

US EPA ARCHIVE DOCUMENT

SUSTAINABLE DEVELOPMENT PRINCIPLES FOR PROTECTING NATURE IN THE CHICAGO WILDERNESS REGION

Through careful planning and design, it is possible to build and sustain healthy, livable communities. Development activities can accomplish three aspects of sustainability: (1) protection and enhancement of the environment, (2) economic development, and (3) social benefits. While sustainable development can involve all these aspects, this document focuses on the protection and enhancement of the natural environment in northeastern Illinois, northwestern Indiana and southeastern Wisconsin.

Nature in the region has important intrinsic value, but natural areas also make communities more attractive, provide recreational areas, improve air and water quality, and reduce the hazards of flooding. Access to nature also creates marketing opportunities for new developments. Additionally, the woodlands, grasslands, wetlands, lakes and streams of the region are aspects of our natural heritage that would be difficult, if not impossible, to replace if they are lost.

Local governments and the development community can collaborate to protect, restore and extend the Chicago area's natural spaces even as development goes forward in the region. As the region develops, the ideal situation will be to allow nature to flourish in proximity to people so residents can enjoy natural beauty and outdoor recreation.



The following principles provide guidance to local governments and developers on the planning and design of new development and redevelopment projects, to protect and enhance nature as an integral part of the development process. The principles are largely focused on the natural resource aspects of sustainable development—land, water, habitat, and soils—and recognize that having healthy nature in communities also creates positive economic and social benefits.

Each land development project offers a unique set of opportunities and constraints. It is impossible for a single set of regulations or guidelines to anticipate every circumstance. It is also a challenge to implement every sustainability principle in every development project. However, it is recommended that all the principles be considered and applied to the greatest extent possible by municipalities, developers, engineers, planners and designers in each development proposal and project. The art of the planning and design process is reflected through the intent and commitment of the parties to serve as stewards of the environment for the benefit of current communities and future generations.

Local regulations can provide developers with the design flexibility needed to protect natural areas and still achieve the prevailing overall density of development. Experienced consultants can help develop creative site plans using new conservation development techniques. Conservation development—development that protects natural resources through techniques such as clustering structures on a site—can protect nature while allowing for attractive and functional community development. Emerging conservation development techniques are growing in acceptance because they protect important resources, enhance property values, and reduce infrastructure costs. Conservation development helps preserve community values, support economic development goals, and provide the qualities that make communities more livable. The principles in this document contain examples of conservation development techniques that can be applied by those involved in community development.

Representatives of local governments, developers, engineers, planners, site designers and conservationists collaborated to create these principles, with the goal of encouraging their region-wide acceptance and application. The effort was sponsored by the **Chicago Wilderness** consortium, *a partnership of more than 170 public and private organizations* working to protect, restore, study and manage the natural ecosystems of the Chicago region for the benefit of the public, and to contribute to global biodiversity conservation.

The principles support the goals and recommendations of the **Chicago Wilderness Biodiversity Recovery Plan**, which the consortium adopted in 1999. Specifically, the Plan recommends that local agencies preserve more land with existing or potential benefits for biodiversity, protect high-quality streams and lakes through watershed planning and mitigation of harmful activities to conserve aquatic biodiversity, and adopt local and regional development policies that reflect the need to restore and maintain biodiversity.



STATEMENT OF PRINCIPLES

1

Promote infill development and redevelopment where transportation facilities and utilities already exist in order to minimize the development of open lands, such as natural areas and farmland. Encourage development that is compact and contiguous to existing community infrastructure.

Infill projects and redevelopment can take advantage of previously disturbed land in order to avoid extending development outward into natural and agricultural natural areas. Infill and redevelopment, as well as compact, contiguous development in outlying areas, also can greatly reduce the costs of new roads, sewers, and other infrastructure.

Implementation Checklist

- Include infill and redevelopment policies, as well as biodiversity protection and enhancement policies, in municipal and county comprehensive plans. Delineate protected areas on plan maps.
- Adopt policies for annexation and contiguous development that encourage compact patterns of new growth.
- Participate in watershed planning and develop intergovernmental agreements with adjacent communities and county governments to create contiguous growth in order to protect valuable natural resources.
- Use tax increment financing (TIF) and other incentives to stimulate reinvestment in build-up areas.



2

Locate and plan new development in ways that protect natural resources and habitat and provide buffers between sensitive natural areas and intensive use areas.

Local plans that identify locations of sensitive natural areas provide guidance to local officials and developers who then may locate and design new development to minimize impacts on water bodies, woodlands, wetlands, and grasslands. Site plans that cluster buildings in a development can provide the zoning district's allowable number of structures but because of the different arrangements, retain areas for nature. These areas serve as valuable amenities enhancing the new development and act as reserves for plants and animals native to the region. Buffer areas should be included in site plans to minimize adverse impacts of human activity on highly sensitive natural resource areas. Impervious areas—principally roads, roofs, and parking lots—should be minimized, wherever feasible.

Implementation Checklist

- Perform community-wide inventories of natural resources, including wetlands, floodplains, water features, remnant woodlands and prairies, wet (hydric) soils, designated natural areas, sensitive groundwater replenishment zones, steep slopes, and public open space.
- Cluster residential development to protect sensitive areas and designated open space.
- Specify these features in official land use plans as areas to be protected and restored.
- Link nearby natural areas via greenways and incorporate appropriate buffers for highly sensitive areas.
- Adopt zoning and subdivision regulations that protect critical resource areas and provide flexibility and incentives for clustering developments.
- Develop creative site plans that build around and take advantage of the natural features of the development site (see list above).
- Minimize impervious surface areas—for example, by reducing street widths and parking lot sizes—to reduce stormwater runoff and avoid disruptions to the replenishment of groundwater.



3

Use the development process to enhance and restore streams, wetlands and lakes, and to enhance their potential as recreational and aesthetic amenities.

The region's water resources are among its most valuable natural assets in terms of sustaining human, plant, and animal life, as well as making our communities healthy and attractive places in which to live and work. Providing appropriate resident access and views to water bodies increases market demand and property values, and provides opportunities for recreation and education. Additionally, streams, lakes and wetlands should be protected from pollution, filling, draining, and alteration of the natural supply and flow of water.

Implementation Checklist

- Base site planning on research of the pre-development conditions of streams, lakes and wetlands on a site, with special regard to locations of wet (hydric) soils, flood-prone areas, and natural conditions of existing water bodies.
- Provide for the setback of structures and hard surfaces from water bodies and wetlands, and provide for buffers of natural vegetation between development and water features. Integrate paths and trails into development plans so people can enjoy access to natural water features.
- Take advantage of opportunities to restore the natural functions of lakes, wetlands, and streams. Use naturalistic approaches to stabilize streambanks. For example, native plants can be used along shorelines to prevent erosion and keep pollutants and sediments from flowing into the water. It is also important to protect and restore the natural paths of waterways and avoid straightening them.



4

Preserve permanent open space as an integral part of new development to both protect critical natural areas and to provide opportunities for recreation and environmental education. Design developments to create open space linkages to adjacent and regional natural areas so that nature exists not as islands but as connected habitat.

Sufficient quantity and continuity of habitat are survival requirements for wildlife and native vegetation in our natural areas which compose our green infrastructure. Connections - between natural areas, and between neighborhoods and natural areas - maximize opportunities for recreation trails, increase public access to nature, promote environmental education and contribute to public health. New development must be designed to prevent fragmentation of natural areas, and to preserve and restore the continuity of streams, wetlands, woodlands and grassland.

Implementation Checklist

- Consult existing local and regional plans for greenways, and land and water trails, as a guide to where critical habitat and recreational connections are needed.
- Designate interconnections of habitat, particularly natural drainage ways, in comprehensive plans.
- Work with local conservation groups and trail organizations to plan and design open spaces and greenways.
- Work with governments, intergovernmental groups, homeowners associations, land trusts, and conservation organizations to establish plans for long-term management and ownership of open spaces and natural areas. Ensure that adequate funding and stewardship arrangements are made.
- Use cost-saving techniques to preserve natural areas, such as conservation easements, donations of land and money, and state and federal grants



5

Recognize the value of water as a resource and manage it to protect downstream waterbodies and wetlands, prevent increased flooding, preserve groundwater resources, and maintain natural hydrology.

Communities should work with developers to create site plans that keep water from running off the land too quickly and instead allow the water to soak back into the earth. Reducing the amount and velocity of water run-off minimizes soil erosion and loss of land. Site plans should also protect the quality of water that flows into lakes, streams, and wetlands or recharges groundwater supplies.

Similarly, techniques should be used to conserve and use wastewater for irrigating land, replenishing groundwater supplies, and supplementing the flow of streams with good quality water.

Implementation Checklist

- Plan the site to protect natural drainage and water storage features such as moisture-retentive (hydric) soils, natural depressions, and drainage ways.
- Minimize impervious surfaces by using permeable paving and green roofs (roofs holding vegetation), where feasible.
- Route impervious surface water runoff directly to permeable landscapes wherever possible, via downspouts, slotted curbs, level spreaders, and recessed landscape islands in parking lots.
- In lieu of storm sewers and concrete channels, manage drainage with measures that use vegetation to reduce water flow and increase water quality, such as swales, filter strips and infiltration trenches.
- Design detention basins as naturalized ponds or wetlands, incorporating native vegetation, flat shoreline slopes, and open water areas to maximize the removal and transformation of runoff pollutants.
- Participate in the stormwater management programs of countywide agencies, understand and delineate watersheds and design plans to protect those watersheds, and participate in cooperative programs such as the Ecosystem Partnerships created through the Conservation 2000 program of the Illinois Department of Natural Resources.



6

Minimize changes to natural topography, soils, and vegetation to preserve land, water and soil relationships that are essential for sustaining plant and animal habitat. Where sites have been previously altered, attempt to restore natural conditions to the extent possible.

Careful site planning and design should minimize areas subject to mass grading, soil compaction, and activities that can lead to soil erosion. Landscape designs should protect remaining native vegetation, particularly native trees, and incorporate native vegetation, where appropriate, in lieu of conventional turf grass. Areas with natural landscaping can provide habitat for birds and other wildlife, and serve as protective buffers between development and natural areas. Natural landscaping can also substantially reduce the costs associated with landscape maintenance, and enhance property aesthetics.

Implementation Checklist

- Analyze site conditions and minimize alteration of natural vegetation and soils.
- Minimize unnecessary mass grading and soil compaction, wherever possible.
- In areas intended for stormwater management and infiltration, deep-till and loosen soils that were unavoidably compacted during site grading to restore their natural infiltration capacity.
- Modify local weed and landscape ordinances to encourage the proper use of native landscaping.
- Inventory and protect a diversity of native trees as part of the site design and construction processes.
- Plant native vegetation in lieu of turf grass and non-native ornamental plants, particularly in areas impacted by stormwater facilities, buffer zones, greenways, and common open spaces not intended for active recreational use.



7



Establish procedures that assure the ongoing management of natural areas within developments as part of an overall strategy for achieving sustainability.

In urban settings, neither development nor nature can survive without ongoing management and maintenance. While protected and restored natural areas generally require much less maintenance than conventional landscapes, basic functions like weed control rely on techniques such as controlled burning, and these techniques may not be familiar to homeowners or permitted by local governments. Long-term maintenance can be accomplished within the conventional management structure for a development (a homeowner or condominium association, for example). However, it is preferable to utilize the expertise of entities that have proven natural resource management capabilities and responsibilities, such as park districts, forest preserve and conservation districts, municipalities, intergovernmental watershed management organizations, natural land foundations and trusts, or trained ecological consultants.

Implementation Checklist

- Provide homeowners with educational materials regarding the value of natural areas within or adjacent to their development and the measures that would be beneficial for their protection and management.
- Incorporate natural landscaping rules into the by-laws and operating procedures of homeowner associations and similar governing bodies.
- Perform regular weed and erosion control using an appropriate combination of hand pulling, herbiciding, and mowing.
- Implement a long-term program of controlled burning of natural landscapes, wherever feasible.
- Provide for an annual landscape monitoring, assessment and maintenance program for natural areas, including performance criteria and funding arrangements, for the first five years after completion of construction. Establish an institutional structure for long-term permanent management of the site.

8



Design development to achieve the broader sustainability of human and natural communities, including the social and economic dimensions of sustainability.

The design of energy efficient buildings, the use of recycled and non-toxic materials in construction, and the incorporation of vegetation and water into architecture all have positive impacts on the conservation of natural resources, and on human health. The creation of attractive natural spaces for walking and social interaction also benefits community residents and workers. Community planning that provides mixes of land uses and transportation options reduces travel times, saves energy, and maximizes access to work, recreation and cultural opportunities.

All of these contribute to community livability and sustainability, and demonstrate communities' commitment to creating desirable places to live, work and invest.

Implementation Checklist

- Revise zoning ordinances to permit mixes of residential, commercial and employment land uses, especially in proximity to public transportation.
- Encourage interconnected, grid-like street patterns, walkways and bikeways, and other features that promote mobility, access, and an increased sense of community.
- Encourage building and landscape designs that result in energy conservation, use of recycled and recyclable materials, environmentally healthy materials (such as low VOC paints), green roofs, rain gardens, etc.

PROJECT PARTICIPATION

The principles in this document were developed through a series of roundtable meetings. The roundtable participants included local government officials, developers, engineers, planners, site designers, conservationists and communication professionals. The Chicago Wilderness consortium sponsored the roundtables.

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SELECTED RESOURCES AND WEB SITES

Below are other resources to consult for more information on sustainable development practices.

PUBLICATIONS

- “Protecting Nature in Your Community,” Northeastern Illinois Planning Commission, 2000.
- “An Atlas of Biodiversity,” Chicago Wilderness, 1999.
- “Environmental Considerations in Comprehensive Planning,” Northeastern Illinois Planning Commission, 1994.
- “Conservation Design for Subdivisions: A Creative Guide for Creating Open Space Networks,” Randall Arendt, Island Press, 1996.
- “Model Stream and Wetland Protection Ordinance,” Northeastern Illinois Planning Commission, 1988.
- “Site Planning for Urban Stream Protection,” Metropolitan Washington Council of Governments, Washington, D.C., 1995.
- “Best Management Practices Guidebook for Urban Development,” Northeastern Illinois Planning Commission, 1992.
- “Natural Landscaping for Public Officials: A Sourcebook,” Northeastern Illinois Planning Commission, 1997.
- “Biodiversity Recovery Plan,” Chicago Wilderness, 1999.
- “Conservation Design Resource Manual,” Northeastern Illinois Planning Commission, 2003.
- “Illinois Urban Manual,” Natural Resources Conservation Service, 1999.
- “Zoning for Environmental Sustainability,” ideas@work, vol.3, number 1, Campaign for Sensible Growth, 2003

WEBSITES

- Campaign for Sensible Growth: www.growingsensibly.org
- Chicago Wilderness: www.chicagowilderness.org
- Center for Watershed Protection: www.cwp.org
- The Conservation Foundation: www.theconservationfoundation.org
- Northeastern Illinois Planning Commission: www.nipc.cog.il.us
- U.S. Environmental Protection Agency: www.epa.gov/greenacres
- IL Dept. of Natural Resources: www.dnr.state.il.us/orep/c2000/ecosystems
- Island Press: www.islandpress.org

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