. For example, land development patterns and densities influence the number of vehicle miles travelled which, in turn, determines the amount of energy used for travel. The availability of practical alternatives to automobile travel, such as sidewalks and bicycle lanes or paths, saves transportation energy.

Energy conservation also can be realized through site designs and building orientation which influence the amount of energy used for heating and cooling. Building codes can establish minimum standards for insulation. Site design and the network of streets can influence the energy needed for street lighting, snow plowing, and other municipal services which consume energy.

This chapter will focus on these and other local government approaches for improving energy conservation.

B. IMPORTANT DEFINITIONS

Energy: The capacity to do work. Energy is usually converted from one form to another when put to practical work. For example, work in the form of heat energy is required to warm a building.

Renewable Energy: Energy produced through the use of non-depletable resources - direct sunlight, wind, water, and plant matter.

Solar Energy: Energy derived directly from incident solar radiation.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *How can comprehensive planning enhance energy conservation?*

A: Energy conservation can be enhanced by plans which promote an efficient use of land so that travel can be minimized. Comprehensive plans also can encourage site designs which are more efficient with respect to energy and natural resource needs (e.g., improved solar access, reduced landscaping).

Q: *What kinds of land use patterns are most effective in saving energy?*

A: Mixed use development can be an effective energy conservation approach. In this type of development ancillary facilities are conveniently located on the development site in order to serve the primary land use. For example, if the primary use is residential, the site would include uses such as a grocery store and pharmacy within walking or biking distance. In this case, energy is saved by reducing the need for automobile travel.

Q: *How can we plan for energy conservation in a community which has only a limited amount of vacant land?*

A: Energy conserving planning principles and strategies can be applied to both developed and undeveloped areas. In mostly developed communities, for example, street patterns and pedestrian links between adjacent subdivisions can be improved to enhance access and reduce excess automobile travel. Energy conservation principles also can be applied to redevelopment activities.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

The federal **Energy Policy Act** of 1992 emphasizes state energy efficient building codes; establishes standards for many types of equipment; and ties the availability of federal mortgage assistance for new residential buildings to compliance with energy efficiency standards.

The federal **Intermodal Surface Transportation Efficiency Act** (ISTEA) requires land use and transportation plans to be integrated and consistent.

Funding is provided for more energy efficient transportation modes such as bikeways and walkways.

The Illinois **Local Land Resource Management Planning Act** (1985) encourages municipalities and counties to protect the land, air, water, natural resources and environment and encourages the use of such resources in a manner that is socially and economically desirable through the adoption of joint or compatible Local Land Resource Management Plans.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

The comprehensive plan is the basic county or municipal guide for the future. It contains statements of local goals, objectives and policies that will guide the decision-making process. The pattern of land uses and the timing of their development as set forth in the comprehensive plan are the most important determinants of community energy use. In formulating a new comprehensive plan or revising an existing plan, an energy conscious pattern of land uses would include:

Encourage Mixed Use/Balanced Development: The plan should promote mixed use developments as an approach to increased convenience and reduced automobile travel. Ideally, such areas should contain sufficient permitted density to allow for a variety of housing types and the provision of transit. Neo-traditional design is an example of such development. The plan also should provide for appropriately located activity centers which bring together diverse business, recreational, and other appropriate uses as an easily accessible community focal point.

Promote an Efficient Jobs/Housing Balance: Comprehensive plans should strive to achieve an appropriate balance between the location of jobs and the location of affordable housing. An efficient balance will reduce distances between the residences of employees and their places of work, thereby reducing travel times and conserving energy. Achieving this objective can be greatly furthered by effective cooperation and coordination among adjacent communities.

Discourage Sprawl Development: Local plans should include land use management policies which promote contiguous development, thereby reducing the impetus toward sprawl.

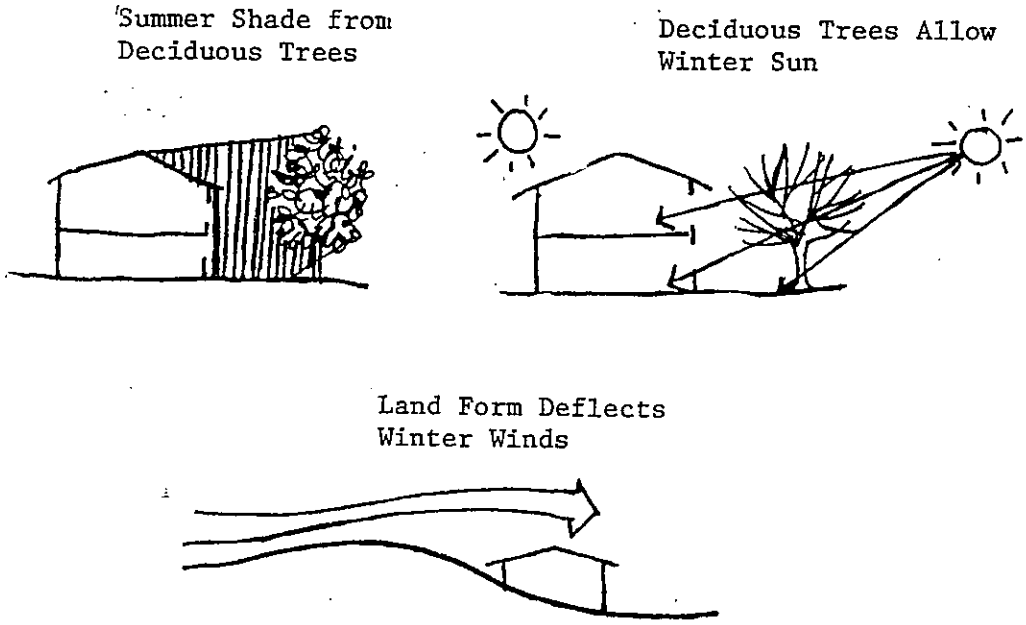
Promote Infill Development: Most localities have some scattered vacant lots that can be developed, but which may not meet current development regulations such as minimum lot size. To encourage the use of these lots, local governments may consider revising their regulations to allow an appropriate use to be constructed.

Encourage Energy Efficient Site Plans: Effective site plans include many components that influence energy use, including usage related to transportation, building heating and cooling, and maintenance. Site planning approaches that are conducive to energy conservation include:

- A street pattern that emphasizes east-west streets which allow maximum south facing facades that are appropriate for solar access.

- Site orientation and landscaping that utilizes natural topography and plantings to provide protection from winter winds and summer sun. Tree preservation ordinances are supportive of this objective.

Figures VIII-1, VIII-2, VIII-3



Source: Cost-Effective Site Planning, National Association of Homebuilders, 1976

- Encouragement of native vegetation approaches which can greatly reduce maintenance needs and associated

energy demands as compared to traditional landscaping approaches which rely on turf grass.

Identify an Efficient Transportation Element: The transportation element of the comprehensive plan has a major energy impact. PACE Development Guidelines may be consulted in formulating this element. This element is discussed in Chapter VII.

Promote an Energy Efficient Building Code: A building code with strong energy conservation requirements is a basic ingredient and should be encouraged in the comprehensive plan.

F. GOOD EXAMPLES

The planned communities of the 1960s incorporated many features of energy conscious communities. For example, both Columbia, Maryland and Reston, Virginia have a suburban character but also include extensive industrial and commercial developments. In both, pedestrian and bicycle amenities were integrated into the design of the streets.

Several neo-traditional communities are under construction. One such development is Laguna Creek, an 800 acre site south of Sacramento with a mix of shops, offices, public and cultural facilities, and a full spectrum of housing. The community is linked by planned light rail transit, walkways, and trails for bicycling, jogging, and horseback riding.

While there are no neo-traditional communities in the Chicago metropolitan area at the present time, plans are being formulated for such a community in western Kane County. The Prairie Crossing development in Lake County includes neo-traditional characteristics and planned pedstrianways and bikeways.

G. CONTACTS

American Planning Association, 1313 E. 60th St., Chicago, IL 60637 (312) 955-9100

American Society of Landscape Architects, 4401 Connecticut NW, Washington, DC 20004-2302 (202) 686-2752

Northeastern Illinois Planning Commission, Planning Services Department, 222 S. Riverside Plaza, Suite 1800 Chicago, IL 60606 (312) 454-0400

PACE, 550 W. Algonquin Rd., Arlington Heights, IL 60005 (708) 364-7223

Urban Land Institute, 625 Indiana N.W., Suite 400, Washington, DC 20004 (202) 624-7000

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CHAPTER IX

Land Use and Open Space

Chapter IX

LAND USE AND OPEN SPACE

by Richard Mariner
and
Betsy Otto

A. INTRODUCTION

Open space is not the same as vacant land. Open space is open area that is preserved and managed because it has value to communities and their residents. In most cases, open spaces can offer multiple benefits, including: outdoor recreation, preservation of animal and plant habitat, air and water quality improvement, flood and stormwater management, visual and other sensory relief from the built environment, nature education, physical definition of land areas, and economic well-being of communities. In northeastern Illinois, open space ranges from high quality prairies, to greenways buffering the entire length of a river or stream, to vacant lots that are reclaimed for parks in urban areas.

Open space is infrastructure, just like roads and schools. Municipalities and park districts undertake planning and budget their fiscal resources in order to acquire and manage open space so they to obtain the benefits that open space has to offer. There is an economy to providing open space in that it improves the attractiveness of communities for investment and as places to live and work. It helps avoid the hazards and costs that can occur when floodplains are allowed to develop and when expensive structural measures are required in order to solve flood and stormwater problems.

In some instances, private land functions as open space by providing open space benefits and by being protected and managed as open space.

Open space is part of the land use "balance" of communities. As the demand for outdoor (especially trail-related) recreation increases, and as citizen concerns regarding the cost of government mount, local officials must find the most effective ways of providing open space and using open space for greatest benefit.

Open space is under constant pressure in the region. Much of northeastern Illinois' original native prairies, wetlands, and woodlands have been converted to commercial and residential development and farmland. Less than one-tenth of one percent of Illinois' native landscape remains. Surprisingly, a high percentage of these beautiful and biologically rich lands survive in northeastern Illinois. Vacant and agricultural lands are being developed at a rapid rate.

Northeastern Illinois lacks dramatic topography. Thus, there are few natural checks on development, unlike other regions with steep slopes. The landscape is easily altered to accommodate growth. As a result, many of northeastern Illinois

open space resources are easily converted into an urbanized landscape. The preservation of open space is major tool for defining the character and quality of communities.

Planning for open space should consider inter-community and regional relationships and interdependencies. Open space along a stream may logically be part of a regional greenway network. The quality and quantity of water flowing in that stream is affected by the open space and land management decisions of communities upstream. Planners and elected officials need to work together to ensure that land use decisions take into account the needs for open space and potential impacts on open space.

B. IMPORTANT DEFINITIONS

Acquisition: One of the methods by which open space plans can be implemented. Acquisition can involve purchase (either fee simple or less than fee), condemnation, gift or donation, and exchange.

Buffer Zone: A piece of land established to separate one type of land use from another. Open space may be used to screen industrial and residential areas from one another or to provide fragile habitat protection from intense human activity.

Cluster Development: A method for preserving open space by clustering buildings in order to provide larger areas of open space. An alternative to traditional development which provides relatively large expanses of private lawn around individual buildings.

Dedication: A setting aside of land for some public use by an owner or developer and its acceptance for such use by the public. Municipalities often require dedications of open space by developers as a condition of development approval.

Easement: A partial right to land which may be acquired by an open space jurisdiction which does not involve transfer of title but causes open space benefits to be provided and preserved. Easements can be negative in that they constrain what an owner can do, or they can be positive by giving the right of public access for a trail. Common types of easements are conservation easements and scenic easements, which limit development and preserve scenic vistas. Conservation easements are becoming increasingly important as a means of protecting environmentally sensitive areas. Conservation easements can be acquired by or granted to public entities such as forest preserve districts. In addition, conservation easements can be held by land trusts and organizations such as Corlands and the Nature Conservancy.

Grants: Direct financial assistance to local open space jurisdictions for the purpose of open space acquisition and development. Examples include the federal Land and Water Conservation Fund and the Illinois Open Space Land Acquisition and Development Program, both administered by the Illinois Department of Conservation.

Greenway: Linear open space, such as along a stream or using former railroad right-of-way.

Illinois Nature Preserve: An official designation by the Illinois Nature Preserves Commission achieved through agreement with a landowner which protects high quality environmental areas and establishes the nature preserve as highest and best use of the property.

Land Trust: A private non-profit corporation formed to hold land as open space for educational, conservation and/or scientific purposes.

Natural Area: Areas identified in the Illinois Natural Areas Inventory has having statewide significance based on the presence of particular features such as relatively undisturbed terrestrial or wetland natural communities and habitat for endangered or threatened species. The term is also used generally to designate an area that contains high quality habitat.

Open Space: Open space is land area that has a very low ratio of development to open area. Open space is maintained with an open character for purposes of conserving and managing natural and cultural resources, providing outdoor recreation opportunities, and providing aesthetic benefits.

Open Space Jurisdictions: In Illinois open space is frequently owned and operated by municipalities, park districts, school districts, forest preserve and conservation districts, state agencies such as the Illinois Department of Conservation, as well as occasionally by sanitary districts, townships, and other jurisdictions. There are currently no federally-owned open space areas within the six-county metropolitan area.

Police Power: Government's right to regulate an individual's conduct or property to protect the health, safety, and welfare of a community. The police power is the basis for zoning and other regulations which can be used to help preserve open space.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *How much open space is needed in my community?*

A: The question of open space standards is a complex one. The amount necessary is usually determined through an analysis of neighborhood and community-wide needs for outdoor recreation area, for environmental

protection and management, and for other open space uses such as beautification, buffers, etc. As a rule of thumb, NIPC has endorsed the recommendations of the National Recreation and Park Association of a minimum of 10 acres of local park land and 20 acres of regional open space for every 1000 persons. Communities are extremely varied in their population characteristics, the opportunities for providing open space, and the needs for environmental management. Therefore, local examination of needs is very important and requires understanding the demographics and environment of the community as well as defining community goals.

Q: *How can I make sure that a particular parcel of land is preserved as open space?*

A: The most certain approach is to make sure the parcel is owned or otherwise controlled by an open space jurisdiction such as a park or forest preserve district. Since jurisdictions must manage limited fiscal resources, it must be demonstrated that the parcel is an important open space and that it logically fits into the jurisdiction's overall program. There are funding sources that a jurisdiction may use to supplement local funds for acquisition purposes. There are also private open space agencies that can provide technical assistance or acquire land on an interim basis if an ultimate public owner can be identified. There are a number of land trusts and other private organizations in the region that own and manage open space. See the "Contacts" section at the end of this chapter.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

There are several state and federal programs that provide financial assistance for the acquisition and development of public open space. The principal programs are identified in the following section.

The are also federal and state regulatory programs relating to wetlands, rivers and streams, and floodplains which support open space preservation. These are identified in Chapter IV.

In addition, state consultation and regulatory programs are in place in order to protect endangered and threatened species and archaeological sites. Endangered and threatened species information can be obtained from the Illinois Department of Conservation, Division of Natural Heritage, and the Illinois Endangered Species Protection Board. The Natural Heritage Division and the Illinois Nature Preserves Commission can be contacted regarding existing and potential Illinois Nature Preserves and the Illinois Natural Areas Inventory.

Archaeological site information is available from the Illinois Historic Preservation Agency, which has maps of high probability areas showing locations likely to contain archaeological resources. (These maps are also on file at NIPC.) Development sites containing known archaeological sites or which are located all or partly within high probability areas are subject to permit requirements pertaining to archaeological surveys prior to commencement of development activity. Section 106 of the National Historic Preservation Act requires a review of federally funded projects which could affect sites or structures listed, or eligible for listing, on the National Register of Historic Places.

In addition, federal law establishes procedures to protect public open space lands. Federally-sponsored transportation projects that would affect existing open space uses are subject to "Section 4(f)" review. As local jurisdictions plan, they need to be aware of possible impacts on existing open space.

E. RECOMMENDED LOCAL PLANNING STRATEGIES

Identify Open Space Needs: Open space is a complex land use. The preservation of open space should be used to:

- *preserve and manage natural and cultural resources*
- *provide recreational opportunities*
- *make communities attractive places in which to live and work*

The usefulness of open space as means of achieving each of the above should be carefully evaluated in developing a plan for local open space.

Inventory Existing and Potential Open Space: Some sites need to be preserved in order to attain a single important objective. Other locations, which have the ability to accomplish two or more objectives, are important for their multiple-benefit potential.

The quantification of future open space needs can become a complex task because of the technical questions that should be considered:

- What locations and amounts of recreational lands will be needed by the future population of the community based upon numbers of people, age, cultural preferences, and other factors? What portion of these needs will be satisfied on school and other public lands? On private lands?
- What are the special open space and recreation needs within the community for disadvantaged people?
- What areas pose severe limitations for development because of floodplains, poor soil conditions, severe slopes, etc.?

- What areas are habitat for wildlife or ought to be restored as habitat? What additional area is needed by the species of plants and animals in these areas in order to protect them from adverse human impacts?

- What areas are wetlands and are subject to federal wetland regulations?
- Are there archaeological sites or historic buildings or landscapes that ought to be included in the plan for open space?

- What county and regional plans for open space and greenways call for preservation areas within the community?

The development of an open space plan map and preferably the inclusion of an open space component of the overall comprehensive land use plan can be a valuable tool in presenting an overall image of open space for the community. It may not be desirable, however, to identify exact land parcels since the actual open space preservation boundaries will need to reflect numerous variables including parcel boundaries and areas, available funding, the need to avoid splitting parcels, the need for open space buffer area, etc.

Establish Open Space Policy: It is very important to establish, through official adoption, local policy for open space preservation even if it is not possible to draw a precisely delineated open space map. In declaring the community's intent to preserve certain types of areas for open space purposes, the community lays the groundwork for preservation.

The body of open space policies adopted by the community establishes the basis for implementation actions including purchase, regulation, exaction of donations (or fees in lieu thereof), and negotiations with developers regarding the details of site design.

Coordinate with Other Jurisdictions and Organizations: Coordination of municipal open space planning and preservation activities with other entities is particularly important because:

Some open space in a community may logically fall under the purview of another jurisdiction, such as regional open space along a major stream corridor;

Many communities have park districts which have special roles and capabilities for providing park lands, including planning and implementation;

There are private organizations that may acquire or assist in the preservation and management of open space;

The natural resources upon which an open space strategy may be based do not necessarily "recognize" municipal boundaries (e.g. streams); effective management of these resources requires coordination among all jurisdictions that can affect, and be affected by, the resource.

A planning process that involves all the relevant parties at the beginning is much more likely to produce an effective product.

Develop Realistic Objectives: The achievement of the desired open space pattern within a community will occur over many years. Open space planning should be based on a clear understanding of priorities concerning what should occur in the short run verses the long term. These priorities need to be defined in terms of such factors as threat of loss of needed open space and financial resources available to affect preservation. Securing key parcels along a shoreline, for example, may require many years through the exercise of options, life tenancy arrangements, etc.

Carry Out Public Education and Information Programs: The preservation of open space may require significant expenditures of funds for acquisition and management. Support for open space programs will require understanding by the public of what they will be getting for their tax dollars and what benefits can be achieved. High real estate taxes have created a difficult climate for open space acquisition programs but experience in the region has shown that public information efforts can achieve desirable results.

Consider a Full Range of Preservation Options: A program of open space preservation will gain wider favor if it can be demonstrated that multiple preservation techniques are being orchestrated in order to make the best use of scarce public and private resources. Traditional acquisition should be complemented by consideration of other techniques, such as:

- **acquisition of less-than-fee** interests (e.g. conservation easements, scenic easements, purchase of development rights, etc.) See definition of easement in Section B.

- **use of regulatory powers** such as zoning to protect natural resources (e.g. streams and wetlands)

- application for federal and state **grants** to leverage local dollars for acquisition and development of open space

- **site planning** with developers to provide appropriate amounts and locations of open space; obtain donations of open space as part of the overall development design and approval process

- work with property owners to develop **donation** and **bargain sale** arrangements

- development of **stewardship** programs in order to enlist citizen involvement in the management of open space

Seek Grant Assistance: There are several programs that are commonly used by northeastern Illinois municipalities, park districts and forest preserve/conservation districts. Because grant application requirements, amounts of required match, and other factors vary from program to program, potential applicants should consult with program managers early in the planning stages of a project. The principal sources of assistance are as follows:

Administered by the Illinois Department of Conservation:

Land and Water Conservation Fund (LAWCON)
Open Space Lands Acquisition and Development Program (OSLAD)
Illinois Bicycle Path Program
Boat Access Area Development Program
Snowmobile (local government) and Snowmobile Trail Establishment Fund (snowmobile clubs)

Contact: Illinois Department of Conservation, 524 S. Second St., Springfield, IL 62701 (217) 782-7481

Administered by the Illinois Department of Transportation:

ISTEA Enhancement Program (development of bicycle and pedestrian ways)

Contact: Illinois Department of Transportation, 2300 S. Dirksen Pkwy., Springfield, IL 62764 (217) 782-6006

Administered by the Chicago Area Transportation Study:

Congestion Mitigation/Air Quality Program (CMAQ) (development of bicycle and pedestrian ways)

Contact: Chicago Area Transportation Study, 300 W. Adams St., Chicago, IL 60606 (312) 793-3456

Obtain Additional Expertise: There are many sources of assistance that can be tapped in order to carry out an open space planning effort. These include:

planning consultants
park district staff
academic institutions
private open space and environmental organizations

regional planning agencies
forest preserve and conservation districts
state and federal agencies

Some of these are listed in Section G.

F. GOOD EXAMPLES

Comprehensive Plan for Orland Park (1991): The Village of Orland Park has developed a comprehensive plan which includes several components pertaining to open space preservation: greenbelt concept, critical and sensitive environmental areas, and open space recommendations. (Contact: Village of Orland Park, 14700 Ravinia Ave., Orland Park, IL 60462 Tel: (708) 403-6100.)

Greenway Corridor Plan (1991), Village of Grayslake: The Village of Grayslake has developed a community-wide plan for the preservation of a greenway system. The existing and proposed greenways are along existing right-of-way, through public lands, and through existing and proposed development. (Contact: Village of Grayslake, 164 Hawley St., Grayslake, IL, 60030 Tel: (708)223-8515.)

Village of Schaumburg Bikeways Plan (1993) : The Village of Schaumburg has developed a plan for a comprehensive system of on-road and off-road bikeways linking all parts of the village and connecting parks and forest preserves with neighborhood areas. (Contact: Village of Schaumburg, 101 Schaumburg Court, Schaumburg, IL, 60193 Tel: (708) 894-4500.)

There are a number of local projects throughout the region which have been notable for their innovation and the bringing together of multiple participants in addressing local and intergovernmental open space issues. Among them are:

- restoration plans for Flint Creek (Contact: Citizens for Conservation, Box 435, Barrington, IL, 60011)
- coordinated preservation and management strategies for Lincoln Marsh (Contact: Wheaton Park District, 666 S. Main St., Wheaton, IL, 60187 Tel: (708) 665-4710.)
- development of Riverwalk along the DuPage River in Naperville (Contact: City of Naperville, 400 S. Eagle St., Naperville, IL, 60566 Tel: (708) 420-6111.)
- development and implementation of comprehensive watershed management regulations, flood hazard mitigation planning, stream corridor planning, and nonpoint source control and stormwater demonstration projects in the Butterfield Creek watershed (Contact:

Butterfield Creek Steering Committee, c/o Village of Flossmoor, 2800 Flossmoor Rd., Flossmoor, IL, 60422 Tel: (708) 798-2300.)

- development of the Lincoln Park Master Plan, citizen participation in the development of a comprehensive park plan for a major urban park (Contact: Chicago Park District, 425 E. McFetridge Dr, Chicago, IL, 60605 312/347-6742.)
- integration of comprehensive environmental management and open space preservation within a large-scale multi-use development project called Prairie Crossing (Contact: Prairie Holdings Corporation, 190 S. LaSalle St., Chicago, IL, 60603 Tel: (312) 701-7360.)

G. CONTACTS

American Planning Association, 1313 E. 60th St., Chicago, Illinois, 60637 (312) 955-9100

Chicagoland Bicycle Federation, 343 S. Dearborn, Ste. 1017, Chicago, Illinois 60604 (312) 427-3325

Illinois Association of Park Districts, 211 E. Monroe St., Springfield, Illinois 62701 (217) 523-4554

Illinois Department of Conservation, 524 S. Second St., Springfield, Illinois 62701
- Planning: (217) 782-3715
- Grant Administration: (217) 782-7481
- Natural Heritage: (217) 785-8686
- Endangered Species Protection Board: (217) 785-8687

Illinois Department of Transportation, State Bikeways Coordinator, 2300 S. Dirksen Pkwy., Room 115, Springfield, Illinois 62764 (217) 782-3194

Illinois Historic Preservation Agency, Old State Capitol, Springfield, Illinois, 62701 (217) 785-4997
- Chicago office: (312) 814-1411

Illinois Rails-to-Trails Conservancy, 313 W. Cook St., Springfield, Illinois 62704 (217) 789-4782

Landmarks Preservation Council of Illinois, 53 W. Jackson Blvd., Chicago, Illinois 60604 (312) 922-1742

The Nature Conservancy, 79 W. Monroe St., Chicago, Illinois 60603 (312) 346-8166

National Recreation and Park Association, 3101 Park Center Drive, Alexandria, Virginia 22302 (703) 820-4940

Northeastern Illinois Planning Commission, Planning Services Department, 222 South Riverside Plaza, Suite 1800, Chicago, Illinois 60606 (312) 454-0400

Openlands Project/Corlands, 220 S. State St., Chicago, Illinois 60604 (312) 427-4256

U.S. Fish and Wildlife Service, Chicago-Metro Wetlands Office, 1000 Hart Rd., Suite 180, Barrington, Illinois 60010 (708) 381-2253

H. SUGGESTED REFERENCES

Dealing with Changes in the Connecticut River Valley: A Design Manual for Conservation and Development. Lincoln Institute of Land Policy, 1989.

Greenways: A Guide to Planning, Design, and Development. The Conservation Foundation, 1993.

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Statewide Comprehensive Outdoor Recreation Plan. Illinois Department of Conservation, 1988-1993.

Strategic Plan for Land Resource Management. Northeastern Illinois Planning Commission, 1992.

Trails for the Twenty-First Century: Planning Design and Management Manual for Multi-Use Trails. Rails-to-Trails Conservancy, 1993.

Selected 1990 Census Summary, Tape File 61A, Population Characteristics for Northeastern Illinois Municipalities, Counties, Townships, and Chicago Community Areas. Northeastern Illinois Planning Commission, 1991. (NIPC can also provide 1990 census tract data and 1990 aerial photography.)

CHAPTER X

Non-Traditional Approaches for Residential, Commerical, & Industrial Development

Chapter X

NON-TRADITIONAL APPROACHES FOR RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL DEVELOPMENT

by Dennis Dreher
and
William Perry

A. INTRODUCTION

Urban development in northeastern Illinois has radiated out from the central city in a relatively consistent fashion since the original settlement by fur traders. Even in the last two decades, when population growth nearly stopped, the pace of development has continued - residential land consumption increased by an estimated 46 percent from 1970 to 1990. This phenomenon has led to well-documented environmental problems, including increased flooding, water pollution, destruction of habitats for fish, wildlife, and endangered species, lost farmland, air pollution, inefficient energy consumption, and loss of open space.

While continued development and redevelopment are important to the economic health and prosperity of the region, it should be obvious that the development patterns of the past need to be changed. Change is needed at both a regional and local level. At the regional level, it is recognized that continued outward sprawl should be slowed and that opportunities for infill and redevelopment need to be enhanced. At the local level, it is becoming apparent that changes are needed in development designs to protect sensitive environmental features and reduce offsite impacts. Local opportunities to reduce environmental impacts will be the focus of this chapter.

Chapters IV-IX identified numerous planning tools and programs for dealing with the environmental effects of residential, commercial, and industrial development. This chapter discusses several "non-traditional" development approaches in greater detail. This chapter also addresses some of the tradeoffs between traditional and non-traditional approaches. In its discussion of non-traditional development approaches, this chapter will address site design concepts such as landscaping with native vegetation and reducing street widths. Such approaches are both environmentally sound and less expensive for developers. However, local governments are sometimes resistant to approaches which deviate from "modern" development practice because of concerns over public perception, maintenance costs, and liability. Improved education is critical to provide an unbiased assessment of tradeoffs from a holistic, environmentally conscious perspective.

B. IMPORTANT DEFINITIONS

Cluster Development: Constructing new units of a development (e.g., houses) in clusters on smaller individual lots as opposed to spreading them uniformly through the development site. Clustering does not change the gross density of a development but does reduce site disturbances, preserves sensitive features and open space, and can enhance energy efficiency.

Neo-Traditional Development: A planned community which includes a mix of shops, offices, public and cultural facilities, and a full spectrum of housing. Streets, walkways, and trails encourage pedestrian travel.

Planned Unit Development (PUD): A development planned as a whole where conventional subdivision regulations are waived to allow more design flexibility.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *What are some recommended types of non-traditional development?*

A: Examples of non-traditional development include neo-traditional approaches which feature higher densities and reduced setbacks, cluster development, use of native vegetation landscaping, and use of natural drainage features such as swales instead of storm sewers.

Q: *What are some of the advantages of non-traditional development approaches?*

A: The approaches described in this chapter can enhance transportation and energy efficiency, protect sensitive features such as wetlands, reduce stormwater runoff, and improve housing affordability.

Q: *What are the cost implications of non-traditional development approaches as recommended in this chapter?*

A: Non-traditional developments can be substantially less expensive due to reduced costs for site clearance, street pavement, and storm sewers. These reduced costs translate to improved housing affordability. Long-term costs also may be lowered due to reduced needs for irrigation and maintenance.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

In general, there is relatively little involvement of federal or state agencies in setting building or subdivision standards for local development. However, guidance is provided at the national level by the Building Officials and Code Administrators International (BOCA). Local governments typically utilize BOCA standards as a starting point in setting local requirements for buildings and subdivisions.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

In evaluating plans for proposed developments, local governments must consider many factors, some of which may be in conflict. To facilitate consistent review of development plans, many requirements are clearly established in subdivision codes and building codes. This section describes a number of approaches for providing flexibility within existing codes or revising code requirements to facilitate environmental protection.

Encourage Cluster Developments: One of the best ways to minimize the disturbance of sensitive areas and natural drainage features while allowing for reasonable economic use of the land is to utilize cluster developments. Cluster development maintains the gross density of the site (i.e., the same number of lots) but clusters the development onto the buildable portion of the site. Cluster designs allow for natural drainage, thereby absorbing rainwater and reducing flooding impacts. According to a recent study in DuPage County (*Home Ownership -- Keeping the Dream Alive*), cluster developments can save 35 percent on the cost of site clearance, street pavement, and storm sewers. A cluster development proposal should be accompanied by a resource management plan to ensure long term management and maintenance of sensitive features and common areas. Ideally, cluster development will allow environmental objectives to be achieved without contributing additionally to suburban sprawl, and without unduly reducing the property owner's return on land value.

It is important in designing cluster developments that offsite impacts, including environmental, are considered. For example, while cluster developments often are typified in reference materials by dead-end "cul-de-sac" streets, it is important to traffic flow that all auto trips not be routed from local streets to major arterials. Use of loop streets and collector streets to connect adjoining clusters can reduce the traffic pressure on the arterials.

Enable Planned Unit Developments (PUDs): PUDs enable developers to utilize cluster developments and other alternative approaches which may otherwise conflict with standard zoning requirements. This approach requires flexibility from both the developer and the local government.

Encourage Reduced Setbacks: Reducing building setbacks, thereby reducing the lengths of driveways and entry walks, reduces impervious area and corresponding stormwater runoff volumes. This is most readily accomplished along low-traffic streets where traffic noise is not a problem. This approach is central to the concept of **neo-traditional development.**

Reevaluate Street Width Requirements: Existing municipal street width requirements are commonly based on access criteria for emergency vehicles and snow plowing. However, some municipal planners and traffic designers are beginning to recognize that standards have gone too far and now favor narrower neighborhood streets for several reasons, including lower maintenance and replacement costs, more taxable land, and creation of a friendlier residential environment. Developers generally favor narrower widths because of reduced construction costs. From an environmental perspective, narrower streets mean less stormwater runoff and reduced flooding and water quality impacts. Street widths may be reduced by eliminating onstreet parking or by reducing the width of moving lanes.

Encourage Natural Drainage Designs: Natural drainage utilizing swales and vegetated filter strips has strong environmental advantages over traditional drainage approaches which utilize storm sewers and curb and gutter streets. These include reduced runoff volumes, reduced stormwater pollutant loads, and greater recharge of groundwater. Natural drainage also can be much less expensive than storm sewers and, therefore, is often favored by developers. Swales are suitable for many types of development, but are probably most practical on large lot residential sites (e.g., 1/2 to 1 acre or larger), some multi-family developments, campus type office/industrial sites, and highways where the number of driveway crossings is not large. Swales are most easily implemented on rolling to gently rolling topography which is common in northeastern Illinois. Despite their many advantages, swales are discouraged by many municipal subdivision codes in northeastern Illinois. Commonly cited concerns include prolonged ponding of water, maintenance requirements, and freezing and overflow during winter conditions. On appropriate sites these concerns can be minimized or eliminated with proper design and installation and effective public education.

Encourage Native Vegetation for Landscaping: Landscaping with native plants is growing in popularity in northeastern Illinois and has important advantages over traditional approaches. Native grasses, wildflowers, and shrubs require less maintenance - fewer mowings, less fertilizer and pesticide, and less irrigation - than turf grass. As a consequence, native vegetation is less expensive to maintain, more energy efficient, and contributes fewer pollutants in runoff water. Native grasses are deeper rooted, thereby providing superior stabilization on steep slopes and better protection of sensitive areas such as streambanks and lake shores. Native vegetation also provides wildlife habitat and visual variety

in the landscape. Local governments can enable or encourage native landscaping approaches in their subdivision codes, particularly for uses such as office campus, residential, road right-of-way, and public parks and open spaces.

Routinely Evaluate the Appropriateness of Development Codes: Subdivision regulations and building codes help to ensure the quality and safety of developments and buildings. Most local codes exceed suggested national standards, (e.g., BOCA) but in many communities certain standards have been in place for many years. To ensure that the latest information is taken into account and to minimize conflicts between requirements and their objectives, local codes should be reevaluated on a regular basis. For example, as discussed above, regulations which mandate storm sewers should be reevaluated to consider options where alternative drainage approaches might be appropriate. A suggested philosophy for evaluating requirements is that each requirement should provide value in terms of development quality, safety, and efficiency in comparison to the costs added by the regulation. If this philosophy is adhered to, development costs probably can be reduced and environmental requirements often can be better justified to developers and residents.

F. GOOD EXAMPLES

Cluster development has not been widely utilized in the region but is receiving increasing attention. The Hybernia development in Highland Park has clustered single family houses around sensitive wetland and floodplain areas. Even with substantially smaller average lot sizes than surrounding subdivisions, the development was successful in quickly selling its houses while preserving about 70% of the site as open space. Currently under development in Grayslake is the Prairie Crossing development which clusters single and multi-family houses around native landscaping, wetlands, and farm fields.

Several recent high-profile developments have featured native vegetation in their landscaping schemes. Perhaps the most prominent is the Sears/Homart Prairie Stone development in Hoffman Estates. This phased development has incorporated native prairie as the dominant landscape material for its common areas. Homart now emphasizes this native landscaping in its marketing scheme. (Contact: Homart Co., Prairie Stone, 5407 Trillium Boulevard, Hoffman Estates, IL 60192 Tel: (708) 645-5000.) Other prominent developments utilizing native landscaping include the Tellabs site in Bolingbrook and AT&T's NSC campus in Lisle, which recently converted from turf grass to prairie. Just outside the region, the Lakeview Corporate Park in Kenosha County, Wisconsin created a 413 acre conservancy district consisting of wetland, prairie, and floodplain which is being restored to a system that will contain primarily native plants.

G. CONTACTS

National Association of Homebuilders, 1201 15th St. NW, Washington, DC 20005 1-800-368-5242

American Society of Landscape Architects, 4401 Connecticut NW, Washington, DC 20004-2302 (202) 686-2752

Northeastern Illinois Planning Commission, Planning Services Department, 222 S. Riverside Plaza, Suite 1800, Chicago, IL 60606 (312) 454-0400

H. SUGGESTED REFERENCES

Home Ownership -- Keeping the Dream Alive. Attainable Housing Task Group and DuPage County Development Department, October 1993.

Residential Stormwater Management. Urban Land Institute, American Society of Civil Engineers, National Association of Home Builders, 1975.

CHAPTER XI

Intergovernmental Cooperation

Chapter XI

INTERGOVERNMENTAL COOPERATION

by Tim Fluck

A. INTRODUCTION

Environmental resources do not respect governmental boundaries. Winds blow across local boundaries, sometimes spreading adverse air quality impacts far from their sources. Streams flow from one community into another, sometimes resulting in flooding or pollution of downstream areas. The impairment of a critical feature or the reduction of a portion of habitat area that is outside of a community can degrade the ability of the remaining area within the community to serve as habitat. A water body, wetland, or woodland can overlap a local boundary, fracturing local responsibility for its protection and enhancement. Extra-local actions can result in local impacts through the operation of social systems, as well as natural systems. For example, land development that occurs in one community can affect how people in the real estate market evaluate the economic viability of a nearby community's farmland or other open space areas.

The mere fact that natural and social systems cross local boundaries does not mean that local governments are ill-suited to the preservation of environmental resources. Compared to federal and state officials, local officials are likely to be more responsive to local constituencies and more aware of local problems and issues. Local governments can also exercise a wide range of regulatory and non-regulatory powers to preserve and enhance environmental resources. Although local boundaries may limit the ability of a single local government to effectively use its powers to preserve an entire environmental resource, intergovernmental cooperation can overcome this limitation.

Illinois law authorizes local governments to enter into two types of intergovernmental arrangements that can be used for environmental protection: (1) Intergovernmental Agreements and (2) Intergovernmental Land Use Agreements. The major shortcoming of these two legal frameworks for cooperative action is that, because they are infrequently used for environmental protection, their effectiveness for this purpose is untested.

B. IMPORTANT DEFINITIONS

Joint or Compatible: As defined in the Local Land Resource Management Planning Act, a characteristic of a plan that exists (1) when so declared by joint resolution of the affected municipalities or counties or (2) when separate plans have been referred to the affected municipalities or counties for review and suggestions, and such suggestions have been duly considered by the adopting

jurisdiction and a reasonable basis for provisions of a plan that are contrary to the suggestions is stated in a resolution of the adopting jurisdiction.

Local Land Resource Management Plan: A map of existing and generalized proposed land use and a policy statement in the form of words, numbers, illustrations or other symbols of communication adopted by the municipality and county governing bodies. The Plan must include (but is not limited to) sewer and water systems, energy distribution systems, recreational facilities, public safety facilities and their relationship to natural resources, air, water and land quality management conservation programs within its jurisdiction. A Local Land Resource Management Plan could be a component of a broader Comprehensive Plan.

Municipality: Any city, village, or incorporated town.

Public Agency: Any unit of local government as defined in the *Illinois Constitution of 1970*, any school district, any public community college district, the State of Illinois, any agency of the State government or of the United States, or of any other State, any political subdivision of another State, and any combination of the above pursuant to an intergovernmental agreement which includes provisions for a governing body of the agency created by the agreement.

Unit of Local Government: Any county, municipality, township, or special district which exercises limited governmental functions or provides services in respect to limited governmental subjects.

C. ANSWERS TO COMMONLY ASKED QUESTIONS

Q: *Why should a community go to the trouble of working cooperatively with other units of government or establishing intergovernmental agreements or Local Land Resource Management Plans to protect the environment?*

A: An environmental resource may overlap local boundaries. Consequently, the protection of the entire resource may require actions by more than one local government. Intergovernmental cooperation also protects the investment in time and energy made by any one community to protect such resources.

Q: *Will adoption of an intergovernmental agreement or Local Land Resource Management Plan mean that my community will lose its local power to plan and zone?*

A: No. The creation of a Local Land Resource Management Plan is only a precondition to two or more local governments estab-

lishing an Intergovernmental Land Use Agreement under the Act. The scope of any intergovernmental agreement can be tailored by the parties to it. For example, the agreement could focus only on the protection of a specific environmental resource (such as a particular stream or wetland).

Q: *How does an Intergovernmental Agreement created under the Intergovernmental Cooperation Act differ from an Intergovernmental Land Use Agreement created under the Local Land Resources Management Planning Act?*

A: There are four important differences:

(1) The Act explicitly provides for an Intergovernmental Agreement to involve the use of any governmental power that may be exercised by each government individually to protect environmental resources. For example, it may provide for the cooperative acquisition of open space areas by two or more local governments.

(2) An Intergovernmental Agreement can be created by almost any type of local government (see the definition of "Public Agency"). An Intergovernmental Land Use Agreement must be created by either a city, village, incorporated town, or county.

(3) There are no preconditions for the creation of an Intergovernmental Agreement. There are significant preconditions for establishing an Intergovernmental Land Use Agreement (such as adoption of implementing ordinances, a three-year capital improvements plan, a statement of goals, and a system and timetable to update the Agreement).

(4) There is no provision for state grants-in-aid to promote local governments to enter into Intergovernmental Agreements. Such grants are authorized for Intergovernmental Land Use Agreements, although the State Legislature has never appropriated funds for such grants.

D. FEDERAL AND STATE LAWS, REGULATIONS, AND PROGRAMS

The Intergovernmental Cooperation Act (5 ILCS 220/1-3) authorizes any "public agency" (see the Definitions section) to exercise jointly with any other public agency any power, privilege, or authority that the public agency is authorized to carry out individually.

Article VII, Section 10, of the *Constitution of the State of Illinois* also authorizes units of local government and school districts to

> ...contract or otherwise associate among themselves, with the State, with other states and their units of local government and school districts, and

> with the United States to obtain or share services and to exercise, combine, or transfer any power or function, in any manner not prohibited by law or by ordinance.

These two laws authorize a high degree of intergovernmental cooperation among Illinois local governments to inventory, plan for, and manage their environmental resources. The provisions of these laws have been used to carry out a wide variety of activities that are not specifically environmental.

The Local Land Resource Management Planning Act (50 ILCS 805/1 *et seq.)* authorizes municipalities and counties to

> ...protect the land, air, water, natural resources and environment of the state and to encourage the use of such resources in a manner which is socially and economically desirable through the adoption of joint or compatible Local Land Resource Management Plans.

A Local Land Resource Management Plan may include goals and procedures to resolve conflicts relating to the following objectives (among others):

- **Agricultural Preservation -- to preserve and maintain the productivity of agricultural lands;**
- **Air and Land Resources Quality -- to ensure that air and resource quality meet or exceed legally established standards;**
- **Areas Subject to Natural Disasters and Hazards -- to identify, document, publicize, and establish the best safe usage for land subject to natural disasters and hazards, including flooding;**
- **Energy Conservation -- to provide programs for energy conservation;**
- **Forest Lands -- to conserve forest lands;**
- **Natural Resources -- to conserve natural resources;**
- **Open Spaces -- to conserve open spaces;**
- **Recreational Needs -- to provide recreational space and opportunities;**
- **Urban Design -- to provide programs for the enhancement of the visual environment;**
- **Water -- to ensure good quality and quantity of water resources;**

The Department of Commerce and Community Affairs is authorized to provide grants to eligible local governments in order to develop, update, administer, and implement Local Land Resource Management Plans (see the Definitions section for a listing of plan contents required for grant eligibility). However, the State Legislature has never appropriated funds for this purpose.

To be eligible for grants and to use the powers and authorities authorized by the Act, a municipality or county must also adopt:

(1) Implementing ordinances and zoning and subdivision ordinances;
(2) A three-year capital improvement and maintenance program for the jurisdictions considering reasonably anticipated growth and designed to accommodate contiguous development;
(3) A statement of goals which shall be compatible with the local situation of the municipality or county; and
(4) A system and timetable to review and update the plans at least once every ten years.

The local jurisdictions must coordinate these ordinances and programs.

The Act also authorizes municipalities and counties to enter into and enforce intergovernmental agreements for joint or compatible planning, local land resource management administration, and zoning ordinance enforcement with other units of State and local government. A person who is adversely affected or any government which has a dispute concerning the reasonableness of an action taken under the auspices of the Act may have the dispute resolved by the circuit court in which the municipality is located.

E. RECOMMENDED LOCAL PLANNING STRATEGIES, REGULATIONS, AND PROGRAMS

Local governments can work together (and with county, state, and federal governments) at one or more stages of a program to assess and/or preserve environmental resources and/or to protect environmental quality. Specifically, intergovernmental cooperation can be useful in addressing issues of farmland protection, open space acquisition (trail/greenway protection), wastewater facility planning, watershed planning, etc. In addition, intergovernmental cooperation can be an important tool in the development of consistent stormwater management standards for local subdivision ordinances. In most cases, such cooperative programs will be defined by the provisions of an intergovernmental agreement. In some cases, cooperative programs may lead to intergovernmental land use agreements.

Communities can agree to map, inventory, and evaluate the features of environmental resources that overlap local boundaries. Intergovernmental agreements can help to ensure that such studies and plans are comprehensive and are prepared by persons with appropriate expertise. For example, each community can perform an environmental assessment of the portion of a resource within its boundaries, after agreeing to use uniform protocols and to share information. Alternatively, an agreement might provide for a single community (particularly if its staff has special expertise) to perform an assessment for the entire resource area. A third approach would be for the communities to share the costs of a consultant who is retained to prepare the environmental assessment.

Local policies and regulations designed to preserve such resources can also be fortified by intergovernmental agreements. These measures can be developed by each community independently, then reviewed for agreed upon compatibility. Alternatively, a single, intergovernmental task force may develop a uniform set of policies or regulations that are adopted by the individual communities. Similarly, administration and enforcement can be the responsibility of each community or of a single agency whose costs are shared by the parties to the agreement.

Apportionment of the costs to carry out studies, develop policies, and to enforce regulations can be negotiated in advance in an intergovernmental agreement. It is possible to tailor cost sharing to the specific ways that the costs and benefits of such efforts are distributed, which will vary according to the particular features of the environmental resource or problem involved. For example, costs sometimes might be shared on a per capita basis, on the basis of the proportion of a resource's total area that is within each community, or on the basis of the value of property that is protected.

F. GOOD EXAMPLES

The DuPage County Regional Planning Commission is composed of representatives of DuPage County government, DuPage municipalities, and citizens. The Commission has carried out a number of countywide planning activities. In updating the countywide land-use plan, the Commission has instituted an intergovernmental planning process known as the Cluster Process. In the Cluster Process, six groups ("clusters") of municipalities and the County have worked cooperatively to propose strategies for addressing issues of common concern. (Contact: DuPage Regional Planning Commission, 421 North County Farm Road, Wheaton, Illinois 60187, 708/682-7230.)

A second example of intergovernmental planning exists in Will County. The municipalities of Plainfield, New Lenox, and Wilmington have entered into intergovernmental land use agreements with Will County that are designed to preserve farmland. The agreements attempt to control development in unincorporated areas that are zoned for agricultural use by the county and are within one and one-half miles of the boundaries of one of the three municipalities. (Contact: Will County Land Use Department, 501 Ella Avenue, Joliet, Illinois 60433 Tel: (815) 727-8430.)

Intergovernmental land use planning has also been underway in central Lake County. Twelve municipalities and the County of Lake have entered into an intergovernmental agreement in which all members have agreed to adopt a set of principles intended to guide future development within a defined corridor. These principles address a number of environmental issues including soil erosion and sediment control, stream, lake and wetland protection, floodplain protection, stormwater detention

and drainage, woodland protection, groundwater protection, and open space preservation, among others. All members intend to adopt these principles and implement them through incorporation into local ordinances. (Contact: Northeastern Illinois Planning Commission, Planning Services Department, 222 South Riverside Plaza, Suite 1800, Chicago, Illinois 60606 Tel: (312) 454-0400.)

The Butterfield Creek Steering Committee was originally formed to guide a flood management study being undertaken by the Soil Conservation Service and the Illinois Department of Transportation. Following completion of the study, the municipalities in the south Cook/north Will County Butterfield Creek watershed have continued and expanded their planning efforts. The Committee has jointly developed a comprehensive watershed management ordinance providing uniform standards throughout the watershed. It has developed and endorsed, with NIPC's assistance, a multi-objective Action Plan and a Flood Hazard Mitigation Plan. It is currently developing a detailed plan for the Butterfield Creek corridor. With the support of the Committee several stormwater management and water quality demonstration projects are also being undertaken throughout the watershed. (Contact: Northeastern Illinois Planning Commission, Planning Services Department, 222 South Riverside Plaza, Suite 1800, Chicago, Illinois 60606 Tel: (312) 454-0400.)

G. CONTACTS

American Planning Association, 1313 East 60th Street, Chicago, Illinois 60637 (312) 955-9100

Northeastern Illinois Planning Commission, 222 South Riverside Plaza, Suite 1800, Chicago, Illinois 60606 (312) 454-0400

H. SUGGESTED REFERENCES

Intergovernmental Land Use Agreements: Four Case Studies (Strategic Plan Implementation Paper No. 2). Northeastern Illinois Planning Commission, 1993.

"Observations and Recommendations on Intergovernmental Agreements in Northeastern Illinois." Northeastern Illinois Planning Commission, Blue Ribbon Panel on Intergovernmental Agreements. Paper available early 1994.

APPENDIX

Plan Review Checklist (Adapted from Planning Resources Inc., 1986)

Developments should first be checked for compliance with the comprehensive plan and all applicable provisions of the zoning and development codes. This checklist summarizes important criteria and factors which should be considered.

1.0 Site Development

- Grading and building design avoids and protects natural drainage features, stream channels, floodways, ponds, wetlands, and woodlands--on and off-site
- Provides for buffers and setbacks along streams, ponds, and wetlands
- Incorporates natural topography into site design
- Provides for effective erosion and sediment control during construction
- Does not expose adjacent uses to impact of severe grade changes or retaining walls at property line
- Connects to sewer and water following an accepted path
- Drainage design maximizes use of swales, filter strips, infiltration practices (as appropriate)
- Creates necessary detention area with slopes that are maintainable and seeded or sodded
- Detention design creates fish/wildlife habitat (as appropriate) and enhances pollutant removal
- Identifies who maintains detention and public rights-of-way
- Does not alter off-site water flow volumes or direction
- Identifies, defines and respects easements and rights-of-way, existing and proposed
- Identifies and protects existing vegetation and trees along property lines of adjacent lots
- Identifies and provides five-foot public walks along street frontage and interior to the development
- Creates safe, functional pedestrian and bicycle system linking site to adjacent public use areas without intruding on privacy or security of property owners
- Displaces no existing building or structures of historic value
- Provides adequate usable accessible open space, coordinated with park district
- Discretely locates and screens transformers and traffic control devices
- Provides area for effective snow removal or storage
- Details Property Owners' Association site maintenance responsibilities including maintenance of entry outlets, open space, detention areas, private drives, perimeter berms and buffers, building surfaces, etc.
- Schools can accommodate projected student population
- Phasing of public improvements such as streets, park and detention areas relate to phasing of building construction

2.0 Access and Circulation

- Considers street capacity, turning movements, curb cuts including those on opposite side of street, and sight lines including influence of topography, berms, signs, etc.
- Provides access for bicycles and pedestrians, including connections to local and regional trails and transit
- Meets minimum requirements for pavement type and width, right-of-way, block length and cul-de-sacs
- Maintains adequate stacking room for entering/exiting vehicles
- Links point(s) of entry and parking clearly
- Separates service from customer circulation
- Avoids blinds corners where vehicles pass close to structures
- Provides adequate directional signs
- Determines if traffic signals and/or multiple exiting lanes are required
- Avoids creating hazards or obstructions related to backing vehicles
- Geometrics are smooth
- Defines site ingress/egress and parking
- Discourages shortcutting through site/neighborhood
- Provides service lanes and screens outdoor delivery and storage areas
- Accommodates future expansion or phasing
- Driveways meet acceptable slope criteria

3.0 Site and Building Design

- House plans and siting avoid intrusion of privacy for other nearby properties
- Separation between buildings within a project does not create an intrusion on privacy or sunlight
- The size and shape of residential lots are increased adjacent to public rights-of-way or to developments with substantially larger lots
- Building siting enhances the streetscape and protects people from the negative effects of wind, snow and sun
- Provides an anti-monotony code for housing developments with base (worst case) elevations and available options defined
- Creates a variety of form and richness of detail to avoid undue repetition and dullness
- Demonstrates appropriate color styling, with logical transitions on townhouses for maintenance
- Screens trash receptacles and maintains accessibility
- Screens roof mechanical units from view of public rights-of-way
- Entries are defined, protected and lighted
- Barrier-free design is employed
- Outdoor storage and service areas are screened

- Restrictions are placed on fence design along public rights-of-way
- Structurally sound materials are used that are maintainable, appropriate to the use, the site and adjacent properties

4.0 Parking/Loading

- Maintains adequate widths/depths of parking stalls and aisles
- Number of parking spaces for immediate use complies with ordinance and future space are phased in as needed to accommodate development
- Provides for outward grading of parking lots to maximize opportunities to use swales and filter strips to treat stormwater runoff
- Provides curb cuts or slotted curbs to convey runoff, where appropriate
- Parking lots are broken up by landscaping to avoid a barren mass of paving and landscaping is used to filter runoff and store snow, as appropriate
- Includes landscaped islands at row ends to provide variety, shade and texture
- Constrains reach of bumpers to avoid overhang damage to trees, poles, etc. or interruption of sidewalk
- Stormwater detention should be designed to pond in parking lots only under extreme conditions and at shallow depths so as not to create undue problems for users
- Separates loading area from customer parking to minimize conflict of movement
- Provides for effective snow removal and a deposition area which utilizes tolerant landscaping for removal of stormwater pollutants

5.0 Signs

- Meets Village sign ordinance with reference to: number, type, placement, setback, height, area, style and lighting
- Free-standing signs will not interfere with sight lines for vehicles
- Signs will not present unusual maintenance problem
- The building address is clearly shown

6.0 Landscaping

- Plant materials are appropriate in number, heartiness, size, placement, variety and spacing
- Buildings are landscaped
- Buffers and berms provide diversity, separation and noise control
- Native vegetation is utilized, where appropriate, to minimize needs for maintenance, irrigation, and chemicals
- Landscaped areas are recessed (rather than raised) to maximize their utility for stormwater storage, conveyance, and filtering
- Sight lines are adequate for pedestrian and vehicular traffic safety
- Grading and landscaping maintains effective drainage
- Property owner can assess all areas for maintenance

- Parkways are appropriately landscaped
- Planting design is in character with the design of the building and achieves functional objectives of creating or screening selected views

7.0 **Lighting**

- Lighting is designed to avoid spillage onto adjacent properties or rights-of-way
- Lighting is adequate in level and evenness for safety reasons and is not excessive for the use or area

APPENDIX

Plan Review Checklist