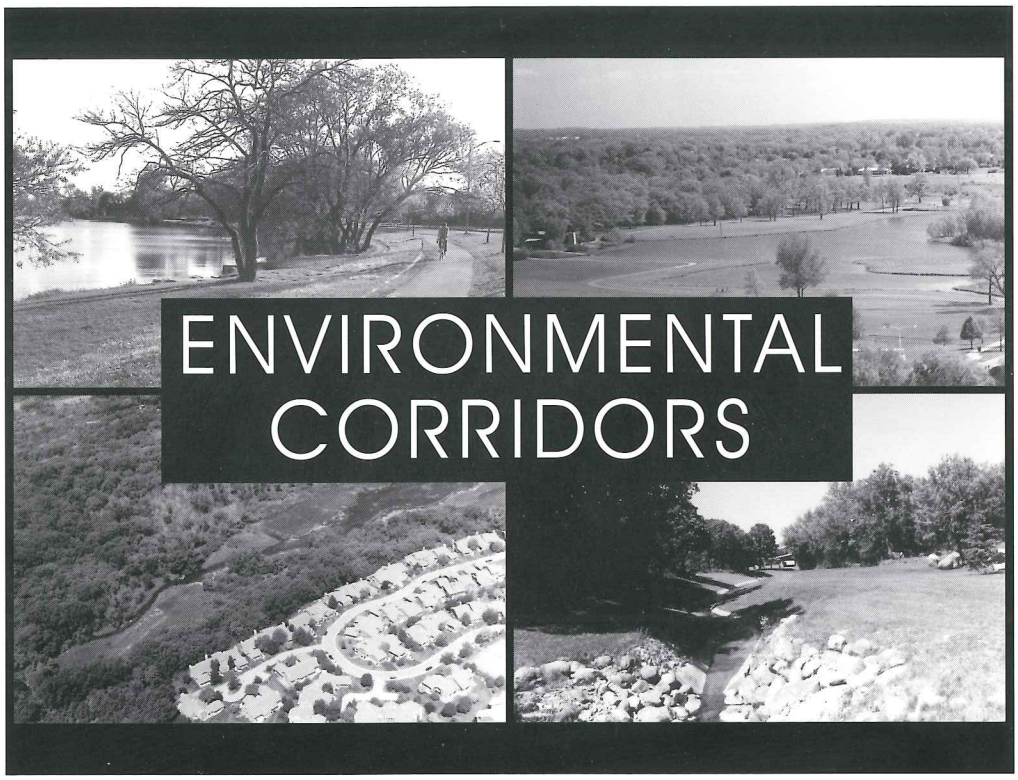

Dane County Regional Planning Commission

1996

ENVIRONMENTAL CORRIDORS

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CHAPTER I.
Summary

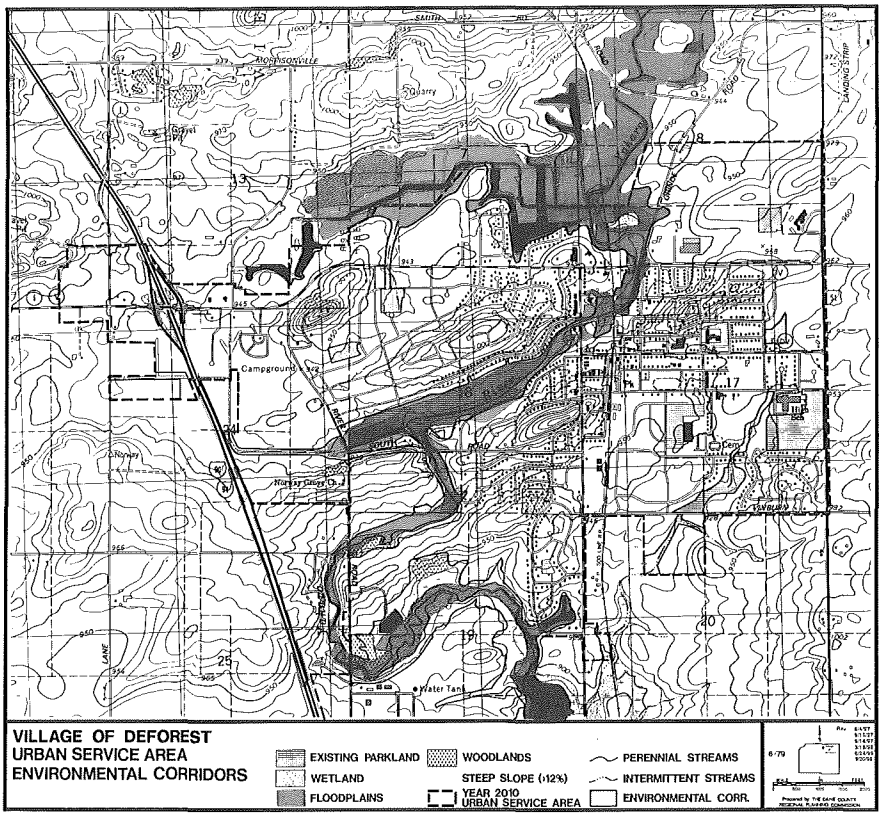
Background

Environmental corridors are continuous systems of open space in urban and urbanizing areas. These corridors include environmentally sensitive lands and natural resources requiring protection from disturbance and development, and lands needed for open space and recreational use. They are based mainly on drainageways and stream channels, floodplains, wetlands, steep slopes, and other resource features and are part of a countywide system of continuous open space corridors. Environmental corridors are used in community and regional plans to address the multiple concerns of drainage and stormwater management, water quality, recreation and open space, and habitat preservation. Therefore, these corridors represent a pattern of a rich diversity of exceptional natural features essential for the preservation of the quality of life in the area.

Protection and preservation of environmental corridors contribute to environmental protection in general, and specifically to water quality through reduction of nonpoint source pollution and protection of natural drainage systems. In addition to protecting natural drainage systems in urban areas, environmental corridors can protect and preserve sensitive natural areas, such as wetlands, floodplains, woodlands, steep slopes, and other areas that would impair surface or groundwater quality if disturbed or developed.

Most open space and recreational uses are compatible with these lands. Therefore, environmental corridors can be a major part of the needed open space for a community or region. In addition, the continuous nature of environmental corridors is suited to increasingly popular recreational activities requiring trail development, such as hiking, biking, cross-country skiing and nature walks. (Public access for open space and recreation requires acquisition of land or access rights. In addition, not all corridor lands are suitable for intensive recreation.) Finally, the continuity of environmental corridors enhances their value as wildlife habitat.

Open space or environmental corridors have been a fundamental planning concept in Dane County since the original development and adoption of the *Dane County Land Use Plan* in 1973. At that time, open space or environmental corridors were mapped only in a very general fashion.



Environmental corridors maps have been prepared and are maintained by the Regional Planning Commission for all Urban Service Areas in Dane County.

In 1975, the Dane County Regional Planning Commission (RPC) was designated by the Governor as the water quality planning agency for Dane County. In fulfilling this responsibility, the RPC is required to outline, as part of its plans, areas which are to receive public sanitary sewer service and areas which are not to receive such service (Chapter NR 121 of Wisconsin Administrative Code outlines the requirements for this planning process).

Delineation of the sewer service area for any particular community requires two steps: (1) delineation of the outer boundary of the area where the community intends to provide sanitary sewer service in the planning period (this is called the urban service area boundary); and (2) delineation of those areas within the urban service area boundary which are not intended to receive public sanitary sewer service (environmental corridors).

The first task, that of delineating sewer service area boundaries, was completed with the adoption of the *Dane County Water Quality Plan* in 1979. The task of delineating and adopting environmental corridors followed the initial task of delineating sewer service area boundaries. The environmental corridors of the Central Urban Service Area were delineated and adopted in 1983. Corridors associated with other service areas in the county were completed and adopted by 1986. As with urban service areas, the RPC worked with local communities to develop a mutually agreeable environmental corridor system which satisfied the local community as well as the regional concerns and requirements that the RPC must address.

Since the initial delineation and adoption of sewer service area and environmental corridor boundaries, they have been continually revised, updated, and expanded, continuing and further developing the cooperative working relationship between the RPC and area communities in preserving natural resources and controlling nonpoint source pollution.

How are Environmental Corridors Mapped?

The Wisconsin Department of Natural Resources (DNR) has issued guidelines for mapping environmental corridors, and has indicated that wetlands, shorelands, floodways and floodplains, steep slopes and highly erodible soils, groundwater recharge areas, and other physically constrained areas must be considered for inclusion in environmental corridors. In Dane County, the following resource features are mapped and used as background information for developing an environmental corridor:

- All waterways and water bodies, including lakes, ponds, intermittent and perennial streams, and drainageways.
- Vegetated buffer strips along drainageways, streams, lakes, and wetlands
- 100-year floodplains
- Mapped wetlands (DNR Wetland Inventory)
- Steep slopes (12 percent or greater)
- Woodlands
- Existing and proposed parks, greenways, conservancy areas and stormwater management areas
- Areas of unique vegetation or geology

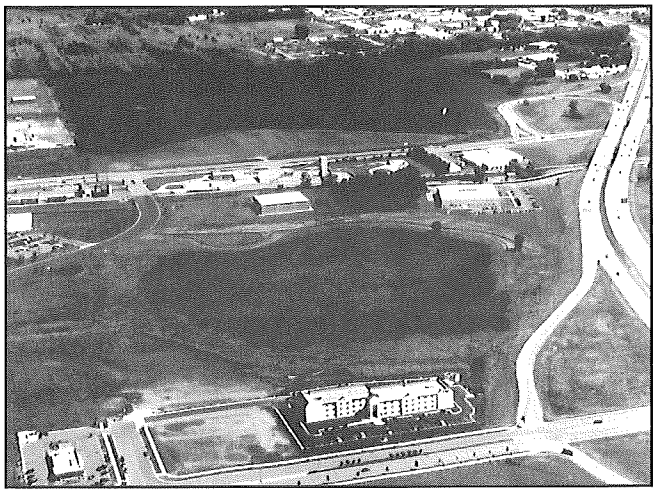
Environmental corridor along Wingra Creek protects natural resource functions adjacent to urban development.

A continuous corridor pattern usually results from the combined mapping of the above features because they often coincide or lie adjacent to each other. The resource features which form the pattern provide a basis for delineating the environmental corridor. Areas which are already developed or committed to development incompatible with environmental corridor functions are not included in the corridor system.

For sanitary sewer extension reviews, environmental corridors are only applicable within urban service areas. The basic resource features which provide the background information used for corridor delineation are commonly mapped beyond the urban service area boundary. This provides the background resource information necessary for extending or expanding the environmental corridor system when the urban service area is expanded. Mapping this background information does not imply any approval or adoption of these features, nor that they will necessarily be included in an environmental corridor.

The RPC staff works with the local community to try to outline a mutually agreeable environmental corridor for the community. There is some flexibility in developing environmental corridor delineations, and not all of the resource features need to be included in the final environmental corridor.

In some areas, major resource features are present but they are isolated from the corridor system. These lands meet all the criteria for inclusion in the environmental corridor except for continuity. These areas are shown on the maps as isolated resource features, and are treated the same as environmental corridors for sanitary sewer service review and for minor and major changes.



Esser Pond is an isolated resource feature wetland. A vegetative buffer strip around the wetland protects this resource from surrounding urban development.

What are the Advantages and Uses to the Local Community of Mapping and Protecting Environmental Corridors?

Environmental corridors are not an idealistic dream of "greenbelts" throughout the community. Rather, they represent a concept which can provide a framework for a community-wide and areawide open space network which is practical, cost-effective, and capable of addressing a number of community goals and concerns. Environmental corridors can accomplish the following functions for local communities (cities, villages and towns):

(1) Mapping and protection of environmental corridors helps the community to identify areas where development can lead to public health or safety problems and assists the community in restricting development in these areas. This can include areas subject to flooding, areas of high noise exposure (such as near airports), areas of unstable soils, areas where development could pollute or endanger water supplies, or areas such as steep slopes where emergency vehicle access may be difficult, as examples.

(2) The process of mapping and protecting environmental corridors assists the community in identifying and protecting lands and resources which contribute to the overall quality of community life. This includes areas of unique or valuable scenery or vegetation, wildlife habitat, and needed buffer areas between areas of adjacent and incompatible land uses.

(3) One of the more practical aspects of mapping and protecting environmental corridors is that it allows the local community to preserve natural drainage systems (including drainageways, floodplains, and wetlands). This allows the community to avoid future expensive drainage and flooding problems, and in most developing areas allows the community to provide surface drainage at a much lower cost than storm sewers.

(4) Most of the areas within the environmental corridors are characterized by soils which pose a number of problems for construction and development. Mapping and protecting environmental corridors allows the community to direct development away from these areas, and thus avoids the construction and ongoing maintenance problems and property damage associated with development on poor soils. Although poor soils are usually not used as a criteria for mapping an area as an environmental corridor, it should be recognized that most of the lands in environmental corridors have soils with severe limitations for development.

(5) Some of the environmental corridor lands can be used by the local community to satisfy open space and recreation needs of its citizens, if these lands are acquired. Multiple use of environmental corridor lands for open space and recreation purposes is a very economical way for the community to satisfy at least part of the open space and recreation needs of its citizens. It must be emphasized, however, that public access for open space and recreation purposes requires acquisition of land, either through purchase or dedication. In addition, not all of the environmental corridor lands are suitable or needed for recreation.

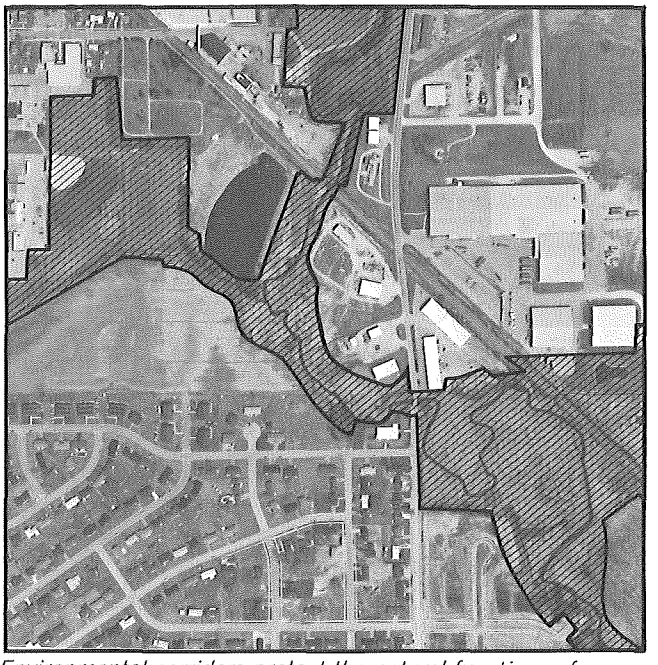
(6) For communities which are served by a metropolitan sewerage district, delineation of environmental corridor lands exempts these lands from any fees, charges or taxes levied by such districts, unless such corridor lands are provided with sewer service (e.g., a park with toilet facilities). Section 66.25(12) Wis. Stats, provides that lands designated as permanent

open space, agricultural protection areas or other undeveloped areas not to be served by public sanitary sewer service in plans adopted by a regional planning commission or other areawide planning agency organized under §66.945, and approved by the board of supervisors of the county in which the lands are located, shall not have property taxes, assessments or service charges levied against them by the district. In Dane County, this applies to all communities within the Central Urban Service Area as well as the Waunakee, Windsor, DeForest, Cottage Grove, Verona, Kegonsa and Morrisonville Urban Service Areas. Lands within the environmental corridors in these urban service areas are exempt from taxes, assessments or service charges levied by the Madison Metropolitan Sewerage District, once these corridors are adopted by the RPC and approved by the Dane County Board of Supervisors. (The corridors would not, however, affect any MMSD taxes, assessments or fees which have already been levied, nor prevent MMSD from charging for providing sewer service to facilities built in the corridors.)

What Can Local Communities Do to Protect Environmental Corridors?

In addition to being used for public sanitary sewer extension reviews, local communities can protect multipurpose environmental corridors through a combination of regulation and acquisition. Protection through floodplain zoning and zoning of shorelands, wetlands, and conservancy areas is appropriate where public access is not needed, and allows lands to remain in private ownership. It is necessary to acquire lands through dedication or purchase where public access is required for recreation, for provision of structures such as stormwater detention basins, or where access is needed for public maintenance of stream channels and structures. In addition, public acquisition through dedication or purchase may be required to protect important resource areas vulnerable to development and not adequately protected through zoning or other regulatory means. Conservation easements may also be used in instances where fee-simple title is not needed.

By adopting environmental corridors, local communities show either the intent of the community to purchase these lands, or provide a basis for negotiating with subdividers and developers for land dedication. Furthermore, by delineating and incorporating environmental corridors in community plans, a legal basis is set for the regulation of privately owned lands through zoning or other regulatory means. This is particularly appropriate for required zoning such as floodplain zoning and wetland zoning, as well as for zoning which is not mandated by the state, such as conservancy zoning. The mapping and adoption of environmental corridors also informs other local governmental bodies and departments of the intent to protect these areas, so that actions by individual governmental departments or other governmental units do not conflict with or detract from the goals and purposes of the environmental corridor system. Finally, the mapping and adoption of environmental corridors can provide a long-term framework for the local community, to show how individual actions affecting small areas fit into the overall open space system, and allows the local government to gradually develop the overall environmental corridor system over a number of years.



Environmental corridors protect the natural functions of streams and their associated floodplains against inappropriate urban development.

What Does It Mean and What Happens When Environmental Corridors Are Mapped and Adopted in an Area?

As indicated earlier, the RPC is required to identify and map lands (environmental corridors) within urban service areas which are intended to remain generally open and undeveloped, and which are not to receive public sanitary sewer service. Once adopted by the RPC and approved by the DNR, these corridors will be used to determine whether or not proposed public sanitary sewer extensions are consistent with the adopted sewer service areas. Sanitary sewer extensions which are proposed to serve areas outside of urban service areas, or which are proposed to serve new development in environmental corridors inside urban service areas, will not be approved

by the DNR. Sanitary sewers will, of course, often be located within environmental corridors, since this is often the logical location for these sewers, but they would not be approved if they are intended to serve new development in the corridors. In addition, there may be existing or proposed park facilities in the corridors which require sanitary sewer service, and extensions will be approved to serve these types of facilities.

For communities served by the Madison Metropolitan Sewerage District, adoption of environmental corridors by the RPC will exempt corridor lands from MMSD taxes, assessments, and fees. The corridors would not, however, affect any MMSD taxes, assessments, and fees which have already been levied, nor prevent MMSD from charging for providing sewer service to facilities in the corridors (such as bathroom facilities in parks located in corridors).

Changing the Environmental Corridors

The environmental corridors are mapped on the basis of the best available information at the time of delineation. It is necessary to update and revise the environmental corridors and the basic resource information on the environmental corridor maps for a variety of reasons: (a) to correct errors or omissions in the mapped resource information and corridor delineations; (b) to reflect additional, improved or updated background or resource information gained from field reconnaissance, more detailed studies, or detailed site surveys and plans for specific areas; (c) corridor changes which result from detailed site design and review of specific development plans and plats; (d) changes in plans or policies of local units of government regarding intended land use and open space uses; and (e) refined design and resolution of conflicts between utility or transportation systems and environmental corridor delineations for specific sites or projects.

Changes to the environmental corridors can be classified into two general categories: (a) refinements and minor changes to the environmental corridors which would not require prior approval by the Regional Planning Commission or the Department of Natural Resources; and (b) major changes to the corridors which would require concurrence by the Regional Planning Commission and the Department of Natural Resources before these changes would be effective for the purpose of reviewing sanitary sewer extensions. Any change to an environmental corridor, whether major or minor, should be initiated or sponsored by the affected local units of general government (city, village, town), or by the Regional Planning Commission in consultation with the affected local general units of government. It is expected that all changes, major or minor, would be initiated by formal action by the affected local general units of government: adoption by resolution, or approval of a plat or development plan. This ensures that the local public body responsible for land use decisions is aware of minor changes and allows opportunity for public input on corridor changes. Procedures and criteria applicable to both types of changes are outlined below.

Refinements and Minor Changes

Refinements and minor changes would not require prior approval of the Regional Planning Commission or the Department of Natural Resources. However, the Regional Planning Commission would have to be informed of the change before it would be effective for the purposes of reviewing public sanitary sewer extensions. The Regional Planning Commission would then be responsible for informing the Department of Natural Resources of the change.

Refinements and minor changes are generally of two types: (1) changes resulting from revised, improved, or more detailed background resource information; and (2) minor adjustments or changes *which would not seriously affect water quality.*

The following examples illustrate revisions resulting from changes in basic background resource information:

(a) Improved or revised DNR-approved floodplain delineations resulting from revised flood studies or availability of more detailed topographic information.

(b) Revised wetland boundaries on DNR Wetland Inventory maps resulting from the availability of more detailed information or field checks by regulatory agencies, or resulting from approved rezoning.

(c) Changes in water bodies, woodlands, steep slopes or other resource features resulting from availability of more detailed studies or site maps or from field reconnaissance by regulatory agencies.

(d) Additions to existing or proposed parks, greenways or conservancy lands resulting from purchase, dedication, zoning changes, official map changes or changes in adopted plans or approved site plans and plats, provided proper statutory procedures have been followed.

The following examples illustrate minor changes which usually would not seriously affect water quality:

(a) Changes resulting from DNR-approved changes in floodplain or wetland delineations, or DNR-approved rezoning.

(b) Relocation or shortening of an environmental corridor which is based solely on shoreland buffer strips along intermittent streams or drainageways.

(c) Adjustment of the width of shoreland buffer strips along intermittent streams or drainageways within the guidelines in Chapter II (generally to a minimum of 75 ft. total width where no other utility except drainage is to be accommodated in the environmental corridor).

(d) Addition to or removal of any amount of public or private lands from the corridors which *do not* include water bodies, floodplains, wetlands or wetland buffer strips, minimum shoreland buffer strips, or steep slopes adjacent to water bodies (defined as slopes over 12 percent lacking at least 75 feet of vegetated buffer strip between the base of the slope and the ordinary high water mark or top of bank of streams, ponds, and lakes).

(e) Changes which result from utility or roadway maintenance or construction which meet the criteria set forth in chapters NR 103 and NR 117 of the Wisconsin Administrative Code. It is not the intent of the environmental corridors to prevent or obstruct maintenance, expansion or construction of transportation or utility facilities intended to serve areas outside of the corridors, needed to maintain or improve continuity of those systems, or designed to serve compatible uses in the corridors, such as park shelters or facilities. Facilities intended to serve new sewered residential, commercial or industrial development in the corridors would not be permitted.

Major Changes

Major changes have the potential for significant impacts on water quality and require the concurrence of the Regional Planning Commission and the Department of Natural Resources before these changes become effective for the purpose of reviewing sanitary sewer extensions. Examples include:

(a) Removal of any mapped floodplain or wetland area for sewered development, unless exempted by state administrative rules or state-approved rezoning.

(b) Any change which would remove any area below the ordinary high water mark of a stream, pond or lake.

(c) Any change resulting in the elimination or interruption in the continuity of any corridor segment including floodplains, wetlands, shoreland buffer strips or steep slopes adjacent to water bodies (defined as slopes over 12 percent lacking at least 75 feet of vegetated buffer strip between the base of the slope and the ordinary high water mark or top of bank of streams, ponds, and lakes).

(d) Any change which would reduce the width of vegetated shoreland buffer strips along streams, wetlands, and drainageways below the minimum guidelines in Chapter II (75 ft. total width for intermittent streams and drainageways, 200 ft. total width for navigable streams).

CHAPTER II.
Planning Background and Issues

The Planning Framework

Open Space Planning History

The earliest colonial plans, such as that drawn for Philadelphia in 1682, recognized the need for recreation and visual variety in the living environment. Public parks and open spaces have long been provided to meet physical and psychological human needs.

Since the early 1960s, increasing appreciation of the natural environment has brought a new dimension to parks and open spaces. Increasingly, open space has been integrated with all of the other land use, economic, and transportation considerations involved in planning. The spaces not used for buildings and structures combine with natural resources such as wetlands to serve a variety of urban and rural functions. These undeveloped lands and precious natural resources are now recognized as an integral part of the fabric of our lives, and their role in determining the quality and character of the places where we live is more fully understood.

In 1960, Wisconsin Governor Gaylord Nelson initiated a *Statewide Recreation and Open Space Plan* (1964). The study and inventory which served as the foundation for that Plan delineated the natural and cultural resources of the state to form interconnected recreation and open space "corridors." The plan represented the first statewide delineation of "environmental" corridors.

Dane County first established policies for parks and open spaces as part of the *Plan for Parks and Open Spaces* adopted by the Park Commission and the Dane County Board of Supervisors in 1971. Since then, the policies have evolved in the context of subsequent efforts, the 1973 *Land Use Plan for Dane County*, the 1983 *Park, Open Space and Outdoor Recreation Plan for Dane County, Wisconsin*, the 1985 *Regional Development Guide For Dane County, Wisconsin*, the 1990 *Park and Open Space Plan for Dane County, Wisconsin 1990-1995*, the 1990 and 1995 *Summary Water Quality Plans*, and the *Parks and Open Space Plan for Dane County, Wisconsin 1996-2000*. The evolution of policies reflects a broadening perspective on the value of preserving or protecting open land. In addition, the open space/environmental corridor concept has been reflected and detailed in the *Dane County Water Quality Plan, Environmental Corridors* report and 1990 and 1995 *Water Quality Plan* updates.

1971 Plan for Parks and Open Spaces

The first park plan for the county addressed long-term needs for recreational land as well as natural resources. The intent of the plan is summarized in its six objectives:

1. "To utilize open space, whether for active or for non-recreation purposes, as a major device or element for directing urban growth and influencing the overall environment of the region."
2. "To locate parks and open spaces in such a way as to assist in water pollution abatement, water quality improvement, flood control, regional drainage, and environmental enhancement."
3. "To meet the outdoor recreation needs of the people of Dane County."
4. "To develop a coordinated system of parks and open spaces for the region" (i.e., coordinated local, county, and state roles).
5. "To provide park and open spaces as effectively and economically as possible."
6. "To preserve for posterity, where possible, some of the heritage of Dane County."

As a first statement of policies for Dane County, the 1971 plan was significant in recognizing the recreational and non-recreational functions of open space. The plan also recognized that open space areas should be an integral part of the land use plan and should help to carry out the overall settlement policies of the region. The plan's policies produced recommendations to acquire major parks along shorelines and in areas threatened by development, and to acquire wetlands as resource protection areas.

1973 Land Use Plan for Dane County

Adoption of the Dane County *Land Use Plan* put park and open space policies into the context of overall county development policies. The plan articulated broad objectives and detailed policies in six subject areas: population growth and distribution; environmental protection and enhancement; regional development; public services; agricultural land; and open space. Policies regarding open space appear explicitly in four of these subject areas. The plan policies in each subject area are summarized in the following sections.

Open Space. The single objective in this category is "To provide permanent open space throughout the region for public recreation, resource preservation, and community separation." This statement outlines three general functions of open space, clarifying what was implied in the 1971 *Plan for Parks and Open Spaces.* Most of

the open space policies in the 1973 *Land Use Plan* emphasized the preservation of a countywide system of open space corridors, which were mapped as the open space element of the plan. The countywide open space corridor system in the 1973 *Land Use Plan* has since been refined and detailed, and provides the basis for the present environmental corridors.

Environmental Protection and Enhancement. The objective relating to open space in this category is "To recognize that the natural environment is an integrated unit composed of interacting land, water, and air resources; and to ensure that the health and stability of this resource system are maintained."

Implicit in the policies for environmental protection is the use of open space to meet resource protection needs and shape urban development to maintain environmental quality and integrity.

Regional Development. The broad objectives for regional development contained in the *Land Use Plan* speak to the "community separation" function of open space. They include the following:

"To attain a pattern of regional development that includes living environments suited to a variety of human needs including privacy, community, productivity, convenience, beauty, and diversity."

"To promote compact urban communities that are visually distinct from each other and both visually and functionally distinct from surrounding agricultural areas."

The accompanying policies speak to the need for compact development, the creation of balanced communities, and efficient use of land for urban purposes. Such objectives and policies recognize that maintenance of open space is integral to achieving desirable development patterns.

Agricultural Land. The agricultural land objectives of the plan largely call for preservation of productive farmland, but one objective specifically sets the goal "To maintain open space provided by agricultural land to guide urban development." Agricultural land, therefore, contributes to the open space function of community separation.

1979 Dane County Water Quality Plan

The *Dane County Water Quality Plan* incorporated the *Land Use Plan* policies for environmental protection and enhancement. Applicable policies from the 1971 *Plan for Parks and Open Spaces* were also incorporated in the *Water Quality Plan* to support a recommendation giving priority to acquisition of water-oriented parks and water related resource protection areas.

The *Water Quality Plan* supported the incorporation of natural drainage systems into developing areas, and underscored the value of protecting multipurpose open space corridors by noting that a "system of . . . corridors, centered around stream valleys, wetlands and lakes, is a concept with substantial water quality benefits."

1983 Park, Open Space and Outdoor Recreation Plan for Dane County

This plan updated the 1971 *Plan for Parks and Open Spaces*. It incorporated the policies of the 1973 *Land Use Plan*, the priorities expressed in the 1975 *Short Range Open Space Program*, the objectives of the 1977 *E-Way* report and the 1981 *Cherokee Marsh Long Range Open Space Plan.* The plan also made specific reference to the development of environmental corridors to address the functions of water resource protection, public health and safety protection, outdoor recreation, shaping urban form, and enhancing scenic beauty, among others.

The six major objectives of the 1971 *Park and Open Space Plan* are restated in the 1983 plan, but the policies to meet those objectives are intended to complement and be consistent with the open space policies of the 1973 *Land Use Plan*. This new policy orientation is largely seen in an emphasis on the open space corridor system. All land acquisitions are encouraged to support the corridors, and natural resource land is given the highest priority. Generally, recreational development is to be nonintensive and focused on using open space corridors to provide trail-oriented activities which are in high demand.

Environmental Corridors Report

The first *Environmental Corridors* report was published in 1984 to document the need to delineate these corridors as part of sewer service area planning and the water quality planning effort which had started in 1975 with the designation of the Dane County Regional Planning Commission as the water quality planning agency for the region. The report explained the features which were being included in environmental corridors and the policies which were being established for the corridors. The report was produced concurrent with the detailed delineation of environmental corridors and their adoption by local units of government and the RPC.

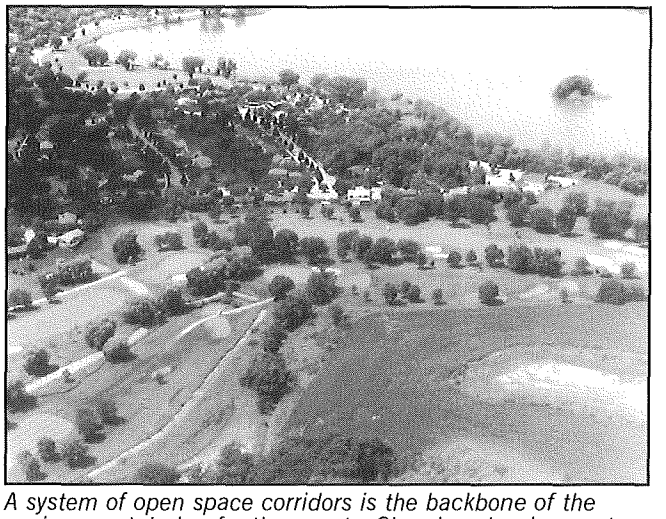
Regional Development Guide for Dane County, Wisconsin

The *Regional Development Guide* (RDG) was adopted in 1985 to replace and expand upon the 1973 *Land Use Plan*, and has been continually revised and updated since. While retaining the basic intent and policy thrust of the plan, the RDG modified and added to the plan to provide a policy framework and set of principles for decision making, so decisions from a wide variety of boards, councils, commissions, and committees could reinforce one another.

On issues related to open space planning, the RDG adopts the following objectives:

1. Promote development patterns which encourage compact, contiguous development adjacent to existing communities as well as balanced communities that provide a variety of commercial, industrial, residential, and open space land uses.
2. Promote a two-pronged environmental protection strategy which incorporates both *pollution control* and *resource protection*. Pollution control is not limited to waste treatment facilities. Land design and management is recognized as one of the most effective and important approaches to preventing and controlling pollution. Appropriate location and siting of development, vegetation management, erosion control, utilization of natural drainage systems and buffer areas are included in this strategy. Resource protection recognizes that land and natural resources perform important environmental functions such as ground-water recharge, water quality improvement, erosion control, storage of floodwaters, wildlife habitat, and scenic beauty. Some lands are particularly vulnerable in urban and developing areas. It is important that these critical and vulnerable lands and resources be identified and their environmental functions protected.
3. Promote the acquisition and preservation of lands along rivers, streams, and lakes; and continue resource protection, park development, and open space acquisition consistent with local and regional plans. Promote the use of some areas within environmental corridors for recreational purposes.
4. Protect the role of agricultural lands as open spaces by promoting the preservation of these lands through the Farmland Preservation Program and limiting non-farm development in rural areas.

The RDG establishes the system of open space corridors as the backbone of open space and environmental planning for the county. Open space corridors are divided into two distinct components: Urban Environmental Corridors within urban service areas; and Rural Resource Protection Areas outside urban service areas. These corridors include concentrations of important environmental resources and functions needing the most protection. The urban environmental corridors are based on natural features and environmentally important lands such as streams, lakes, shorelands, floodplains, wetlands, steep slopes, woodlands, parks and publicly owned lands. Where a natural feature occurs in isolation and lacks a natural linkage with the continuous system of environmental corridors, an "Isolated Resource Feature" is delineated. All of the policies and protection applied to environmental corridors are also applied to Isolated Resource Features. Rural resource protection areas are based primarily on floodplains, wetlands and shoreland areas, lands protected through zoning or other regulations together with existing or proposed publicly owned or controlled lands.



A system of open space corridors is the backbone of the environmental plan for the county. Cherokee development and Country Club adjacent to Cherokee Marsh environmental corridors.

The RDG includes a number of policies on open space and environmental resource protection. The following are some selected policies:

1. To protect shoreland, floodplain and wetland areas throughout the county and emphasize their value as focal points of natural beauty and recreation.
2. To preserve the role of wetlands and woodlands as essential components of the hydrologic system as well as valuable wildlife habitat, and restore or improve degraded wetland and woodland resources where possible.
3. To recognize the interrelationship of adjacent landscape types and avoid dividing natural units or breaking important linkages.

4. To develop and promote a countywide system of open space corridors as a basic structure and framework for resource protection and open space planning.
5. To minimize adverse impacts of necessary encroachment of utilities and transportation facilities into open space corridors by: (a) avoiding encroachment when reasonable alternatives are available; (b) where encroachment is necessary, select routes which minimize environmental impacts, and avoid dividing natural units; and (c) incorporate design considerations which minimize impacts and contribute to compatibility with corridor functions.
6. To protect the quality and supply of groundwater as the principal source of water supply in Dane County.
7. To guide urban development to those locations where adverse impacts on ground and surface water quality are minimized.
8. To incorporate in the design of urban development natural drainage patterns and measures to minimize or entrap pollutants before they enter surface waters.
9. To guide urban development to areas where soils are suitable for such development.
10. To protect the scenic values of the Dane County landscape by preserving and enhancing vegetative cover, particularly on steep wooded slopes and stream and lake shorelands.
11. To protect and maximize public enjoyment of the scenic qualities of Dane County by preserving views of landmarks, assessing visual impact of proposed developments and facilities, and improving public access to scenic areas and views, particularly urban lake and stream shorelines.
12. To acquire or preserve lands along rivers, streams, lakes, and in wetlands as well as areas of significant topography and woodlands.
13. To use open space preservation as a means for protecting the historic, aesthetic, and cultural heritage of Dane County and as a tool for shaping the form of urban growth.
14. To recognize the countywide open space corridor system and encourage continued preservation of the resources within the corridors.
15. To develop a full range of programs for the preservation of open space corridors using various devices such as purchase, dedication, zoning, easement, acquisition and other equitable means.
16. To recognize and protect natural resources and linkages outside the open space corridors such as scientific areas, glacial features, and other isolated environmentally sensitive areas.

Park and Open Space Plan for Dane County, Wisconsin 1990-1995

This plan served as an update to the 1983 *Park, Open Space and Outdoor Recreation Plan.* It retains the objectives which were developed in the 1983 plan and adds an assessment of the needs of the existing park and open space lands as well as the need for additional parklands and conservation and open space acreage. The overall goals of the *Park and Open Space Plan* are the following:

1. To preserve key natural resources of the county in permanent open space.
2. To provide sufficient parks and recreation areas to meet the needs of the people of Dane County.
3. To preserve for posterity some of the heritage of Dane County.
4. To use open space to achieve separation of communities and help guide urban growth when the land is appropriate for park purposes.

The following policies from the plan have particular implications for environmental corridors:

- Continue the preservation of the resources within the countywide open space corridor system as adopted in the *Regional Development Guide.*
- Support the detailed delineation and implementation of the system of environmental corridors within urban service areas.
- Acquire and preserve lands along rivers, streams, lakes, and in wetlands as well as areas of significant topography and woodlands.
- Allow for only low-impact recreational uses of natural resource protection areas.

Dane County Greenspace Plan

In 1989, the Greenspace Committee of the Dane County Board of Supervisors was formed to further open space preservation efforts, approve open space plans, develop implementation proposals, and report its recommendations back to the County Board. *The Greenspace Plan* was developed and adopted in 1991, fulfilling the Committee's tasks.

The Plan included the following goals:

1. To develop and promote a countywide system of open space corridors, as shown on the *Regional Development Guide* plan map, as a basic structure and framework for resource protection and open space planning.
2. To provide permanent open space throughout the region for resource preservation, public recreation, and community separation to prevent sprawl and encourage orderly community development.
3. To preserve agricultural land as a resource and promote its use as part of the linkage of lands that constitutes Dane County's *Greenspace Plan.*
4. To recognize and protect natural resources and linkages outside the open space corridors such as scientific areas, prominent glacial features and other isolated environmentally sensitive areas.
5. To use open space preservation as a means for protecting the historic, aesthetic and cultural heritage of Dane County and as a tool for shaping the form of urban growth.
6. To develop a full range of programs for the preservation of open space using various devices such as purchase, dedication, zoning, easement, acquisition and other equitable means.
7. To encourage greater private sector action in the preservation and acquisition of park and open space lands.
8. To seek and maximize the use of a variety of funding sources to implement the *Greenspace Plan* and provide for equitable compensation for acquired lands.

The Plan identified several resource protection study areas which it recommended for further study to develop detailed acquisition plans. These recommendations were incorporated in the *Park and Open Space Plan 1990-1995* as an amendment. As detailed acquisition plans are prepared and finalized, the detailed acquisition areas will be incorporated in the rural resource protection areas and the environmental corridors.

The 1990 and 1995 Summary Dane County Water Quality Plan Updates

The resource management element of the 1990 and 1995 *Summary Water Quality Plan* updates are based on the environmental corridor policies of the *Regional Development Guide* and incorporate these policies in the *Water Quality Plan.*

The Summary Plans identify several environmentally important functions and community concerns which are protected through the delineation and protection of a continuous open space corridor system. These include the following:

- protection of water resource, drainage and hydrologic functions;
- pollution control;
- protection of public health, safety and property;
- provision of outdoor recreation and education opportunities;
- protection of wildlife habitat; and
- enhancement of scenic beauty and shaping of urban form.

The delineation and protection of a continuous areawide open space corridor system is based on the recognition of the interrelatedness of adjacent landscape types and the importance of protecting valuable ecological units and linkages. The corridor system, therefore, is primarily associated with stream valleys and water features, and emphasizes the importance of continuity of environmental systems and protection of the land/water edge.

The open space corridor system shown on the *Regional Development Guide* Plan Map represents the basic skeleton of an areawide open space network. It is expected that this basic system will be expanded by adding buffer areas, areas for protecting scenic views and community separation, and areas desired for active recreation or public use. Adjacent or contiguous upland areas important for wildlife habitat, groundwater recharge, or protection of unique or valuable resources (unique vegetation, geologic features, archaeological sites, etc.) should also be considered for addition to the corridors.

The most important current issues and priority needs in regard to open space and environmental corridor protection are noted in the Summary Plans as: (1) using the adopted open space/environmental corridor system as a consideration in all local land use and siting decisions and planning; (2) continuing to emphasize the use of the open space corridor network as basic guidance and priorities for open space acquisition and protection programs; (3) providing an emergency acquisition fund to ensure protection of important corridor lands and critical environmental resources which are endangered or threatened by development which cannot be adequately protected through other means.

The Dane County
Regional Planning Commission

Regional Development Plan Map

Urban Service Area
Limited Service Area

Open Space Corridors
Open Water
Rural Area
Incorporated Area

Note to User:
This map is a general representation of the adopted Urban Service Areas and Open Space Corridors effective the date indicated. The map user should consult the official detailed up-to-date maps maintained by the RPC for specific interpretation of these delineations.

Dane County, Wisconsin

May, 2000

N

Miles
1 0 1 2 3 4

1 inch = approx. 3 1/2 miles.
1:216,000

Lambert Conformal Conic Projection
Dane County Coordinate System - NAD 83(91)

Map Created by DCRPC, 5/2000.

Source Info:
Urban/Limited Service Areas: 5/00, Environmental Corridor Maps (DCRPC).
Open Space Corridors: 5/00, Environmental Corridor Maps and Town Plan Maps (DCRPC).
Civil Division Limits: 5/00, Annexation Records (DCRPC).
Roadways: 4/95, Orthophoto Derived (DCLIO).
Hydrography: 4/95, Orthophoto Derived (DCLIO)

Parks and Open Space Plan for Dane County, Wisconsin 1996-2000

This plan serves as an update to the *Park and Open Space Plan, 1990-1995* and includes an inventory of the progress made in park and open space development and acquisition since 1990 when the previous plan was formulated. More significantly, it includes a number of policy additions, some of which are listed below:

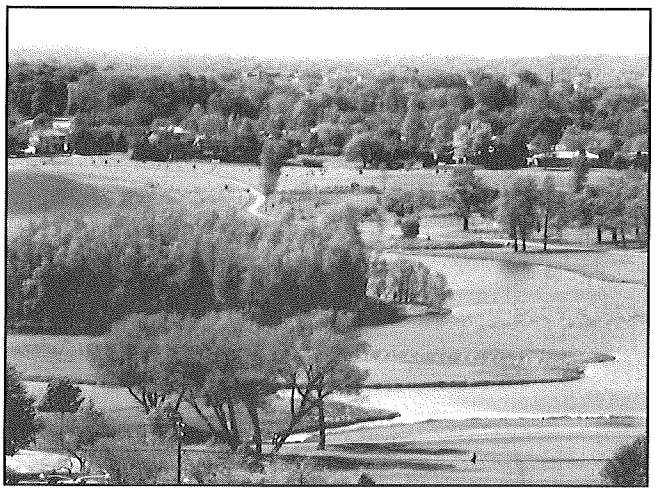
1. Adds upland areas adjacent to wetlands, stream headwater areas and springs to the list of areas to be considered for acquisition and preservation.
2. Restoration of upland prairies, woodlands, and wetlands.
3. Link public lands and trails of various political jurisdictions to communities and population centers to amplify the availability and recreational use of these lands.
4. Provide access to lakes and streams and water-based recreational trails. These water-based trails would be designed for use by canoes, kayaks, and similar watercraft.
5. Provide for year-round multiple uses, particularly trail-oriented activities, in siting and designing parks.
6. Charge fees in order to provide funding for operation, land acquisition, and development of the county park system.
7. The *Regional Transportation Plan for Dane County* should plan for safe trail crossings across county roads and highways as well as reduce the impact of transportation corridors on county park and open space areas.
8. Adds policies for the role of the private sector in assisting the county in the acquisition and management of parks and open spaces.
9. Adds policies which would address the impacts of removing lands from tax rolls when the county acquires lands for recreational use and resource protection.

Functions and Values of Environmental Corridors

It was stated in the previous section that open space has long been a significant element in Dane County planning. However, the words "open space" have a different emphasis in each planning context. The following section reviews the role of environmental corridors as an element of the total open space system.

Environmental corridors are continuous systems of open space that include environmentally sensitive lands and natural resources requiring protection from disturbance and development, and lands needed for open space and recreational use. They are based mainly on drainageways and stream channels, floodplains, wetlands, and other resource lands and features. Environmental corridors are used in community and regional plans to address the multiple concerns of drainage, water quality, recreation, open space, and wildlife habitat.

Protection of environmental corridors contributes to a variety of community concerns and functions, including the protection of water resources, drainage, and hydrologic functions; pollution control; protection of public health, safety and property; provision of outdoor recreation and education opportunities; protection of wildlife habitat; and enhancement of scenic beauty and shaping of urban form.



Warner Park environmental corridor combines several open space functions in one location.

Open Space Functions

The primary functions of open space lands can be classified into five general categories. These include: (1) resource production, including such uses as agriculture, forestry, and mining; (2) protection of natural resources and critical environmental processes, which would include fish and wildlife refuges, wetlands and marshes, groundwater recharge areas, and watershed and stream corridor protection areas; (3) protection of public health, safety and property, including floodplains, landslide hazard areas, fire hazard areas, steep slopes, and areas of high noise exposure (such as airport flight paths); (4) satisfaction of community outdoor recreation needs, including parks, playgrounds, trails, nature study areas and other recreation areas; and (5) enhancement of scenic beauty and provision of buffer areas and separation between adjacent

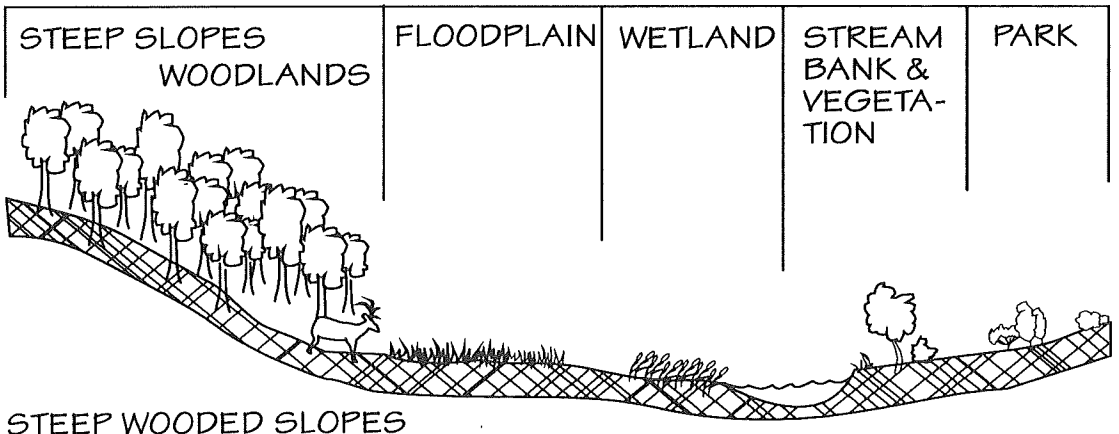
communities or incompatible land uses, growth management boundaries and barriers, and utility and transportation corridors, as a determinant of urban shape and form.

While lands typically included in environmental corridors contribute to all five open space functions, the function of resource production plays a less significant role, particularly in urban areas. Therefore, the following discussion emphasizes the contribution of environmental corridor lands and resources to the remaining four open space functions, namely, protection of natural resources and critical environmental processes; protection of public health, safety and property; outdoor recreation and education; and scenic beauty and urban form.

The function of protecting natural resources and critical environmental processes is one of the most important contributions made by environmental corridors and includes a number of different aspects of public concern. In discussing the contribution of environmental corridors to open space functions, therefore, this functional category has been subdivided into three major categories: (1) protection of water resources, drainage and hydrologic functions (including such features as surface drainageways and floodways, groundwater recharge and discharge areas, and flood storage and detention areas); (2) pollution control (including protection against erosion and sedimentation caused by incompatible or adverse development, provision of vegetative filtering of surface runoff, maintenance of dry weather stream flows by protecting wetlands and groundwater discharge areas, and the vegetative stabilization of drainageways, streambanks and shorelines); and (3) the protection and provision of land and water habitat for a wide variety of wildlife.

The protection of public health, safety and property is an extremely important function of environmental corridors, with significant economic implications, as well as health and safety impacts. Avoiding or preventing development in areas subject to flooding, areas with unstable soils which could be subject to landslides or settlement, areas subject to excessive noise, areas with steep slopes which present problems in providing adequate access for emergency vehicles in adverse weather conditions, or avoiding or preventing activities which would cause erosion or contamination of public water supplies (either direct contamination of surface water supplies or contamination of groundwater supplies by improper development or practices in groundwater discharge or recharge areas);. All of these factors contribute to the protection of public health, safety, and property. The economic, health and safety consequences of ignoring the limitations of developing in these areas is staggering, although it is not often thoroughly tabulated or evaluated.

Much of the traditional focus of open space lands has been on the satisfaction of outdoor recreation and education needs for the community. Many of the resource features and lands included in environmental corridors are capable of satisfying both active and passive recreation and outdoor education and nature study needs. It should be emphasized, however, that all environmental corridor lands are not suitable for intense or concentrated active



The schematic diagram depicts the resource elements one finds in a typical environmental corridor. Often one or more elements are found in the same locality, such as woodlands and steep slopes.

recreational uses. Therefore, there will always be a need to provide additional upland recreational sites to satisfy some of these needs. The continuous nature of environmental corridors is particularly suited to outdoor recreation activities utilizing trails, such as hiking, biking, or cross-country skiing, as well as providing access to water bodies and significant opportunities for nature study and observation of wildlife.

Finally, environmental corridors contribute to scenic beauty and the shaping of urban form. This is particularly important in urban areas, where there is a significant need for defining and shaping urban form, providing buffer areas between incompatible land uses and separation between communities, providing corridors for utility and transportation systems, and incorporating boundaries and barriers to urban development. Many of the lands and resource features included in environmental corridors provide scenic beauty and the needed serenity and tranquility associated with natural processes and scenery, a particularly important psychological and aesthetic need in dense urban areas.

Recreational trail and environmental corridor along Monona Bay and Northshore Drive underscores the utility of a linear and interconnected system of corridors for recreational trail development.

Functions and Values of Resource Features

As described earlier, environmental corridors commonly include a variety of environmentally sensitive lands and resource features including: lakes, ponds and streams; wetlands; floodplains; shoreland buffer strips along streams, drainageways, and wetlands; steep slopes; woodlands; parks and recreation areas; areas of unique vegetation or geology; and areas with problem soils.

The contribution of each of these resource features to the open space functions of environmental corridors have been summarized in Table 1. Functions are classified into primary functions and secondary or supplemental functions.

Lakes, Ponds and Streams. Lakes, ponds and streams are important water resources which provide a primary function in drainage and hydrologic balance. It is, therefore, important to avoid destroying or diminishing the capability of these water bodies to perform those important functions.

In order to protect public health, safety and property, it is also important to avoid development which adversely impacts lakes, ponds and streams, since these water resources are necessary to convey runoff and flood flows and to provide public water supplies.

Lakes, ponds and streams are heavily used for outdoor recreation, nature study and education. Swimming, boating, fishing, and nature study are among the most significant outdoor recreation activities in Dane County. Lakes, ponds and streams also represent significant wildlife habitat, not only for fish and aquatic organisms, but also to provide food and water for land-based wildlife, birds and waterfowl.

Finally, lakes, ponds and streams are among the most important features in enhancing scenic beauty and shaping urban form, particularly in Dane County where these features have dominated and controlled the form of urban development and provided a beautiful setting. The tranquility, serenity and beauty afforded by views of the lakes, ponds and streams in the Dane County area are particularly important in providing a sense of psychological well-being in an urban environment.

Wetlands. Wetlands are particularly fragile and important natural resources which contribute to every open space function of environmental corridors. Wetlands are particularly important in protecting water resources, drainage and hydrologic functions, in that they usually represent groundwater discharge areas which maintain stream flows during dry weather conditions, or groundwater recharge areas which provide protection against contamination of groundwater supplies. Wetlands provide temporary detention and storage of floodwaters and runoff, which reduces flood damage and maintains a hydrologic balance between ground and surface waters. Avoiding construction and development in wetlands is important in terms of protecting public health, safety and property, since these areas are usually subject to flooding and exhibit unstable and compressible soils.

Wetlands provide an important function in pollution control, since they provide for settling of sediment in storm runoff and for the removal and utilization of contaminants and nutrients in runoff waters.

A secondary or supplemental function of wetlands is to provide outdoor recreation and education opportunities. Wetlands are extremely important resources for nature study, interpretation and education. They are, however, fragile resources which are generally unsuited to intensive recreational use.

Wetlands are perhaps the most important resource feature in terms of wildlife habitat, since they represent the edge between land and water and are usually highly productive in terms of production and support of living organisms, both plant and animal. Thus, wetlands are extremely important in provision of food, water, nesting and breeding habitat for a wide variety of wildlife. Finally, wetlands are important in enhancing scenic beauty and shaping urban form. They often provide logical barriers or boundaries to urban development, as well as buffers between communities and incompatible land uses.

Floodplains. The role of floodplains in performing a drainage and hydrologic function is very important. Loss, due to development, of the flood conveyance and storage capacity provided by floodplains can result in increased flooding and damages both upstream and downstream.

One of the primary reasons to protect floodplains from development is to protect public health, safety and property. Locating development in the floodplain exposes property such as buildings, streets and utilities to extensive and expensive flood damage, as well as exposing the resident population to significant risks to health and safety during floods.

Providing pollution control is a secondary or supplemental function of floodplains, primarily through the mechanism of settling out sediment from slow-moving waters in flood fringe or storage areas.

Since floodplains are associated with water features, they can satisfy some outdoor recreation and education needs. Many active and passive recreational uses are compatible with floodplains, particularly for activities not requiring structures or facilities which would be vulnerable to flood damage. Another secondary or supplemental function of floodplains is to provide wildlife habitat. Since floodplains are associated with lakes and streams, they include the land-water edge, which is particularly important in satisfying the food, water, and habitat needs of a wide variety of land and water-based wildlife. In addition, floodplains

Table 1

Open Space Functions of Environmental Corridor Resource Features

FUNCTION	RESOURCE FEATURES: Lakes, Ponds, & Streams	Wetlands	Floodplains	Shoreland Buffer Strips	Steep Slopes	Woodlands	Parks	Unique Vegetation or Geology	Problem Soils
Protect Water Resources, Drainage & Hydrologic Functions	▲	▲	▲	▲		△			△
Provide Pollution Control		▲	△	▲	▲	△	△		
Protect Public Health, Safety & Property	▲	△	▲		▲				▲
Provide Outdoor Recreation & Education Opportunities	▲	△	△	△		△	▲	△	
Provide Wildlife Habitat	▲	▲	△	△		▲	△	△	
Enhance Scenic Beauty & Shape Urban Form	▲	△	▲	▲	▲	▲	▲	▲	

▲ Primary Function △ Secondary or Supplemental Function

have a continuous nature, and this continuity is extremely important in enhancing the value of open space for wildlife habitat.

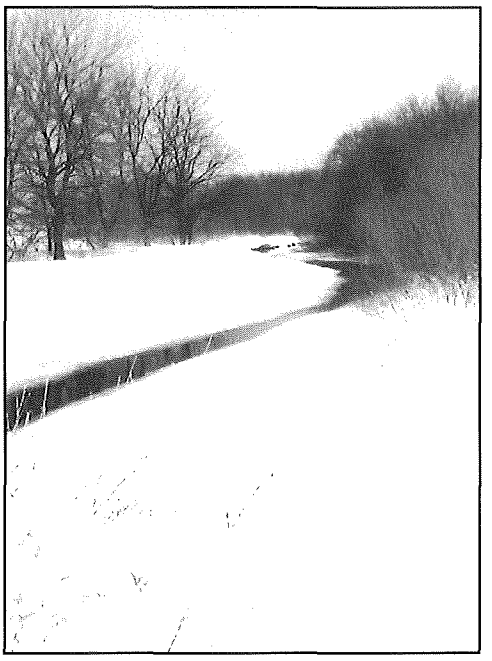
Finally, floodplains also provide a secondary or supplemental function in terms of enhancing scenic beauty and shaping urban form. While floodplains in and of themselves are not particularly scenic, they are important in providing buffers between adjacent communities or incompatible land uses and provide logical boundaries for urban growth.

Shoreland Buffer Strips. Shoreland buffer strips along streams, drainageways and wetlands are important resource features which are not based on any physical or visible feature, but rather represent an arbitrary protective buffer strip where floodplains or wetlands are absent or provide inadequate protection to the stream or wetlands.

Shoreland buffer strips are important in protecting water resources, drainage and hydrologic functions in that they substitute as a floodway and floodplain for small streams and intermittent drainageways where these features have not been delineated, and provide area for the passage and storage of runoff and flood flows. Buffer strips along streams and drainageways are also necessary because over long periods of time, there tends to be lateral movement and migration of the stream bed or stream channel, and the buffer provides room for this natural process. An extremely important function of shoreland buffer strips is to provide pollution control by allowing natural vegetation in the buffer strips to filter sediment and contaminants from surface runoff entering the water body, and by allowing vegetation to stabilize the natural drainageway and stream bank, thus reducing erosion of the bed and banks. This is particularly important in urban areas, where development causes substantial increases in storm runoff and flood flows. The increased flows destabilize and erode natural stream channels and drainageways unless significant efforts are made to protect these areas.

Shoreland buffer strips provide opportunities for development or extension of trail-oriented recreational activities, such as hiking, biking, cross-country skiing, and nature study, particularly in urban areas. In many cases, shoreland buffer strips along intermittent streams and drainageways could provide a significant amount of open space and recreational opportunities at the subdivision or neighborhood scale.

Another secondary function of shoreland buffer strips is wildlife habitat. While shoreland buffer strips along permanent streams and wetlands are more important for this function than those along intermittent drainageways, the continuity provided by shoreland buffer strips and the ability to connect one area of significant wildlife habitat with another can make them important features of a continuous wildlife habitat system in urban areas.



Buffer strips provide year-round wildlife and recreational use in addition to bank stabilization and pollution and erosion reduction functions. Nine Springs Creek.

Shoreland buffer strips, like floodplains and wetlands, can be quite important in enhancing scenic beauty and shaping urban form. Shoreland buffer strips along streams and drainageways often include wooded areas and provide and preserve views of water bodies. While the scenic aspects of shoreland buffer strips along intermittent streams may not be as important, these buffer strips are important for providing buffers between adjacent and incompatible land uses, in addition to shaping urban form and providing boundaries to urban growth.

Figure 1 illustrates minimum guidelines for the provision of shoreland buffer strips. Along navigable streams and the boundaries of wetlands, a buffer strip with a minimum width of 75 feet should be provided to the landward side of the wetland or ordinary high-water mark. This generally corresponds to the minimum building setback provided under shoreland zoning requirements, and should be sufficient to accommodate vegetative bank stabilization, pollution control, and recreational trail development. This minimum width would be provided on each side of the stream, with a total minimum corridor width of 200 feet, except where the 100-year floodplain is wider (where the floodplain boundary becomes the boundary of the environmental corridor). The buffer strip adjacent to wetlands is also provided in or-

Buffer strip along Murphy Creek provides space for maintenance of banks and protects the water quality by filtering surface runoff.

der to accommodate pollution control through filtering of surface runoff. It is important to provide adequate space for recreational trail development where intended.

For intermittent streams and drainageways, a minimum total corridor width of 75 to 100 feet is established for those corridors where public access for recreation is not intended (75 feet where no other utility except drainage is to be accommodated in the corridor, 100 feet where one or more other utilities are to be located in the corridor). In all cases, a minimum 25-foot wide vegetated buffer strip should be provided on each side of the stream or drainageway. Where recreational access to the corridor is intended, the minimum total corridor width should be increased to 100 to 200 feet, depending on the degree of intended recreational use and needed facilities.

While buffer strips have been mapped for streams, wetlands, and drainageways, they have not been mapped for lakeshores. In Dane County, lakeshores in unincorporated areas are subject to shoreland zoning and restrictions, while in urban areas lakeshores are for the most part either already developed or in public ownership. Environmental corridors generally include those lakeshore lands in public ownership, but lakeshore lands in private ownership have not been included in the environmental corridors, unless they are intended to be acquired for public purposes. While most urban and rural lakeshores are subject to shoreland regulations of one form or another which provide some protection, it is quite difficult to illustrate the effect of these regulations through any uniform mapping approach. The regulations provide variable setback requirements which depend on the setback of existing structures on adjoining properties. Thus, buffer strips are not mapped along privately owned lakeshores even though it is recognized that these areas are subject to regulation.

Although lakeshores, particularly in urban areas, are not mapped in terms of buffer strips, it is important to recognize that these are significant features which contribute to most if not all of the environmental functions noted in Table 1, and need to be protected. In addition, it is recommended that when opportunities arise for acquisition of lakeshores, the shorelands be obtained for public use. For privately owned urban lakeshores, it is recommended that those uses which will maximize the enjoyment of and benefit to the greatest number of people be encouraged by emphasizing those facilities or businesses which are most appropriate for and suited to enjoyment of the lakeshore amenity, and will expose a significant number of people to those amenities. It is suggested that low-density residential use, for example, be discouraged except where it is desired to maintain significant vegetative cover.

Steep Slopes. One of the primary purposes of protecting steep slopes from development or disturbance is the need to provide pollution control, since disturbing the soils and vegetation on steep slopes can result in extremely severe erosion, which can in turn have an important impact on the water quality of nearby water resources.

Another primary function of steep slopes is to protect public health, safety and property. Disturbance of steep slopes by development and construction can render the slope unstable, causing earth movement or landslides resulting in expensive and extensive damage to buildings, roads and utilities. In addition, development on steep slopes usually results in streets with steep grades. It is important, from a public safety standpoint, to maintain moderate street grades which allow access to property by emergency vehicles during inclement weather conditions.

Finally, steep slopes are extremely important in enhancing scenic beauty and shaping urban form. Steep slopes represent an obvious barrier to urban development and are often logical boundaries for urban growth. In addition, steep slopes are highly visible and therefore important in determining the scenic qualities of an area. When steep slopes are stripped of vegetation or scarred by mining or construction activities, results are highly visible for great distances.

Where steep slopes are found in conjunction with woodlands, the functions and values are multiplied, and steep wooded slopes are extremely important from the standpoint of pollution control and enhancing scenic beauty. In addition, steep wooded slopes are important wildlife habitat.

The question of degree of steepness which may represent a problem depends to a certain extent on the topography, geology, and development constraints in a particular area.

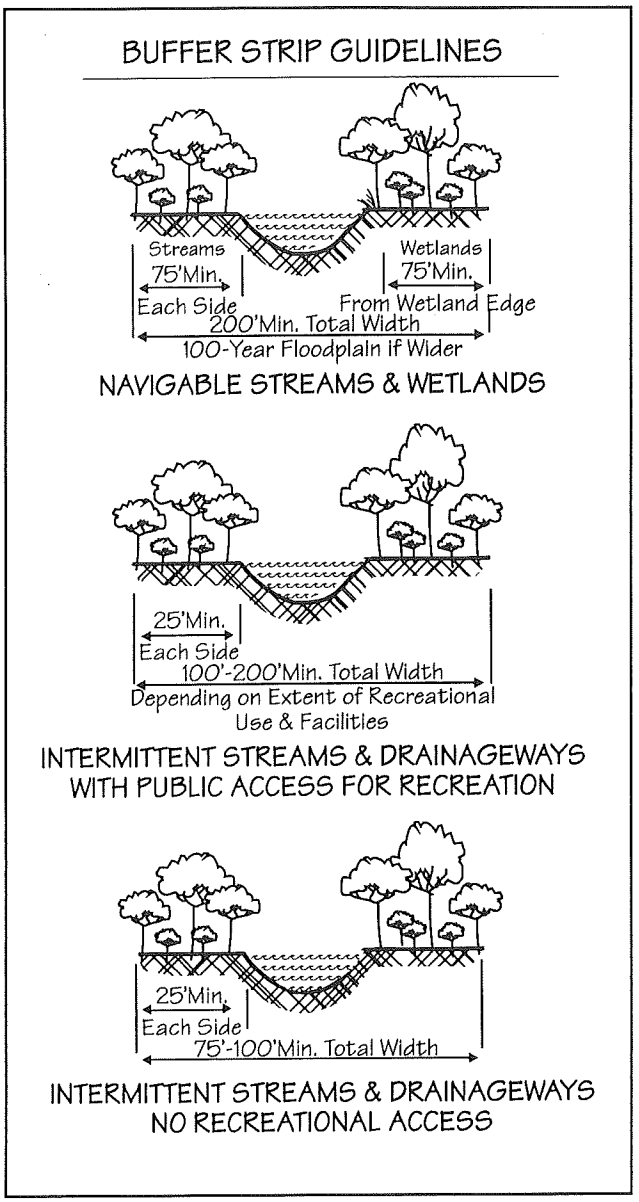


Figure 1

Slopes of over 20 percent will almost always represent a serious problem if disturbed or developed from the standpoint of erosion and protection of public safety and property. These slopes should be excluded from development at urban densities and from significant vegetation clearing. Slopes ranging from 12 percent to 20 percent can represent a significant problem in many cases, and should be likewise protected from development, unless careful attention is paid to the concerns of erosion control, slope stability, and emergency vehicle access. In some cases it may be possible to allow low-density development on slopes ranging from 12 to 20 percent; however, this should only be permitted in the context of specific and careful review of individual site plans and proposals.

Woodlands. Woodlands provide a secondary or supplemental function in protecting water resources, drainage and hydrologic functions, and in providing pollution control. In general, wooded areas result in low levels of surface runoff and erosion and nonpoint source pollution. In addition, woodlands are important in the overall hydrologic cycle in transpiring water to the atmosphere.

Woodlands also provide a supplemental function in outdoor recreation and education opportunities. They are often used for hiking, nature study, picnicking, and similar activities.

The primary functions of woodlands are to provide wildlife habitat, enhance scenic beauty and shape urban form. As mentioned earlier in the discussion under *Steep Slopes*, wooded steep slopes are particularly important for both of these functions and are extremely vulnerable to impacts from development or construction. Wooded areas are also important in providing a sense of natural open space in dense urban areas.

Parks. While parks may include a number of other resource features (such as woodlands, steep slopes, floodplains, etc.) they often also include lands which exhibit none of these features. Even when other resource features are not involved, however, parks contribute to a number of open space functions. In general, parks contribute to pollution control, since the open vegetated spaces usually generate little erosion and nonpoint source pollution. In addition, the large open vegetated spaces provide a supplemental function in terms of wildlife habitat.

The primary function of parks, of course, is to provide outdoor recreation and education opportunities. Parks also are important in enhancing scenic beauty and shaping urban form.

Unique Vegetation and Geology. Areas of unique vegetation (such as remnant prairies and oak savannahs) or geology can provide outdoor education and nature study opportunities and wildlife habitat, but the fragile nature of many of these areas is not suited to intensive recreation. Areas of unique vegetation and geology perform a primary function in enhancing scenic beauty. Areas of unique vegetation are also often associated with rare or endangered plant species, and their inclusion in environmental corridors provides additional protection against loss or extinction. These areas are usually protected for their uniqueness, educational and scientific value, or beauty.

Soils. The primary reason to avoid building in areas with soils which pose severe limitations for development is to protect public health, safety and property. Permitting development and construction on compressible or unstable soils will generally result in both short-term and

long-term construction, maintenance, and economic problems to landowners and the community. Building on compressible or unstable soils will usually result in damage to buildings, roads and utilities, and the long-term maintenance costs are often prohibitively expensive. It is usually wise, therefore, to avoid these areas. In addition, some limiting soils are associated with areas of high water table, and development in these areas can result in additional construction costs and drainage problems, as well as subsequent problems such as basement flooding.

It should be recognized that areas of soils which pose limitations for development often coincide with many of the other resource features associated with environmental corridors. Wetlands, floodplains, shoreland buffer strips, and steep slopes usually include soils which can present problems for construction and development.

Differences Between Urban Environmental Corridors and Rural Resource Protection Areas

As stated earlier, the *Regional Development Guide* outlines a countywide system of open space corridors and identifies them as the most crucial natural resource areas in the county, deserving of the greatest degree of environmental protection. The open space corridors include the three following components:

1. Rural Resource Protection Areas, which are continuous open space systems based on streams, lakes, shorelands, floodplains, wetlands, steep slopes, and woodlands. Primary protection of these lands is through zoning.
2. Urban Environmental Corridors, which are that portion of the open space corridors which lie within urban service areas. These are subject to pressures of development and impact from adjoining land uses. They are also valuable because of the relative scarcity of natural resources and scenic beauty in urban areas.
3. Isolated Resource Features lie outside of open space corridors, but need protection because of their scientific, ecological, and scenic importance. These features are treated the same as environmental corridors and resource protection areas and are included in the other two components.

While environmental corridors and rural resource protection areas represent continuous corridor systems and are connected with each other, there are some differences and distinctions between the two components. Urban environmental corridors generally face greater pressure from adverse development or modification, higher densities of surrounding development and land use, and greater need and use of corridors for public open space and recreation. As a result, the urban environmental corridors have a higher proportion of land in public ownership, are more extensively used for recreation, and have a greater emphasis on protecting intermittent streams and drainageways which are threatened by development and landscape alteration. Urban environmental corridors often require more stringent protection measures or acquisition to adequately protect critical or scarce resources.

The urban environmental corridor systems represent a substantial framework for the open space and environmental network in a community. As an example, the environmental corridor system in the Central Urban Service Area (the largest urban service area in Dane County) includes over 11,000 acres of land, or about 20 percent of the total land area. About 8,000 acres (75 percent) of this land is in public ownership. Most of the remaining 3,000 acres is subject to environmental regulations of some sort (such as shoreland, wetland, or floodplain zoning), and some of this land will be acquired in the future through purchase or dedication.

Rural resource protection areas are based mainly on floodplains, wetlands, and shorelands delineated in town plans and protected through zoning or other regulations, together with existing and proposed publicly owned or controlled lands needed for resource protection, continuity, or public recreation. There is less pressure for alteration or development of these lands, and less land is needed for public open space and recreational use. As a result, most of the lands in rural resource protection areas will remain in private ownership, and there is less need for acquisition or stringent regulation of such resources as intermittent streams and drainageways, woodlands, or steep slopes.

The countywide open space corridor system illustrated on the *Regional Development Guide* Plan Map (Map 1), has evolved from a general planning concept to a specific and detailed tool used for guiding land use and environmental management decisions. Urban environmental corridors have been mapped and adopted for all of the urban service areas in Dane County. Environmental corridor delineations have been incorporated into local land use and comprehensive plans, and provide the basis for decisions on acquisition, regulation, and protection of open space in urbanizing areas. The primary protection mechanisms for environmental corridor lands and resources at the local level include land use regulations (such as floodplain, wetland, shoreland, and conservancy zoning, subdivision regulations, official mapping), and acquisition (through purchase or dedication). These pro-

tective mechanisms are reinforced by using the environmental corridors as the basis for federal (404 permits) and state (Chapter 30 and 31 permits) actions and decisions. In addition, the requirement that sanitary sewer extension approvals be based on a delineation of sewer service areas which include the identification of lands (environmental corridors) which are to be excluded from sewered development provides an additional powerful tool in protecting corridors from urban development.

The open space corridor system shown on the *Regional Development Guide* Plan Map (included in this report as Map 1), represents the basic skeleton of an areawide open space network. It is expected that this basic system will be expanded by adding buffer areas, areas for protecting scenic views and community separation, and areas desired for active recreation or public use.

The most important current issues and priority needs in regard to open space and environmental corridor protection are: (1) Using the adopted open space/environmental corridor system as a consideration in all local land use and siting decisions and planning; (2) Continuing to emphasize the use of the open space corridor network as basic guidance and priorities for open space acquisition and protection programs; and (3) Providing emergency acquisition funds to ensure protection of important corridor lands and critical environmental resources which are endangered or threatened by development and which cannot be adequately protected through other means.

Encroachment by Utilities and Transportation Facilities

Any time that a continuous system, such as environmental corridors, is superimposed on other continuous systems, such as utility and transportation systems, it should be expected that a great deal of conflict and interference between the systems will result, particularly in a densely developed urban area. Environmental corridors are not intended to be a system of continuous open spaces which are sacrosanct and which are to be protected at all costs against any intrusion by transportation or utility systems. Rather, the intent is to recognize that such conflicts will occur, and to attempt to resolve these conflicts in such a way as to protect the basic functions of the environmental corridors while providing necessary utility and transportation facilities in a cost-effective manner.

Since environmental corridors are often based on natural drainage features and include low-lying areas along streams and drainageways, they are logical locations for some utilities, particularly sanitary sewers and storm sewers which drain by gravity. Thus, it is expected that some utilities will normally be located within environmental corridors. The distinction to be made, however, is whether or not these located there with the intention of serving urban (residential, commercial, or industrial) development within the corridor. This leads to the first policy:

It is the intention that the environmental corridors remain open and undeveloped, and utilities or streets which are primarily intended to serve new residential, commercial or industrial development within the environmental corridor should not be permitted.

Any transportation or utility facilities to be located within the environmental corridors should be intended to serve urban development located outside of the environmental corridors. Exceptions would include necessary utilities or transportation facilities to serve compatible or permitted open space uses within the corridors, such as park shelters, parking lots for recreational facilities and similar uses. Wastewater treatment plants and pumping stations are other examples of facilities which could be located within environmental corridors and which would need transportation access and utilities.

Where reasonable alternatives exist, encroachment of utility and transportation systems into environmental corridors should be avoided, particularly those encroachments which have permanent impacts or which inject incompatible uses into the corridors.

In this respect, it is suggested that all alternatives to encroachment be fully explored before deciding to encroach into environmental corridors. (This is normally required as part of the environmental impact evaluation process required for major roadway projects.) In many instances, encroachment of streets and highways is necessary to maintain the continuity of the city street system. Similarly, encroachment of continuous systems such as utilities or transmission lines may be necessary to maintain continuity in areawide utility systems. In general, surface facilities such as streets and highways will result in more serious and longer-term disruption and impacts than will underground utilities. In other cases, expansion of an existing facility presently located in an environmental corridor may be a more cost-effective and reasonable solution than relocating the facility outside of the environmental corridor. Where alternatives are considered from the standpoint of reasonableness and cost-effectiveness, however, it is suggested that the cost of land not be the overriding factor in this determination, since corridor lands often reflect lower values inherent in the limitations of these lands for development.

Where encroachment into the corridor by utilities and transportation facilities is necessary, impacts should be minimized through careful location and design techniques.

If encroachment is necessary, alternative routes, if they exist, should be thoroughly analyzed to minimize impacts on the corridor. In many cases, for example, locating a utility or transportation facility along the edge of a basic resource feature, such as a wetland or steep slope, will result in less impact than taking a direct path across or cutting a swath through the middle of a resource feature. It is usually the case that impacts will be lessened if an attempt is made to avoid dividing natural or physiographic units. This often holds true for impacts on scenic beauty, in addition to impacts on environmental and natural systems. Locating major construction areas in less sensitive natural areas is also important, as is maximizing the compatibility of vegetative management practices in the right-of-way with adjacent vegetation.

Finally, any necessary facilities constructed in the environmental corridors should be limited to the specific needs of that facility. The guidelines suggested in Chapters NR 103.08 and NR 117.05(2) provide reasonable considerations in taking into account the construction or maintenance of roads, as well as other utilities within environmental corridors. NR 117 indicates that the construction or maintenance of roads are permitted uses in wetlands, if the roads are necessary for the continuity of the city street system, necessary for the provision of essential utility and emergency services, or are necessary to provide access to uses permitted in the wetland, provided that the following criteria are met: (1) the road cannot as a practical matter be located outside of the wetland; (2) the road is designed and constructed to minimize the adverse impact upon the natural functions of the wetland; (3) the road is designed and constructed with the minimum cross-sectional area practical to serve the intended use; (4) road construction activities are carried out in the immediate area of the roadbed only; and (5) any filling, flooding, drainage, dredging, ditching, tiling or excavating that is done must be necessary for the construction or maintenance of the road. Although these criteria are intended to indicate the considerations that must be taken into account in locating a road within a protected wetland under NR 117, these same considerations are appropriate to take into account when considering the encroachment of any utility or transportation facility into an environmental corridor. The following guidelines are also noted in NR 117 for the construction and maintenance of electric and telephone transmission lines, water, gas, and sewer distribution lines, and related facilities: (1) that such lines cannot as a practical matter be located outside the wetland; and (2) any filling, excavating, ditching, or draining necessary for such construction or maintenance is done in a manner designed to minimize the adverse impact upon the natural functions of the wetland.

CHAPTER III.
Protecting Environmental Corridors

Introduction

This chapter briefly describes techniques and mechanisms available for protecting environmental corridors. Environmental corridors can be protected from incompatible development and undesirable impacts through a combination of regulation and acquisition. Protection through regulation is appropriate where public access is not needed and allows lands to remain in private ownership. Regulations available include zoning, subdivision regulations, official mapping, and state and local permit processes. It is necessary to acquire lands through dedication or purchase where public access is required for recreation, for provision of structures such as detention basins, or where access is needed for public maintenance of stream channels and structures. In addition, public acquisition through dedication or purchase may be required to protect important resource areas vulnerable to development and not adequately protected through zoning or other regulatory means. Conservation easements may also be used in instances where fee-simple title is not needed.

Incorporating Environmental Corridors into Plans

The environmental corridor delineations, along with the accompanying text and policies, have been adopted by the Regional Planning Commission as part of the *Regional Development Guide* as well as the *Dane County Water Quality Plan,* and approved by the Wisconsin Department of Natural Resources (DNR). These plans have been updated and revised continually and are a part of the framework for state and regional water quality policies and programs and open space and land use plans affecting Dane County.

It is equally significant that local communities have also adopted the environmental corridors and have incorporated these concepts and delineations into local land use and open space plans. Environmental corridor delineation and adoption indicates the community's intent to protect or acquire these lands and may be used by the community as a basis for negotiating with landowners, subdividers and developers on site plan reviews and land dedication or acquisition. Furthermore, when environmental corridors are delineated and incorporated in community plans, they serve as a legal basis for regulation of privately owned lands through zoning or other regulatory means. This is particularly appropriate for required zoning, such as floodplain zoning and wetland zoning, as well as for zoning which is not mandated by the state, such as conservancy zoning. Additionally, the mapping and adoption of environmental corridors informs other local governmental bodies and departments of the intent to protect these areas, so that actions by individual governmental departments or other governmental units do not conflict with or detract from the goals and purposes of the environmental corridor system. Finally, the mapping and adoption of environmental corridors provides a long-term framework for the local community, showing how individual actions affecting small areas fit into the overall open space system, allowing the local government to develop the overall environmental corridor system over a number of years.

Regulation

Table 2 illustrates the most commonly used techniques for protecting the types of land and water resources included in environmental corridors. These techniques and mechanisms are classified into those which are required or mandatory under state law and those which are optional or discretionary approaches. A further distinction is made between primary mechanisms and techniques which are most important or commonly used, and supplemental or alternative approaches which may be used in combination with primary mechanisms or where primary mechanisms are not appropriate or adequate.

It is often the case that a single approach or protective mechanism is not sufficient to adequately protect environmental corridors from incompatible development and undesirable impacts. It is important that local, regional, and state governments utilize the full array of mechanisms and tools described in Table 2 to protect environmental corridors.

Section 404 of the Clean Water Act

Description.

A federal permit program was established under Section 404 of the Clean Water Act (Public Law 95-217), authorizing the Secretary of the Army, acting through the Chief of Engineers (Army Corps of Engineers), to regulate the discharge of dredged or fill materials into all waters of the United States. Generally, the Corps jurisdiction applies to all lakes, rivers, streams and wetlands. The term "discharge of fill material" under Section 404 means the addition of any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body, including excavation or dredging of wetland soils.

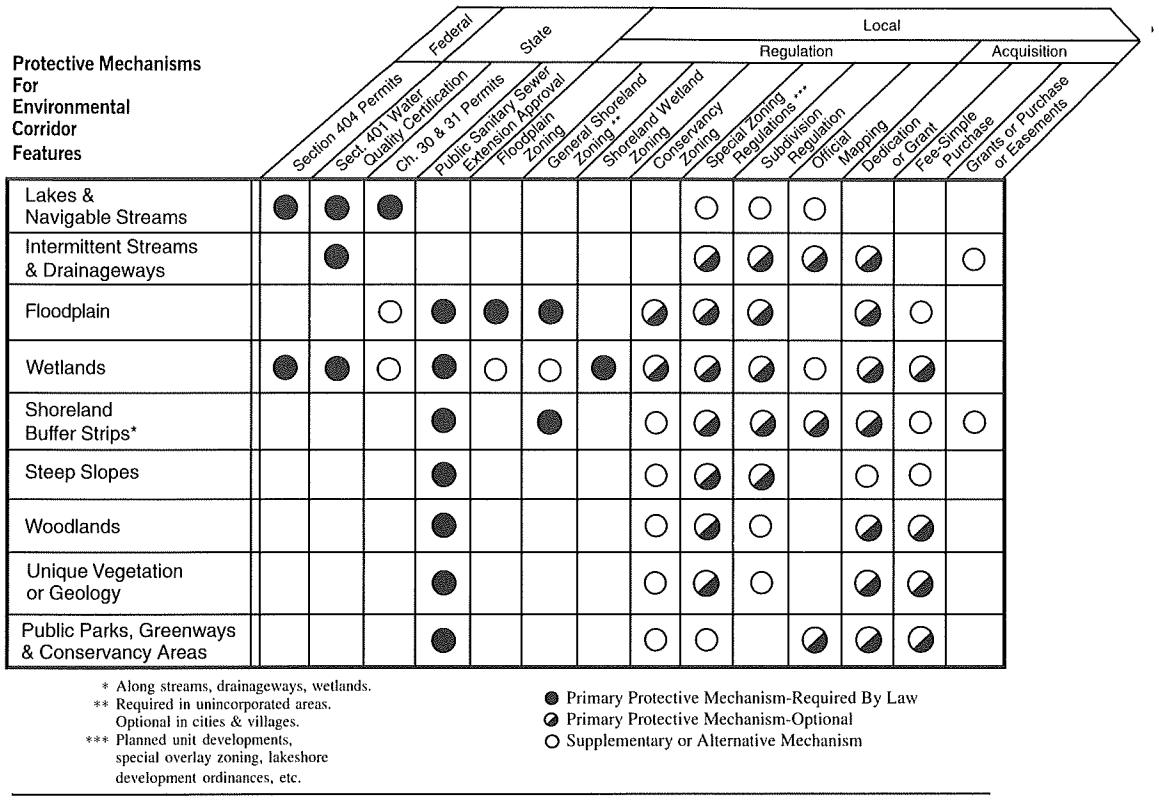


Table 2

Activities Regulated.

Some activities with minor adverse impacts on the environment are regulated through a system of nationwide general permits. However, the state may require special conditions and management practices for general permit activities. General permits may apply to non-tidal rivers, streams, and their lakes and impoundments, including adjacent wetlands, that are located above the headwaters; in addition to isolated water bodies. General permits may also apply to utility crossings within primary environmental corridors, with 30 days prior notification to the DNR. (In Dane County, all environmental corridors are primary environmental corridors.) However, in Wisconsin the following are not applicable for nationwide general permits, unless DNR permits, approvals, or coordination is required for the entire project: (1) Calcareous fens; (2) State-designated natural and scientific areas; (3) Trout lakes, including wetlands within 1,000 feet of the lake's edge (in Dane County, Stewart Lake and Salmo Pond are currently classified as trout lakes); (4) state and federally designated wild and scenic rivers, including wetlands within 1,000 feet of the ordinary high-water mark of the river; (5) Class I, II, and III trout streams identified in the DNR publication 6-3600(80) (*Wisconsin Trout Streams*), including wetlands within 1,000 feet of the centerline of the stream.

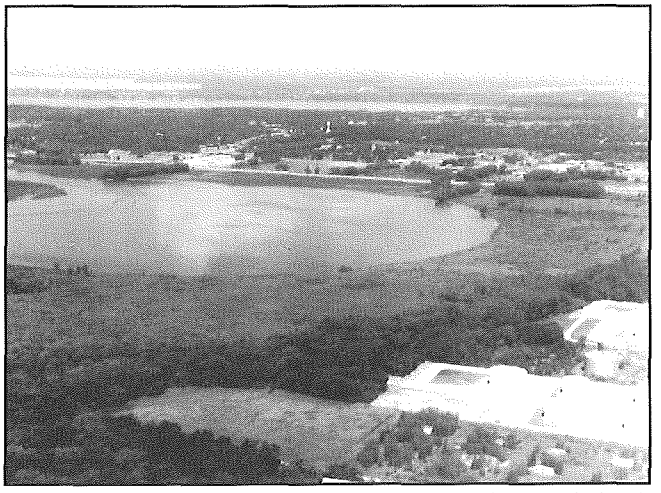
It is important to note that the federal wetland definition is not the same as the state. Consequently, areas not mapped by WisDNR as wetlands could fall under federal wetland jurisdiction. It is recommended that the Corps of Engineers be consulted for activities in all low-lying areas.

Administrative Process.

Approval must be obtained from the Corps of Engineers prior to the initiation of any activities regulated under Section 404. Permit application evaluations include a detailed analysis of anticipated impacts on the environment and public interest. The U.S. Fish and Wildlife Service, the Environmental Protection Agency, the Wisconsin State Historic Preservation Office (SHPO), and other interested groups may also be involved in evaluation of the proposed activity. The review process allows conservation agencies to make recommendations to the Corps, to minimize adverse effects of the regulated activity. State water quality certification must be obtained from the DNR after the Corps of Engineers approval has been obtained.

Impacts and Effectiveness.

The Section 404 permit program is a resource management program which can be effective in protecting valuable water and wetland resources. The courts have sustained the Corps' authority under the Section 404 permit program, and have sustained the requirement that environmental considerations be evaluated in determining permit issuance and conditions. Early coordination of project planners with the DNR and/or Corps can result in acceptable project designs, elimination of costly delays due to design conflicts, and an environmentally sound activity.



Wetlands and water resources are protected through federal section 401 and 404 authority as well as state jurisdiction. Upper Mud Lake and wetlands near development in the Village of McFarland.

Section 401 Water Quality Certification

Description.

Section 401 of the Clean Water Act (Public Law 95-217) requires that federal permits comply with state water quality standards. Wisconsin Administrative Code Chapter NR 299 has been adopted to implement Section 401 certification requirements. In addition to other applicable standards, NR 103 has been adopted to establish water quality standards for wetlands and activities which impact wetlands.

Activities Regulated.

Section 404 permit activities.

Administrative Process.

Under NR 299, the DNR conducts Section 401 water quality certifications. Water quality certification is usually one of the conditions of a 404 permit. Consequently, if the DNR (generally the district water management coordinator) finds that a proposed federal permitted activity will adversely affect water quality or is not in conformance with a water quality plan, the 404 permit would be invalid. Wisconsin Administrative Code Chapter NR 103 was adopted in 1991 to establish water quality standards for wetlands. These and other standards are considered in evaluating water quality certification. The proposed project cannot begin without state certification.

Impacts and Effectiveness.

Section 401 water quality certifications can be a valuable environmental corridor protection tool since it applies to all Section 404 permit actions.

Chapters 30 and 31, Wisconsin Statutes

Description.

Many activities affecting navigable waters require permits or approvals from the DNR under Chapters 30 and 31 of the Wisconsin Statutes. The water laws of Wisconsin are based on the English Common Law, the Northwest Ordinance, and the State Constitution. Based on these legal documents, the courts have developed the "public trust doctrine" which maintains that all navigable waters are protected (held in trust) by the state for the public. Generally, navigable waters in Wisconsin include lakes, streams, and flowages that have a defined bed and bank and are of sufficient size to float the smallest recreational craft on a regularly recurring basis. (This definition is different from the federal definition of navigable waters, so identified by the Congress.)

Regulated Activities.

The activities requiring permits under Chapter 30 include: the placement of structures (pipelines, piers, etc.) and deposition of materials (riprap, sand blankets) in navigable waters; diversions of water from lakes and streams; enlargement or straightening of existing waterways; construction of an artificial waterway within 500 feet of the OHWM; grading or otherwise removing topsoil from the bank of any navigable water in excess of 10,000 square feet; and, dredging or removal of material from beds of a waterway. Chapter 31 requires permits for construction, operation, maintenance or removal of dams, and bridge construction.

Administrative Process.

Approval must be obtained from the state prior to conducting regulated activities in or adjacent to navigable waters of the state. A person should contact the nearest DNR office for assistance in initiating the permit application process. A field investigation of the project site is usually conducted after permit application submittal. The water management specialist and other DNR staff evaluate the

permit application based on criteria for each activity, including impact on fish and game habitat, environmental pollution, public rights and interests, etc. Fines or forfeitures and correction of any undesirable condition may be required of any person initiating, continuing or completing a regulated activity without first obtaining a permit.

Impacts and Effectiveness.

Chapter 30 and 31 permits are effective environmental corridor protection mechanisms for navigable waters and areas (particularly wetlands) below the OHWM.

Water Quality Management Plans - Sanitary Sewer Extensions

Description.

Pursuant to Section 208 of the Clean Water Act (Public Law 95-217), designated water quality planning agencies (e.g., RPC) have developed areawide water quality management plans. As part of the plan, areas which are to receive public sanitary sewer service and areas which are not to receive such service are designated. Chapter NR 121, Wisconsin Administrative Code, outlines the requirements for this planning process. Delineation of the sewer service area for any community requires two steps: (1) delineation of the outer boundary of the area where the community intends to provide sanitary sewer service in the planning period (this is called the urban service area boundary); and (2) delineation of those areas within the USA boundary which are not intended to receive public sanitary sewer service. These excluded areas are referred to as environmental corridors or isolated resource features and include lands (as discussed earlier) with sensitive environmental features that are to be excluded from sanitary sewer service areas, and are intended to remain open and undeveloped. It is the RPC policy to work with communities towards defining mutually agreeable urban service area boundaries, environmental corridors and isolated resource features.

Regulated Activities.

Once adopted by the RPC and approved by DNR, the environmental corridors and isolated resource features are used, along with urban service area boundaries, for review and approval of all public sanitary sewer extensions.

Administrative Process.

Since 1979, the DNR has required applicants for public sanitary sewer extensions (in Dane County and other areas under the jurisdiction of an RPC) to submit proposed sewer extensions to the RPC for review. As the designated water quality planning agency for Dane County, the RPC reviews and advises the DNR as to the consistency of the proposed extensions with the sewer service areas designated in the *Dane County Water Quality Plan* and the *Regional Development Guide.*

The applicant for DNR approval of a public sanitary sewer extension must include a letter from the RPC stating that the proposed sewer extension is consistent with the *Dane County Water Quality Plan.* If it is found that the proposed sewer extension is designed to serve (within a 20-year period) areas outside of the USA boundary, or new residential, commercial or industrial development within environmental corridors or isolated resource features, DNR will not approve the sewer extension.

Review for private sanitary sewer extensions is performed by the Wisconsin Department of Commerce. Under an agreement between the Department of Commerce and the Wisconsin Department of Natural Resources (DNR), the Department of Commerce also requires that applicants for private sanitary sewer extensions submit proposed sewer extensions to the RPC for review. The RPC reviews these extensions and advises the Department of Commerce as to their consistency with the *Dane County Water Quality Plan* and the *Regional Development Guide.* Similar to public sewer extensions, a private sewer extension designed to serve areas outside of the urban service area boundary, or new development within environmental corridors or isolated resource features, will not receive Department of Commerce approval.

Impacts and Effectiveness.

The use of environmental corridor and isolated resource feature delineations in the review process for sewer extensions avoids sewered residential, commercial, and industrial development within environmental corridors and isolated resource features. Sanitary sewer extensions which are proposed to serve new development in environmental corridors or isolated resource features inside urban service areas will not be approved by the WisDNR or Department of Commerce. Activities not requiring sewer service, though, are not included in this review process (e.g., clearing vegetation, filling or dredging): therefore, this implementation measure needs to be utilized in conjunction with other mechanisms for protection of environmental corridors and isolated resource features.

Floodplain Zoning

Description

Section 87.30, Wis. Stats., requires counties, cities and villages to adopt reasonable and effective floodplain zoning ordinances for areas where flooding is likely to occur. NR 116 of the Wisconsin Administrative Code states the minimum criteria for these regulations. The ordinance must contain maps reflecting the best available data on the 100-year floodplain (floodway and flood fringe) and define the land use restrictions in these areas. Floodplain zoning must include those areas covered by waters during the 100-year regional flood. The floodway is that portion of the floodplain required to carry and discharge flood waters. The flood fringe is that portion of the floodplain outside the floodway, covered by waters during the regional flood, and generally associated with standing water rather than flowing water.

Regulated Activities

To assist counties and communities in establishing or improving floodplain zoning ordinances, the DNR has prepared a model floodplain zoning ordinance. Permitted land uses in the floodway are generally restricted to open space uses or minimal development which does not obstruct flood flows, has a low flood-damage potential, and does not increase the height of the regional flood. Any fill, obstruction, structure, etc., which interferes with the discharge of floodwaters is prohibited. Any developments in the flood fringe may be permitted only when filled or protected to above the regional flood level, and then only if such filling or protection does not cause a rise in the regional flood. Increases in the regional flood elevation may be permitted only if amendments are made to the ordinance, official floodplain zoning maps, and water surface profiles. Special fill and construction, flood-proofing, and sanitary regulations must be followed when building structures in the flood fringe.

Administrative Process

Zoning regulations are administered by counties, cities and villages. The zoning administrator (a) advises applicants as to the ordinance requirements, (b) assists in permit application and appeal form preparation, and (c) inspects sites for compliance and reports violations. The planning or zoning committee (a) reviews permit applications, (b) holds hearings on proposed amendments to the ordinance and maps, and (c) can be designated to hear appeals for variances and special exemptions (conditional use permits). The Board of Adjustment (or Board of Appeals) (a) hears appeals for variances and special exemptions (conditional use permits), (b) interprets the meaning and intent of the ordinance, and (c) denies or grants the appeals where appropriate.

Impacts and Effectiveness

Floodplain zoning is designed to reduce flood damages but does not protect flood fringe areas from development. It can be used to identify the flood fringe lands, and, if the community desires, deter development from these areas. Implementation of other protective mechanisms in conjunction with floodplain zoning would be recommended for more complete protection of flood fringe areas.

Shoreland Zoning - General

Description

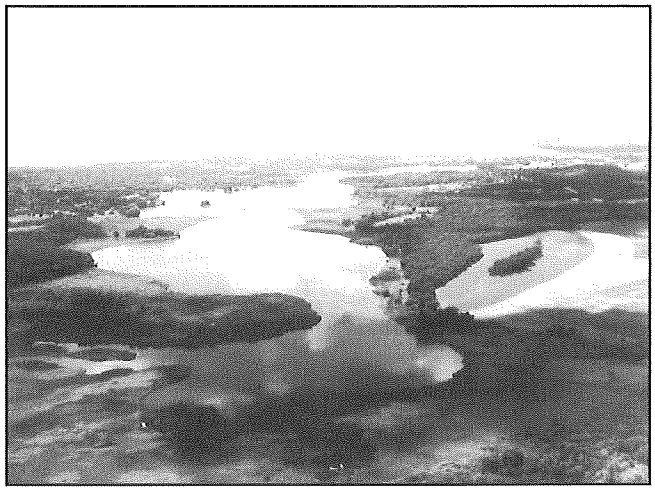
Section 59.971, Wis. Stats., requires that all counties adopt and enforce restrictive zoning of shorelands along navigable streams and lakes in unincorporated areas. Shoreland zoning provides a means for the county zoning body to determine the suitability of shoreland for new development, based on the natural limitations of each site. The minimum standards and criteria for regulation of land use near water bodies are stated in NR 115 of the Wisconsin Administrative Code, which include: zoning provisions, land division controls, sanitary waste disposal regulations, administration and enforcement provisions, and mapping provisions for identifying the shoreland zoning district. Shorelands are defined as areas lying within 1,000 feet of lakes, ponds, and flowages; and within 300 feet of rivers and streams, or to the landward side of the floodplain, whichever distance is greater.

Regulated Activities

The DNR has developed a model shoreland zoning ordinance, based on NR 115, in order to assist counties in establishing shoreland zoning ordinances. Local ordinances must set minimum requirements for: lot sizes; building setbacks; tree and shrubbery removal; filling, dredging, grading, etc.; water supply facilities and sanitary waste disposal; shoreline improvement and stabilization practices; and administration and enforcement of the shoreland protection program.

Administrative Process

Shoreland zoning regulations are administered by the county in a manner similar to the floodplain zoning administrative process.



County shoreland-wetland zoning provides substantial protective measures for wetlands within shoreland areas. Upper Yahara River and adjacent wetlands near Cherokee Marsh.

Impacts and Effectiveness

The purpose of shoreland zoning is to control water pollution, protect fish habitat, protect natural shoreline beauty, and regulate the building of structures and land uses within shoreland areas. It does not specifically prohibit development in shoreland areas, but regulations on building setbacks, vegetation removal, and other physical alterations to the shoreland do provide for a certain level of protection, along with establishment of minimum buffer areas along streams and lakes. This zoning ordinance, in conjunction with other mechanisms, can be effective in protection of environmental corridors in shoreland areas.

Shoreland-Wetland Zoning

Description

In addition to the general shoreland management requirements of NR 115, the code requires zoning of shoreland-wetlands, providing substantial protection measures for wetlands located within shoreland areas. Administrative Code Chapter NR 117 has been created to implement Wis. Stats. 61.351 and 62.231, which require villages and cities also to adopt shoreland-wetland zoning ordinances. The permitted uses and administrative procedures for both NR 115 and NR 117 are nearly identical. The following discussion, then, refers to the responsibilities of each unit of government in implementing shoreland-wetland protection measures.

Zoning regulations are required through establishment of shoreland-wetland districts for all shoreland areas identified as wetlands greater than five acres in size on the Wisconsin Wetland Inventory maps prepared by the DNR. In Dane County, wetlands of two acres or larger are shown on these maps. Dane County has adopted the required general shoreland zoning, shoreland-wetland zoning, and floodplain zoning for the unincorporated areas of the county. Nearly all of the villages and cities in Dane County with areas subject to flooding have adopted floodplain zoning. All of the villages and cities with shoreland- wetland areas have also adopted shoreland-wetland ordinances protecting wetlands two acres and larger.

Regulated Activities

NR 115 and NR 117 specify permitted uses within shoreland-wetland districts under state law. Generally these activities include, among others, various recreational, silvicultural, agricultural and grazing uses. However, a land use permit may be required from the local unit of government. Activities which involve draining, tiling, ditching, dredging, excavating, filling or flooding are, for the most part, prohibited without a zoning change. NR 115 and NR 117 make the provision, however, for a unit of government to rezone specific shoreland-wetlands, if the applicant can prove that the activity would not have a significant adverse impact upon the hydrology of the wetland, or on the ability of the wetland to filter and store nutrients and sediments, protect against shoreline erosion, provide fish and wildlife habitat, and to maintain special recreational, scenic, or scientific interest. Wetland protection standards and criteria are included in NR 115 and NR 117 to aid zoning officials in determining whether an application for rezoning is to be approved. Existing uses are generally permitted to continue.

Administrative Process

Shoreland-wetland zoning regulations are administered by the same parties and through the same process as floodplain and shoreland zoning.

Impacts and Effectiveness

Shoreland-wetland zoning can prevent the conversion of wetlands to inappropriate uses in the shoreland zone. This is particularly true if draining, ditching, dredging, etc. is involved. Although NR 115 and 117 extend added protection to wetlands in shoreland zones, it does not protect wetlands beyond the shoreland zone, isolated wetlands or wetlands along non-navigable streams. However, counties, cities and villages have the power, under home rule authority, to expand wetland protection zoning districts beyond the limits of shorelands, thereby providing more comprehensive protection of wetlands in that municipality. Under this provision, Dane County amended its

Code of Ordinances in 1994 to expand wetland zoning to all wetlands over two acres in the county (shoreland wetlands as well as inland wetlands).

Conservancy Zoning

Description.

Under Sections 62.23(7), 61.35, and 59.97, Wis. Stats., cities, villages and counties, respectively, have the authority to enact zoning ordinances. Required floodplain and shoreland-wetland zoning, described earlier, regulates development in floodplain and shoreland areas, providing protection for lands adjacent to lakes and streams. Dane County and several local communities have recognized the need for additional zoning to protect environmentally sensitive lands. Certain floodplains, shorelands, wetlands, steep slopes, and other resource areas beneficial to the community have been included in conservancy zoning districts. The rationale for inclusion of certain resource based lands in conservancy districts is not only to preserve and protect those lands, but also deter costs to the unit of government resulting from development in unsuitable areas. For example, development on steep slopes may result in accelerated erosion and runoff, or emergency vehicle access problems. Faced with these hazards, a community may enact restrictive regulations to discourage or limit development in these hazard-prone areas.

Regulated Activities

The usual approach is to indicate permitted and conditional uses within a conservancy zoning district. Generally, permitted uses are limited to open space uses such as agriculture, silviculture, education or recreation. Other uses usually either require a conditional use permit or are prohibited. Conditional use permits may be used to permit some uses in a conservancy zone, subject to detailed review of a specific proposal by the local zoning body, which may result in limitations or conditions being placed on the proposed use.

Administrative Process

Similar to the floodplain and shoreland zoning process, conservancy zoning is administered through the zoning office of the local unit of government. Certain open space land uses compatible with the intent and purpose of the ordinance (e.g., recreational or educational facilities) may be permitted and subject to controls specified in the ordinance. Other land use proposals requiring a permit or zoning change (zoning appeal) must undergo a process similar to that described under floodplain zoning.

Impacts and Effectiveness.

Present conservancy zoning regulations range from prohibiting any development to allowing agriculture or limited compatible urban development under conditional use permits. However, the lands presently zoned conservancy in Dane County are mostly publicly owned parklands, and little, if any, development pressure is expected.

Existing regulatory measures are somewhat effective in protecting streams, floodplains, and shorelands. However, a modified conservancy overlay zoning technique could provide an even higher level of protection to these areas, along with providing a regulatory measure for corridor lands not currently protected.

Suggested Approach to Conservancy Zoning for Environmental Corridors

If a local unit of government wishes to utilize conservancy zoning to protect environmental corridor lands, the following recommendations should be considered.

Overlay zoning, similar to floodplain or shoreland zoning, is probably the most appropriate approach to using conservancy zoning to protect environmental corridor lands. Overlay zoning has the effect of placing additional restrictions on land located in the overlay zone. The basic zoning district (residential, commercial, industrial, agricultural, etc.) remains in effect for the parcel. That portion of the land parcel within the conservancy or environmental corridor overlay zone would be permitted the same uses as the basic zoning district, but would be subject to additional restrictions on the permitted uses. These could include more restrictive density requirements, setback or buffer strip requirements, erosion and runoff control requirements, vegetative management requirements, land or easement dedication requirements, and other similar restrictions. In addition, detailed review of specific development or use proposals will be desired in many cases, and can be a feature of overlay zoning through conditional use permit or planned unit development procedures.

If an overlay conservancy zoning approach is used to protect environmental corridor lands, the best and most legally defensible approach would be to relate specific limitations and restrictions to the particular resource element (steep slope, wetland, floodplain, buffer strip, etc.) so that the restrictions or limitations are clearly based on and related to protecting the corridor functions and valid public and community concerns. Thus, the limitations and restrictions on steep slopes in the overlay zone would probably be different than those applicable to wetlands.

To accomplish this, it will be necessary to map the individual resource features making up the corridors, or at least classes or categories (uplands, shorelands, etc.) having common or similar limitations and appropriate restrictions.

The question is often raised as to the extent zoning can be applied in restricting the use of private property. By restricting the use of property, in some cases, the property owner may believe the value is thereby lowered, resulting in a "taking" without compensation. The landmark case in Wisconsin, Just v. Marinette County (56 Wis. 2d 7 (1972), addressed just such an issue and has set precedence in Wisconsin. The plaintiffs argued that Marinette County unjustifiably depreciated the value of their property, as the county issued a fine to the plaintiffs and ordered restoration of a wetland filled without a permit in a shoreland-conservancy zoning district. The Wisconsin Supreme Court, however, upheld the zoning ordinance, ruling that a "taking" had not occurred, and that the ordinance was not confiscatory or unreasonable. The court ruled that the loss of value claimed was not based on the land in its natural state, but on what it might be worth if the property were filled and used for residences.

Special Zoning Regulations

Other local zoning applications can be used in order to develop a comprehensive approach for protection of open space and environmentally sensitive lands. At the discretion of the community the need to maintain significant environmental resources can be addressed by fashioning ordinances to regulate development and maintain certain conditions at the site, such as: waterfront development zoning districts, planned unit development districts, or more extensive use of conditional use permits. Cities, villages, and counties can employ these special zoning regulations under the authority of Sections 62.23(7), 61.35, and 59.97, Wis. Stats., respectively.

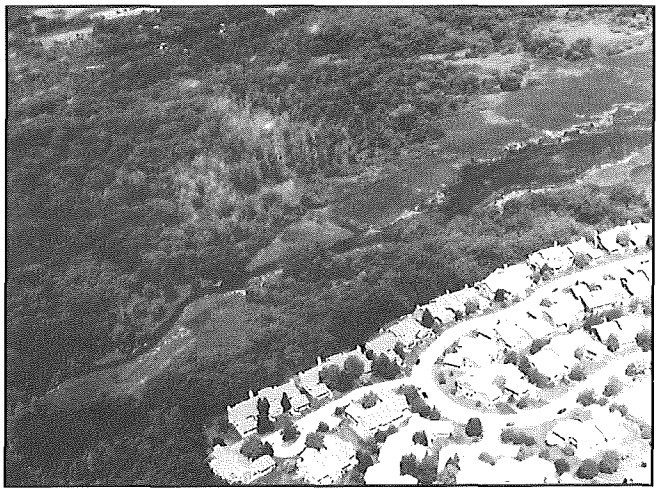
Waterfront Development Districts.

Similar to county shoreland zoning ordinances, cities, villages and counties can employ the use of waterfront development zoning districts. This type of zoning, particularly with application of conditional use permits, could provide the community with a level of control over how a development is to occur. Establishing building setbacks, and limits or standards on filling, excavating, grading and removal of vegetation on lake and stream shorelines should be considered minimum components of such an ordinance (e.g., City of Madison Zoning Code, Chapter 28, ss. 28.04(13) and 28.04(19)).

Planned Unit Development (PUD)

A PUD district is normally established as a special zoning district to accommodate large-scale mixed-use (residential, commercial or industrial) developments which should be planned and designed as a unit. This type of zoning is intended to encourage improved environmental design in land development by providing opportunities for flexibility in site plan design not possible with standard zoning districts. To this end, the PUD district may allow for diversified permitted uses; mixed use development; density trade-offs; and variations in the size and height of structures, while still requiring substantial compliance to the general plan for community development. The PUD approach can result in land development which is more compatible with the environment by facilitating conservation of natural features and open space.

The administrative process involves the application of general standards and criteria in the detailed review of proposals by the planning commission. The review process usually involves an overall and stage-by-stage examination of the site plans, and may result in specific requirements or performance standards being placed on the design. This is of concern particularly with respect to protection of environmental features of the site.



Urban development adjacent to the Pheasant Branch Conservancy.

Special Exemptions (Conditional Use Permits)

The application of zoning ordinances is based on the premise that the county or municipality is divided into zoning districts, with permitted land uses established within each district. There are often other uses and activities which may be compatible with permitted uses within that zoning district if certain conditions and limitations are observed. These uses may be listed as conditional uses in a zoning district, and are permitted if a special exemption (conditional use permit) is obtained.

A special exemption (conditional use permit) is obtained by submitting a specific site plan or development proposal to the local planning and zoning body for review. The review establishes whether the proposed activity or use is compatible with other uses in the zone, and usually imposes special conditions on the proposed use or activity to ensure compatibility and to reflect applicable public concerns and policies (such as protecting environmentally sensitive areas).

In relation to environmental corridors, special exemption (conditional use permit) provisions requiring review for specific projects are particularly important for protection of shorelands, drainageways, buffer strips, wetlands, floodplains, wooded areas and steep slopes. During the plan development process, negotiations between the community and developer could determine critical areas to be reserved for environmental protection or open space, as part of the requirements for obtaining the conditional use permit.

Subdivision Regulations

Description

The subdivision of land involves the division of a tract of land into separate parcels. A survey and an approved and properly recorded plat are required by Chapter 236, Wis. Stats., for any division of land for the purpose of sale or building development, where the act of division creates, within five years, five or more parcels or building sites of 1-1/2 acres each or less in area (Section 236.03). Under Section 236.45, Wis. Stats., any city, village or county which has established a planning agency may adopt ordinances governing land division which are more restrictive than the provisions of Chapter 236. The purposes of land division regulation include: promoting public health, safety and general welfare; facilitating adequate provisions for water, sewerage, parks, playgrounds, and other public requirements; and encouraging the most appropriate use of land. In addition, local ordinances may include environmentally oriented objectives, such as providing for stormwater drainage facilities, parklands, and erosion control.

Land divisions at a smaller scale than a subdivision of land are referred to as certified surveys (Section 236.34, Wis. Stats.). Local subdivision ordinances often require certified surveys to comply with provisions relating to general requirements, design standards and required improvements which are applied to subdivisions.

Regulated Activities

Many subdivision regulations address environmental and open space considerations. The existing location of streams and drainageways, wetlands, lakes, rock outcrops, wooded areas, and other natural resource and environmental features are often required to be mapped as part of subdivision plat submittal. Regulations frequently require that the site design for plats recognize these and other environmental features, and use these factors in the site design process. For example, hazardous and sensitive areas with severe limitations for development may be identified in the regulations (areas with poor soils, inadequate drainage, unfavorable topography, flooding hazard) as areas prohibited or with severe development restrictions. In less hazardous yet environmentally sensitive areas, permitted development may be subject to added controls. Subdivision regulations often include specific design standards for width and alignment of parkways and drainageways, and public easements adjacent to streams of adequate size and grade to accommodate potential flow volumes. Besides easements, the regulation may require dedication of land to the public for resource protection, open space or recreation purposes. Often plat approval is conditioned upon compliance with design standards for critical areas, or adequate protection or preservation of certain environmental features in the site development plan.

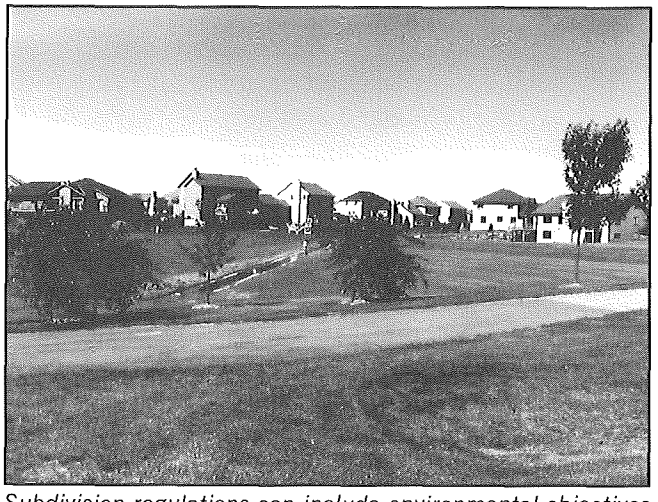
Administrative Process

Subdivision regulations furnish general development and design standards based on local plans, official mapping, and policies which the local planning commission applies in review of preliminary and final plats. There are usually three stages for review of subdivision plats.

(1) *The Preapplication Conference.* A discussion should be held, prior to submittal of a preliminary plat, between the developer and community staff and/or local planning commission. At this time, a sketch plan may or may not be required. The primary purpose of such communication is for the developer to inform the community of the intended land use and general design scheme. It also allows the staff and planning commission to review and suggest revisions early in the site design process, since this is the most flexible and least costly time to influence development plans.

(2) *Preliminary Plat.* The preliminary plat should incorporate the revisions suggested in the pre-application conference and include all data required by the ordinance. Upon formal application to the county, city, or village, the plan commission refers the preliminary plat to appropriate staff for review. The plan commission reviews, and then approves, conditionally approves, or rejects the preliminary plat. For the first two stages, the ordinance specifies what information is to be supplied, how it is to be submitted, who is to be involved in the review process, and the time allowed for each step.

(3) *Final Plat.* In the final stage, legal commitments, dedications, financial guarantees, and special agreements should be finalized. Final plats are usually reviewed again by the county, city, or village staff, and sent to the legislative body for final action.



Subdivision regulations can include environmental objectives such as stormwater detention areas. City of Sun Prairie subdivision with stormwater detention area in environmental corridors.

Impacts and Effectiveness

Subdivision regulations can be an effective tool to ensure recognition and protection of natural resource and environmental features in the land division and development process. Planning and design standards incorporated into subdivision regulations can be particularly important in protecting streams and drainageways, floodplains, wetlands, shoreland buffer strips, and steep slopes. Often a degree of flexibility is provided to enable the planning body to negotiate design considerations with the subdivider or developer, and a firm grasp of and commitment to the principles underlying the planning and design standards is needed to avoid compromising adequate protection in the negotiations. Subdivision regulations can also provide for or require dedication of land or easements for drainage, parks and open space, or environmental protection.

Official Mapping

Description

Sections 62.23(6) and 61.35, Wis. Stats., give cities and villages, respectively, the authority to establish an official map of the city or village, or any part thereof, showing existing and proposed public facilities, including (in addition to streets, highways, railroads and transit facilities) parks, parkways, and playgrounds. Section 62.23(6) provides cities and villages authority to include waterways or drainage features on the official map (if the waterway is included in a comprehensive surface water drainage plan). One purpose of official mapping is to express the community's intent to reserve areas adequate for parks, parkways and waterways. Official mapping may extend beyond the corporate limits of the municipality to the extent of its extraterritorial plat jurisdiction area.

Regulated Activities

The focus of official mapping is to protect future public lands and document these areas systematically. To this end, official map ordinances state that no permits may be issued for any building in the bed of any parkway or waterway shown on the official map, with certain exceptions. The placement of lands upon the official map, however, does not constitute the opening or establishment of a park, parkway or waterway, or the taking or acceptance of any land for these purposes by a city or village.

Administrative Process

The governing body of a city or village may establish and amend an official map showing the exterior boundaries of existing and planned streets, highways, parkways, railroads, public transit, parks, playgrounds, and waterways. Amendments require notice and public hearing, except for amendments made as part of subdivision plat approval if adjacent lands are not affected.

Building permits, normally issued by the community building inspector, may not be issued for any building in the bed of any street, highway, waterway, railroad right-of-way, public transit facility or parkway shown on the official map. In the extraterritorial plat review jurisdiction, a person desiring to construct a building in the bed of any street, highway, railroad right-of-way, public transit facility or parkway may apply to the authorized official of the city or village for a building permit. Unless such an application is made, and the building permit granted or not denied, the person is not entitled to any compensation for damage to the building caused by construction of the officially mapped facility. (It should be noted that Section 62.23(6)(C), Wis. Stats., does not include officially mapped waterways under the building permit stipulation in the extraterritorial zone.)

The Board of Appeals (or equivalent body handling zoning variances or appeals) may review the administrative authority's decision for permit denial. If the finding is that the land in question within the officially mapped area is not yielding a fair return, the Board would have to grant a variance under terms of the statute, and allow for a building permit to be issued. Otherwise the land would have

to be acquired and compensation paid. The Board may impose reasonable permit restrictions as a condition of granting the building permit, in order to minimize the increase in cost of opening a park or waterway. If the finding is that the applicant would not be substantially damaged by placing the building outside the officially mapped area, the Board may refuse to grant a building permit.

Impacts and Effectiveness

Official mapping is a method for municipalities to declare public intent to reserve lands for future public acquisition. The successful application of official mapping can serve to guide sound and orderly development by reserving sites for public improvements in anticipation of actual need. For example, the official map can represent a useful planning tool for reserving land areas for future stormwater management practices and facilities, and for linking local plans with the comprehensive water resources planning process.

The denial of building permits for buildings in officially mapped areas provides the community the opportunity to acquire the site, prior to construction of a building, through dedication or purchase.

Acquisition

Public rights in environmental corridor lands must be acquired, through purchase or dedication, where public access is required for recreation, for provision of structures, such as stormwater detention basins, or where access is needed for public maintenance of stream channels and structures. In addition, public acquisition may be indicated in some instances for environmentally sensitive areas which cannot be adequately protected by regulation.

Federal and State Funding Programs

State Stewardship Fund

The State Stewardship fund was created by the Wisconsin Legislature in 1989. The Stewardship Program provides a 10-year, $250 million fund to enhance Wisconsin's outdoor recreational resources. The program is administered by the Department of Natural Resources. Activities which are eligible for funding include the following:

- Planning and development of new trails and maintenance of existing trails.
- Habitat restoration through the restoration of wetlands and grasslands.
- Recreational development through the maintenance and upgrading of existing parks and other properties.
- Aid to local units of government for the development of community parks and acquisition of land for public outdoor recreation.
- Establishment and expansion of urban green space through the purchase of open, undeveloped land or the purchase of rights to open lands.
- Streambank protection through fee-simple acquisition or purchase of easements along stream banks. A special allocation of funds has been made under the Stewardship Program to acquire land which is on or adjacent to rivers in urban areas.

Housing and Community Development Act of 1974

The U.S. Department of Housing and Urban Development (HUD) administers a grant program for the purpose of, among others, protecting open space and natural resources, for providing recreational facilities, and development of scenic areas. Although these types of projects are eligible for community development block grants (CDBG), economic development projects currently have higher priority. Cities with populations greater than 50,000 administer their grants locally, whereas the state Department of Commerce, through the small cities CDBG program, administers projects for small cities and villages (with population less than 50,000) and counties.

Acquisition Techniques

Cities, villages, towns, and counties are authorized under state statutes Sections 62.22(1) and (1m); 61.34(3) and (3m); and 60.10(2)e; and 59.07(1); respectively to acquire and develop property for a variety of purposes including (among others) parks, recreation, public use, and natural resource protection. Acquisition of property rights or partial rights may be accomplished in several ways, such as; (1) gifts or donations; (2) dedication of lands by developers; (3) purchase of fee-simple interest in a property; (4) purchase of lesser interest in the property (e.g., easements); or (5) acquisition of development rights.

(1) Gifts or Donations

Landowners may give land or partial rights to the land for public use to a local unit of government. Voluntary gifts or donations are a preferred method of acquisition since this is a least-cost method for acquiring property rights and for preserving the land in open space. Gifts are usually granted because the landowner desires to preserve the natural qualities and values of the land. In addition, the benefits to the grantor may include a reduction in the

property tax burden along with providing for a charitable deduction on income tax returns for the value of the land or property rights given to the unit of government.

Another type of agreement establishes a life estate condition on the property. Through this, a property could be donated (or sold) to a unit of government when the donor or direct heirs die.

(2) Dedication of Lands by Developers

Local subdivision and PUD ordinances often require that a portion of subdivisions or PUDs be dedicated by the developer for the purpose of park, open space, drainage greenways, and access to navigable lakes and streams. In lieu of dedication of lands to a unit of government, the developer may provide a payment of fees during the land development process. Besides providing for needed recreation areas, dedication is a commonly used tool (in conjunction with official mapping) to reserve and protect drainageways on developing lands.

The adopted environmental corridor delineation may be used by the community as a basis for negotiating with subdividers and developers on land dedication, particularly of sensitive environmental features, such as wetlands, floodplains, drainageways, and wooded or steep slopes. During the negotiation process, the environmental corridor could be used by the community to direct development away from these kinds of features. Density trade-offs could be suggested to the developer as a means to enhance the development or protect a particular resource feature, while minimizing any loss in development potential for the area.

The dedicated environmental corridor lands can be used by the locality for the open space and recreation needs of its citizens. *However, it must be noted that not all environmental corridor land dedications will be suited to or entirely satisfy the ordinance requirements for recreation and open space land dedication needs.*

(3) Fee-Simple Purchase

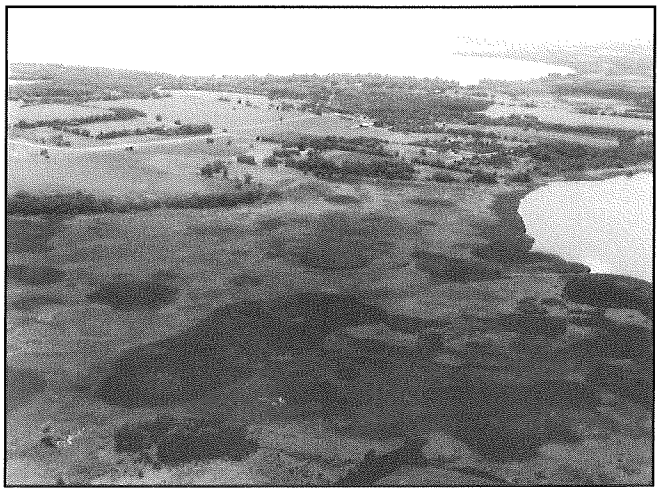
Traditionally, local units of government have acquired public parklands and parkways for recreational purposes through the purchase of fee-simple interest in the property. Fee-simple acquisition is the purchase of all rights to a specific property. The county or community may also purchase particularly sensitive resource areas not adequately protected by regulatory mechanisms for conservancy or passive recreation areas. As referred to earlier in this section, local units of government have commonly sought financial assistance for purchase and development of parklands from federal and state cost-share funding programs (e.g., State Stewardship Fund, CDBG, DNR matching funds).

Private sector involvement in purchase of critical environmental resource recreation and open space lands has increased in recent years. For example, it is not uncommon for a local volunteer fire department, veterans organization or civic group to purchase land and to develop and maintain it as a public park or to donate it to a community for operation. In addition, several private environmental groups, such as the Nature Conservancy, Audubon Society, and Wisconsin Wetlands Association, actively seek to acquire and protect sensitive natural resource areas through donation or purchase. Private foundations, such as the Dane County Natural Heritage Foundation, are also becoming increasingly active in acquisition and protection of open spaces.

Besides easements, a unit of government may seek a first right of refusal agreement with the owner of an environmentally valuable property. With this agreement, the county or community is offered the first opportunity to purchase when the land is sold.

(4) Purchase of Easements

In instances where fee-simple title is not needed, the purchase of less-than-fee-interest in a property may be more appropriate. Such acquisition of less-than-fee-interest grants the possessor of the interest only partial control and rights in the land, while the original owner retains partial interest. The most common less-than-fee-interest purchase by units of government is the easement, whereby limited land use rights are acquired.



Lower Mud Lake Conservancy area is protected on its north urbanized fringe by environmental corridors. State stewardship funds have been used to purchase conservation acreage to protect Lower Mud Lake wetlands.

Common examples of easements include the following:

(a) Access easements, to allow public access to private lands for hiking, fishing or other recreational purposes, or for maintenance of drainage facilities.

(b) Conservancy easements, to preserve environmentally sensitive sites without allowing public access.

Purchase of easements may be appropriate where public access is needed only for construction or maintenance of drainage facilities, but they also can be used for recreation access if costs would be substantially lower than fee-simple purchase.

(5) Acquisition of Development Rights

A transfer of development rights (TDR) program allows the transfer of future development potential from properties in "sending" areas. Sending areas are designated areas where the community desires preservation of lands or limitation of development. Productive farmlands and environmentally sensitive areas are examples of sending areas. The future development potential is allowed to be transferred to "receiving" areas, designated as appropriate for new or additional development. They are usually in areas well served by transportation networks and public sewer and water systems.

A variant of this preservation tool is the purchase of development rights (PDR) program. Under a PDR program, a landowner sells his or her development rights to a parcel of land. The buyer, usually a public agency or a conservation organization, pays a price which is less than the outright purchase price of the land, and the seller retains the title to the land and can sell it or pass it on to other family members; however, the use of the land is forever restricted to agriculture and open space.

APPENDIX A.

Mapping Environmental Corridors

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Mapping Environmental Corridors

This appendix explains the natural and cultural features used to identify environmental corridors, and the specific criteria for mapping them. The process of delineating the actual corridor line based upon the mapped data is then described. The basic resource and corridor mapping is continually refined and updated to reflect the most accurate and up-to-date information available, as described in the procedures for changing environmental corridors outlined in Chapter 1.

Environmental Corridor Elements

A previous chapter explained four major functions served by environmental corridors. As explained there, and in Table 1, land is included in an environmental corridor because it serves one or more of the corridor functions. The first step in delineating corridors, then, is selecting and mapping resource "elements" which have open space functions.

For the purpose of mapping environmental corridors, 13 separate elements have been identified and mapped for urban service areas of Dane County. Each element is mapped distinctly, so that it appears even when it coincides with another element. Clearly, the choice of elements depends on the environment of the study area, so additional or different ones might be mapped in another setting.

The 13 elements are the following:

1. Lakes and ponds
2. Perennial streams
3. Intermittent streams and drainageways
4. Open channel (constructed) drainageways
5. Shoreland buffer strips adjacent to streams and drainageways
6. Wetlands
7. Shoreland buffer strips adjacent to wetlands
8. 100-year floodplains
9. Woodlands
10. Steep slopes
11. Unique vegetation or geology
12. Existing parks, greenways, conservancy land
13. Proposed parks, greenways, conservancy land

For sanitary sewer extension reviews, environmental corridors are only applicable and delineated within urban service areas. The basic resource features which provide the background information used for corridor delineation are commonly mapped beyond the urban service area boundary. This provides the background resource information necessary for extending or expanding the environmental corridor system when the urban service area is expanded. The environmental corridors do not include all resource features, and mapping this background information does not imply approval or adoption of these features, or that they will necessarily be included in an environmental corridor.

1. Lakes and Ponds

Source: The basic sources for water bodies are 1:24,000 USGS topographic maps; the boundaries shown there are generally used for the large water bodies. Topographic maps are checked against the latest aerial photographs, which are used wherever shorelines are different. In addition, all small water bodies visible on aerial photographs are mapped, including those which do not appear on USGS maps.

2. Perennial Streams

Source: Perennial streams are permanent, continuously flowing streams. Streams are derived from USGS topographic maps, originally at a scale of 1:24,000. These maps are supplemented by the latest aerial photographs. Where the photographs or reliable local maps show changes in stream bed or extent, the line from the USGS map is altered accordingly.

3. Intermittent Streams

Source: Intermittent streams are those which flow in response to: (1) seasonal fluctuations in the water table; (2) a seasonal or intermittent water source, such as a snow pack; or (3) precipitation events. Intermittent streams are derived from 1:24,000 USGS topographic maps, supplemented by the latest aerial photography. In urbanizing areas, the photographs are the major source, as development, drainage, and channelization have greatly altered stream patterns since the USGS maps were last revised. Many intermittent streams mapped by USGS have been replaced by underground storm sewers or man-made open channel drainageways. In general, intermittent streams mapped for this project include those originally identified by USGS which have remained, and natural drainageways not mapped by USGS but evident from both topographic patterns and aerial photographs.

4. Open Channel (Constructed) Drainageways

Source: Open channel drainageways are above-ground drainage systems which have been constructed to accommodate intermittent water flow, often replacing a previously natural drainageway. Drainageways included in this category may be concrete-lined channels or simply open ditches. The latter appear commonly in undeveloped areas where natural drainageways have been altered to accommodate agriculture or recent development, while the former appear in more heavily urbanized areas. Continuously flowing streams, even if lined or channelized, are considered perennial streams, not open channel drainageways. The primary sources for lined channels are aerial photographs or municipal storm sewer maps.

5. Shoreland Buffer Strips Adjacent to Streams and Drainageways

Source: In the initial mapping process, a total buffer strip width of 200 feet, centered on the perennial or intermittent stream or the open channel drainageway, is delineated. Shoreland buffer strips are mapped adjacent to all streams, with the following exceptions: they are not mapped when sufficient land adjacent to streams is categorized as existing or proposed park or greenway, or when the adjacent land is floodplain, wetland, or woodland. In other words, buffer strips are initially designated only where the land at least 100 feet on either side of a stream is not protected or characterized by other important natural features. Whenever floodplains, proposed or existing park lands, or woodlands extend less than 100 feet from a stream, a shoreland buffer strip is designated for the remaining distance.

It should be noted that the mapped width of proposed shoreland buffer strips for intermittent streams and drainageways is tentative and is expected to be adjusted during the process of detailed site review, plat approval, or official mapping, within the guidelines indicated in Chapter II and illustrated in Figure 1. The mapped width of 200 feet should be adequate for water resource protection, wildlife habitat, basic recreational trail development and placement of utility lines. On intermittent streams and drainageways, the buffer strip width may be reduced to a minimum total width of 75 to 100 feet, depending on the presence of other utilities in the buffer strip and in accordance with the suggested guidelines in Chapter II and Figure 1, where public access for recreation is not intended.

6. Wetlands

Source: All wetland locations are obtained from the Wisconsin Wetlands' Inventory prepared for each Wisconsin county by the Wisconsin Department of Natural Resources. That inventory, begun in 1978, adopted the following definition of wetlands, which was approved by the Wisconsin legislature in Section 23.32(1)Wis. Stats.:

A wetland is "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions."

In the latest DNR study, wetland boundaries were interpreted from 1986 black-and-white infrared photographs and delineated on 1:24,000 scale township-centered photographic enlargements. The wetland inventory maps are updated and revised periodically and are available in digital form.

It should be noted that the federal wetland definition is different from the state definition. Areas *not* shown as wetlands in the WisDNR Wetlands' Inventory may fall under federal wetland definition and jurisdiction.

7. Shoreland Buffer Strips Adjacent to Wetlands

Source: A 75-foot-wide buffer strip is mapped bordering wetlands and is considered adequate for protection of wetland functions and for basic trail development. Buffer strips are mapped adjacent to wetlands with the following exceptions: they are not mapped when a sufficient width of land adjacent to wetlands is categorized as proposed or existing park or greenway, or as floodplain or woodland proposed for inclusion in environmental corridors. Whenever floodplains or woodlands extend less than 75 feet from a wetland, a buffer strip is designated for the remaining distance, unless existing development encroaches into that area.

8. Floodplains

Source: The floodplain is defined as that area subject to flood hazard in a 100-year flood (which has a one percent chance of occurring in any year). Floodplains are obtained from National Flood Insurance Program Flood Insurance Rate maps produced by the Federal Emergency Management Agency, or more detailed studies where available. Within the cities of Madison, Monona, and Fitchburg the original map scale is 1:12,000, while in all unincorporated areas the scale is 1:24,000. Other incorporated communities are mapped at a variety of scales.

9. Woodlands

Source: Woodlands are mapped from the latest aerial photographs. Woodlots are visually interpreted from the photographs using a one-acre minimum size and approximately 80 percent minimum canopy cover as mapping criteria. Wooded land within residential subdivisions is generally excluded, unless it is park land or other public land.

10. Steep Slopes

Source: Steep slopes are defined here as those with 12 percent or more gradient. Steep slopes are determined from USGS topographic maps with a ten-foot contour interval or from detailed topographic mapping studies where they are available.

11. Unique Vegetation or Geology

Source: The location of areas of unique or native vegetation (such as remnant prairies and oak savannahs) are obtained primarily from DNR's Natural Heritage Inventory maps and from discussion with naturalists who are familiar with the area. Unique geology (such as rock outcrops and glacial features) is based on discussion with local officials or geologists who are familiar with the area. Aerial photographs help define the boundaries of this element.

12. Existing Parks, Greenways, Conservancy Land

Source: Parks, greenways, and conservancy-zoned land are obtained from a variety of sources and are mapped in two categories: those with public access, whether publicly or privately owned; and those with no public access.

The criteria for land with public access are the following: (1) that it be open and/or recreational land; and (2) that it be publicly controlled through existing ownership, easement or other regulation which includes provision for public access or, if in private control, that it have public access for recreational or general open space use. Land mapped under the public access category includes state, county, city, village, and town parks; drainage greenways dedicated to the public; private golf courses; and public and private school playfields and open lands.

Land without public access is that which is undeveloped and publicly controlled in some way (e.g., easements or zoning) but which has no legal provision for access. These are areas which are protected from development for environmental but not recreational purposes. Such land includes most drainage easements and conservancy zoning (where that is the only control on the land). In the Central Urban Service Area (CUSA) it also includes the Madison Metropolitan Sewerage District and the Dane County Regional Airport lands.

In both categories all mapped information is checked against aerial photographs to be sure that only land which is actually open and undeveloped is included.

The following sources are used for all Dane County communities:

- Aerial Photographs: Latest aerial photographs are used to verify all mapped information and to obtain boundaries of open land which do not correspond with parcel boundaries.
- Land Use Inventory Maps: Maps prepared by the RPC from field inventory and aerial photos, on property base for villages and cities and orthophoto base for towns. These maps are available only for communities other than Madison; town maps are available in digital form in ARC/INFO format, while villages and cities are 1:3,600 or 1:4,800 scale maps. These are major sources for local parks and publicly owned conservancy land.
- City, Village, and Dane County Zoning Departments: Zoning maps at various scales, providing land zoned conservancy under city, village and/or county ordinances. County exclusive agricultural zoning is not mapped.
- Recorded Subdivision Plats: Plat maps, at various scales, for recorded subdivisions filed with the Register of Deeds, City of Madison Engineering Division and the Dane County Surveyor. These maps are used to determine dedicated parkland and greenways in new developments which are not reflected on other source maps.
- State and County Park Maps: Detailed maps of state parks and individual county parks, prepared by Wisconsin Department of Natural Resources and Dane County Parks Department, respectively. Various scales.
- City and Village Park Plans and Master Plans: Plan maps, at various scales, from adopted plans. Where available, these plans are used for a general guide in locating existing park and open space lands.

The following specific sources were also used for park and other open land in the CUSA:

- Madison City Parks Map: A 1:24,000 scale map showing location and general land boundaries of city parks and drainage greenways. This map is used as a general guide but not to map specific park boundaries.

- Madison Parks and Open Space Plan (1991), Existing Park and Open Spaces: Plan includes several maps showing information on conservation and park areas and future facilities in the City of Madison. These maps are used as a general guide.
- City of Madison Official Maps: 1:1,200 scale maps used to determine precise boundaries of parks, greenways, and easements in the City of Madison only.
- City of Middleton Land Use and Zoning Maps: 1:9,600 scale maps prepared originally as part of the City of Middleton Development Plan and continually updated since then; used to determine park and zoning boundaries with the city.
- University of Wisconsin-Madison Campus Development Plan (1996): Includes maps delineating open spaces (available in digital form) showing existing natural preserve, athletic fields, and multipurpose urban open space within the UW campus boundaries. All of the first two categories are mapped, as well as major urban open space areas (those larger than plazas in front of university buildings).
- University of Wisconsin Arboretum Map: A 1:12,000 scale map showing boundaries of land ownership, prepared by the UW Cartographic Laboratory for the Arboretum.

13. Proposed Parks, Greenways, Conservancy Land

Source: Proposed parks are defined by the same criteria as existing parks, the distinction being that proposed park or conservancy land is not currently in public ownership or controlled by the desired regulatory means. This category represents land planned for future park or open space use by some level of government. To be included here, the proposal must be mapped as part of an adopted plan or other document which signals public intention for the use of that land.

Public access may or may not be anticipated for land mapped in this category. That distinction can be made only at the time that the proposal is implemented.

The following sources are used:

- Preliminary Subdivision Plats: Preliminary plats at various scales under review by cities, villages or Dane County but not yet recorded. These maps are used to determine proposed dedications and greenways in developing areas.
- Community Plans: Plan maps, at various scales, from adopted city, village and town plans. Only specifically mapped parks or conservancy areas are included, not general recommendations.
- Adopted park and open space plans, including community park and open space plans, *Dane County Park and Open Space Plan*, special plans (*Greenspace*, special area plans such as Cherokee, Ice Age, Door Creek, DNR plans, etc.).
- City of Madison Official Maps: 1:1,200 scale maps which show proposed parkways within Madison and in adjacent unincorporated areas.
- University of Wisconsin-Madison Campus Development Plan (1996): Includes maps delineating open spaces (available in digital form) showing private natural preserves and proposed additions to multipurpose urban open space, both of which are mapped here as proposed conservancy/open space.

Soils with Limitations for Development

Although soil with development limitations is not a mapped resource feature or included as a criteria for the initial delineation of an area in the environmental corridor, it should be noted that soils found along streams, in floodplains, wetlands and steep slopes very commonly have severe limitations for development and represent an additional or reinforcing reason why these areas should be protected from development.

Source: Soils with limitations for shallow excavations, construction of dwellings with basements, and construction of local streets and roads are obtained from the Soil Survey of Dane County, prepared by the U.S.D.A. Soil Conservation Service.

Corridor Delineation and Mapping Procedures

The 13 mapped elements described above serve as the basis for defining environmental corridors. Drawing the corridor boundary is a process of selecting the combination of elements which form a logical system of open lands—one which respects both the resources and the people who use them.

Corridor Delineation

The corridor delineation process involves three steps: (1) compiling resource elements; (2) applying a set of criteria for including land in the environmental corridor; (3) drawing the corridor boundary.

Step one is accomplished by preparing a set of resource element maps at identical scale, allowing analysis of the relationship among elements. The base map usually selected for corridor mapping is the USGS topographic

map, originally at a scale of 1:24,000. This map provides the topographic contours which are related to many natural features.

For the CUSA project, the original topographic maps were enlarged to a 1:12,000 scale. Scales vary from 1:4,800 to 1:12,000 for other Dane County communities.

The entire Central Urban Service Area is mapped on 25 separate detailed maps, 24 of which show one quarter of a township (9 square miles) and one which shows a smaller area in the towns of Westport and Burke. Other communities are mapped on a single map.

For sanitary sewer extension reviews, environmental corridors are applicable and intended to be used within urban service areas. The basic resource features which provide the background information used for corridor delineation are commonly mapped beyond the urban service area boundary. This provides the background resource information necessary for extending or expanding the environmental corridor system when the urban service area is expanded. The environmental corridors do not include all resource features, and mapping this background information does not imply approval or adoption of these features, or that they will necessarily be included in an environmental corridor.

Three general criteria guide corridor delineation: (a) degree of contribution of an element to an environmental corridor function; (b) degree of continuity; and (c) degree of existing development. The specific measures of "degree" for each of the criteria are explained below:

(a) Degree of Contribution to an Environmental Corridor

The first priority for inclusion in the corridor is land which makes a "major contribution" to one of the six environmental corridor functions shown in Table 1. A major contribution is made by either a single important resource element or a group of elements which are important because of their interrelationship.

Wetlands and floodplains are elements which, by themselves, serve all corridor functions and are highly sensitive to disturbance. These features are almost always included in the corridor unless they are isolated (criterion b) or modified by development (criterion c). Major parks and conservancy lands (existing and proposed) are also included wherever they correspond with other elements, by virtue of being in (or proposed for) public control and contributing large areas or open space. Smaller neighborhood parks may or may not be included, depending on their location and relationship to other resources.

Shoreland buffer strips also make a major contribution to corridors and are always included because they may provide the only basis for protection of the streams or wetlands to which they are adjacent. Both shoreland buffer strips and officially mapped proposed parkways represent preliminary delineations, in the sense that both occur in undeveloped areas; their boundaries may be adjusted when zoning, acquisition, or dedication is accomplished as part of the development process.

Other lands are included because two or more resources occur together, such as a wooded steep slope. More often than not, several resource elements coincide or abut, which increases the importance of an area and its need for protection. Presence of an isolated individual resource, such as a woodlot or a steep slope, does not justify inclusion of land in the corridor without other supporting factors or resources.

(b) Degree of Continuity and Linkages

After the most important resource areas have been identified, the next priority is to include land which links them together to form a continuous system. Continuity may be created for ecological reasons to protect the continuity of a drainage system or a wildlife habitat; or connections between otherwise isolated habitats; or for recreational reasons to provide a continuous pathway for walking or skiing.

Including land because it provides continuity is a matter of judgment; there are no specific criteria on the distance between major resource areas to be connected or the size of the link. In general, the purpose is not to arbitrarily connect points but to provide continuity where it is logical and justifiable for the purposes noted above.

Any of the following may be used as linkages in the corridor: railroad corridors; bicycle paths; narrow drainage or walkway easements; low traffic-volume residential streets; individual resource elements which do not alone qualify for inclusion in the corridor; undeveloped land with no resource significance other than open space. Some land is also included in the corridor because it enhances a naturally continuous pattern. For example, small parks or woodlots adjacent to major resource features are generally included because of their association with them.

In some areas, major resource elements are present but not in association with the rest of the corridor system. Such land may meet the degree of contribution requirement for inclusion in the corridor but not the continuity criteria. In these situations, the land is mapped as an Isolated Resource Feature, indicating that the area is valuable open space but not connected to the rest of the environmental corridor system.

The following areas are mapped as Isolated Resource Features: (1) parks or publicly owned conservancy lands which are at least 40 acres and contain one or more resource features; and (2) land which is not publicly controlled or a park, but which has significance because of the size, quality, location or ecological importance of its resources. Isolated Resource Features, although not continuous with the corridor system, are to be treated the same as environmental corridors with respect to implementation and protection measures.

(c) Degree of Development

The final criteria for land in the environmental corridor is that it be undeveloped and free of existing commitments for future development. While this may seem self-evident, much land is classified as floodplain, shoreland, or other significant resource yet is already developed for residential or commercial use. Despite those classifications, that land no longer serves the functions of environmental corridors, as the resource is not protected. Portions of municipal or county parks which are not actually in recreational use are also excluded, such as administration buildings and equipment storage.

Similarly, if land is now open but is committed for some use incompatible with corridor functions, it is excluded. An example might be a large woodlot located on land which has recently been platted. Though undisturbed, the land is on its way to development, a process that would be costly and difficult to reverse.

The only development intended within the environmental corridor is recreational facilities in parks (tennis courts, tracks, etc.) and the streets, utilities and railroads used as linkages, or as access to recreational or institutional uses in the corridor.

Community Participation in Corridor Delineation

The RPC staff meets and works with the community plan commission, governing body, and other interested agencies to delineate, refine, and revise the environmental corridors. It is the intention of the RPC to work with communities to maintain and expand the environmental corridors in a manner which satisfies both the local unit of government and the regional concerns the RPC must address. Local input into the delineation of environmental corridors is a critical step, since through this process the most accurate resource information and resulting environmental corridor is identified.

APPENDIX B.

Fact Sheet-Environmental Corridors