

Chapter Four



NATURAL SYSTEMS & THE ENVIRONMENT

I. Introduction

A primary characteristic of Ann Arbor is the extent, diversity and quality of its natural systems. The southern area of the city is predominantly a glacial till plain. The northern area has considerable topographic relief as a result of glacial activity. The last glaciers deposited significant amounts of soil, creating hills and kames (short hills or mounds) that are separated by waterways and valleys. Because of these steep slopes and wetlands, some land was never farmed. As a result, a diversity of natural communities, species and pre-settlement landscape remains today. A significant number of these high quality natural systems remain intact in pockets throughout the City.

Foremost of these natural systems is the Huron River, its tributaries and surrounding valleys. These features, more than any other, provide Ann Arbor with its best natural scenery. Another important natural system includes native forest fragments. The City was logged extensively in the 19th century for lumber and to clear land for farming. Where farming did not occur, natural systems have recovered and regenerated into high quality native forest fragments and wetlands. Native forest fragments and other woodlands offer important habitat for plants and animals, help to cool the community and provide valuable recreational opportunities. Landmark trees and steep slopes also help define the natural character of a community and provide a window to the past. Water features are important in Ann Arbor. Wetlands help to clean and stabilize storm water runoff and provide critical habitat to a wide variety of plants and animals. Wetlands along the Huron River include high quality and rare natural elements. South Pond, Barton Nature Area and the Arboretum provide important bird habitat. Nine creek corridors exist in Ann Arbor supplying wildlife habitat and are a critical component to water quality in the Huron River watershed. Flood plains also exist in areas along creeks and the Huron River.

Natural areas are lands where high quality native forest fragments, wetlands, waterways, and steep slopes exist. Places where several of these high quality natural systems overlap are particularly valuable. In addition to supporting plant and animal life, natural areas provide sanctuaries for people and scenic views that define what is special about Ann Arbor. They offer sounds, smells and sights that can help people relax after a hectic day. By providing opportunities for walking, jogging and bicycling, natural areas can help link neighborhoods and broaden a sense of community. Such linkages can present opportunities for residents to meet neighbors and friends and have a better connection to the community at large. Natural areas can also present educational opportunities for students of all ages. The Huron River, City parks, and public and private open spaces are the primary

components of the City's natural systems. These areas provide habitat and linkages for plant and animal life and provide residents recreational opportunities within an urban area. The City of Ann Arbor Parks & Recreation Open Space Plan (PROS) provides an inventory of the City park system, identifies guiding principles, goals and objectives and makes recommendations for acquisition of parkland. Development in Ann Arbor should preserve and protect high quality natural systems. The City should continue to ensure that these areas are protected when sites are developed and that careful stewardship of natural areas continues, in perpetuity, on public lands and private lands. The City should also continue to work toward connecting the Huron River greenway system to protect natural systems and improve public access. The City's National Features Master Plan (2004) provides additional information.



Near Nixon and Dhu Varren Roads

II. Issues

A. Natural Systems Protection

Helping to protect natural features is one of the primary goals of this plan. The following are existing tools that the City uses to protect and enhance natural systems:

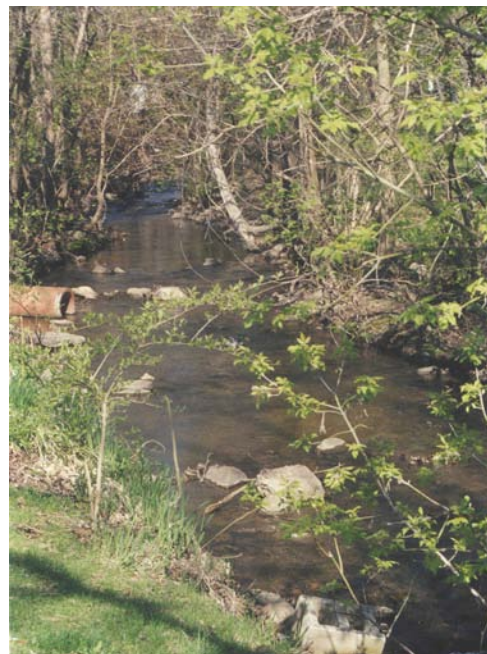
City Code Regulations - The City requires substantive protection of the following natural features: endangered species habitat; 100-Year floodplain; landmark trees, steep slopes, watercourses, wetlands and woodlands. Protection is provided by requiring site plan review of proposed development projects. This review considers the location, nature and quality of the natural features on the development site. If disturbance or removal is proposed, then alternatives must be considered. If impact is deemed acceptable, then mitigation, usually in the form of replacement, is required. The intent of these regulations is to ensure that sensitive natural features are preserved while identifying those portions of the site that are developable.

Natural Features Master Plan – Although the City has performed generalized inventories of floodplains, wetlands and woodlands, landforms change over time and such inventories are used only as general guidelines for natural features on a site. The last comprehensive natural systems inventory was conducted for Ann Arbor in the 1980's. The Parks and Recreation Department, however, has conducted an inventory on the "floristic quality" of natural areas in City parks. A summary of this assessment is provided in the Parks & Recreation Open Space Plan. The goal of developing this inventory is to establish various categories of natural areas based on the overall ecological quality of each site. This type of analysis is helpful when determining the ecological value of natural areas and whether they should be protected or acquired by the City.

Natural Area Preservation – The Natural Area Preservation (NAP) Division of the Parks and Recreation Services Unit is responsible for managing, preserving and restoring the condition of natural areas in parks throughout Ann Arbor. A primary activity of NAP is the removal of non-native, invasive species of plants from public natural areas. NAP also determines the floristic quality of natural areas and has developed a chart that ranks natural areas in Ann Arbor by the quality of the natural environment. The chart and additional information about NAP can be found in the Parks & Recreation Open Space Plan. Some site plans and development agreements include language on the removal of invasive plants.

B. Water Quality & Huron River

One of the largest pollution sources for surface water quality is storm water runoff. Storm water collected within Ann Arbor falls into one of nine watershed areas (Traver Creek, Fleming Creek, Millers Creek, Malletts Creek, Swift Run, Allen, Honey, Paint Creek or the Huron River) and is funneled into storm drains and creeks and eventually makes its way to the Huron River. Much of this water flows over impervious surfaces and lawns collecting fertilizers, pesticides, metals, animal waste, and petroleum-based products. Storm water flowing over impervious surfaces also increases in temperature and raises the speed and volume of water flowing into creeks. The impact on creeks and the River is reflected in erosion, sedimentation, temperature rise, and nutrient overloading, which significantly decrease natural, recreational, and wildlife values.



Traver Creek

In 1972, Congress adopted the National Pollution Discharge Elimination System (NPDES) Act to regulate water pollution in the United States.

The act gave states the authority to regulate

local water pollution discharge. In 1972, the State of Michigan adopted the Soil Erosion and Sedimentation Control Act. The act, which was amended in 1994, allows municipalities to adopt their own soil erosion and sedimentation control regulations in accordance with the act. The City adopted Chapter 63 (Storm Water Management and Soil Erosion and Sedimentation Control) to regulate soil erosion and sedimentation control. Chapter 63 regulates the issuance of grading permits and defines the requirements for storm water management systems. The Planning and Development Services Unit regularly updates Chapter 63. In 2000, the City adopted the “Rules of the Washtenaw County Drain Commission” as a step toward improving the quality of water that enters the Huron River within its jurisdiction. In addition to enforcing Chapter 63, the City has continued its street cleaning program and increased storm drain clearing and educational programming related to improving water quality. It is anticipated that additional efforts to protect water quality will continue in the future.

In 2000, the Ann Arbor City Council adopted the Malletts Creek Restoration Plan in an attempt to develop a long-range and cost-effective plan to control flow, improve the water quality and enhance the natural resource of Malletts Creek. The Restoration Plan identified ways to modify ordinances and standards to achieve the recommendations of the restoration plan. In 2000 the Ann Arbor City Planning Commission adopted a resolution regarding development in the Malletts Creek Watershed. The resolution describes Malletts Creek as being “a severely impacted urban watershed” and the watershed as a degraded urban stream. The resolution strongly encourages petitioners of any development proposal within the watershed to make special efforts to limit the impact of development on Malletts Creek by incorporating “best management practices” into any proposal. Those practices might include a) minimizing impervious surfaces by efficient parking and drive design, shared parking, parking deferral, and the use of multiple-story building design wherever possible, b) providing or retrofitting detention facilities to meet and, if possible, exceed the Rules of the Washtenaw County Drain Commissioner, and c) participating in creek-safe maintenance of the lawn and landscaping on proposed development projects including the use of low phosphorus, fertilizers and native plant alternatives to lawn.

In early 2004, the Millers Creek Study, a restoration planning effort for Millers Creek, was completed. The public/private partnership evaluated and inventoried the conditions of the creekshed and included recommendations for restoration and enhancement of the Millers Creek watershed.

C. Air Quality

The City of Ann Arbor is a part of Region 5 of the federal Environmental Protection Agency (EPA). Region 5 is based in Chicago and includes the states of Michigan, Minnesota, Wisconsin, Illinois, Indiana, and Ohio. Each state is responsible for producing an air quality management plan. (The EPA office in Ann Arbor is the national emissions testing laboratory.)

The Michigan Department of Environmental Quality (MDEQ) is authorized to develop and enforce an air quality plan for the State of Michigan. The Southeast Michigan Council of Governments (SEMCOG) works with MDEQ to develop strategies for reducing air pollution in southeast Michigan.

In 1997, the United States Environmental Protection Agency (EPA) adopted a new, more stringent ozone standard, known as the 8-hour ozone standard. Various areas in the U.S. including Southeast Michigan, are out of compliance with this new standard. In 2004, the EPA gave its support to a petition from the Michigan Department of Environmental Quality (MDEQ) and SEMCOG to reclassify Southeast Michigan as a moderate non-attainment area. MDEQ and SEMCOG will work with the EPA to develop a strategy to reduce air pollution in the region to achieve attainment. Ann Arbor is also in a region that is considered non-attainment for small particulate matter.

Ann Arbor's State of the Environment report (2004) indicated that, "Air quality in Ann Arbor continues on a slow decline." The report also describes what can be expected from being "out of attainment: "Motorists will see some significant changes due to the County designation as 'moderate' non-attainment. This federal designation will require emissions testing of all automobiles in the SEMCOG area. We may be required to use cleaner fuels for our area..."

In 2002, the American Lung Association released a report that measured ground level ozone in 678 counties in the U.S., which monitor for ozone levels. The report indicated that Washtenaw County received an "F" (a failing grade) for its smog levels for the second year in a row.

Primary air quality contaminants in the 1990's were also ozone and particulate matter. Ozone is a gas that is produced through a combination of emissions from internal combustion engines (volatile organic gases and nitrogen oxide [NOX]) and certain weather conditions (hot, sunny weather). Ozone causes severe lung irritation and can damage vegetation. Particulate matter is a microscopic byproduct of the burning of fossil fuels and can cause respiratory problems.

The EPA has developed a list of land use and transportation recommendations to help reduce the amount of regional air pollution in southeast Michigan. The recommendations are in an EPA report called Improving Air Quality through Land Use Activities (January 2001). Recommendations from the report include:

- *Concentrated activity centers:* Encourage pedestrian and transit travel by creating nodes of high density, mixed-use development that can be more easily linked by a transit network.
- *Mixed-use development:* Encourage pedestrian and transit travel by locating a variety of compatible land uses within walking distance from each other.
- *Infill and densification:* Encourage pedestrian and transit travel by locating new development in already developed areas.
- *Increased density near transit corridors:* Encourage transit travel by increasing development density within walking distance of a high capacity transit corridor.
- *Pedestrian and bicycle facilities:* Encourage pedestrian and bicycle travel by increasing sidewalks, paths, crosswalks, and shading.
- *Interconnected street network:* Encourage pedestrian and bicycle travel by providing more direct routes between locations. Also, alleviate traffic congestion by providing multiple routes between origins and destinations.
- *Strategic parking facilities:* Encourage non-automobile modes of transit by limiting the parking supply, and encourage carpooling by reserving parking close to buildings for carpools and vanpools.

D. Brownfields

The Michigan Department of Environmental Quality (MDEQ) defines Brownfields as “abandoned, idle, or underused industrial and commercial properties where redevelopment is complicated by real or perceived contamination”. Recent changes to the State’s Brownfield legislation have expanded the definition of sites in the City of Ann Arbor eligible for consideration as a Brownfield site to include “obsolete” or “blighted” properties. A number of brownfield and suspected brownfield sites exist in the City of Ann Arbor.

III. Natural Systems Goals, Objectives and Action Statements

The Natural Systems Goals, Objectives and Action Statements provide a framework to preserve, protect or restore natural features, water quality, air quality and brownfields in the City of Ann Arbor.

Natural Systems Overall Goal: To manage, maintain, protect, restore and enhance natural systems to assure biodiversity and provide a sustainable ecological balance between urban and natural systems in the City of Ann Arbor.

Goal A: To protect and restore woodlands, landmark trees, steep slopes, endangered species habitats, prairies and savannahs, the Huron River, creeks and native flora and fauna from the impacts of development.

Objective 1: Evaluate and improve the City’s current environmental protection practices.

Action Statements:

- a) Periodically evaluate City ordinances (i.e., natural features, wetland, and soil erosion control ordinances) to determine code sections that could be improved to better protect natural systems.
- b) Continue coordination with the Huron River Watershed Council, the Washtenaw County Drain Commissioner, the parks departments of the City of Ann Arbor, Ann Arbor Township, Pittsfield Township, Scio Township and Washtenaw County, and other organizations to better coordinate and prioritize goals, and enforce regulations to protect and preserve natural systems and greenways especially along the Huron River.
- c) Continue coordination with City departments, commissions and other organizations to restore and maintain natural areas.
- d) Develop methods to encourage the identification and removal of invasive species.
- e) Consider adopting City ordinance language that requires developers to identify and remove invasive species and otherwise restore natural areas on sites proposed for new development.
- f) Consider reducing setback requirements to increase design flexibility to minimize impacts to natural systems.
- g) Implement the recommendations of the Natural Features Master Plan.

Objective 2: Encourage developers to consider alternative land use designs that provide the best protection for existing natural features.

Action Statements:

- a) Encourage multiple-story buildings where appropriate, structured parking or cluster design development to reduce impacts to existing natural features and reduce surfaces that are impervious to water.
- b) Ensure that the placement of buildings, parking lots, driveways, sidewalks, and storm water management systems minimizes the impacts to natural features and encourages storm water infiltration.

Objective 3: Create educational materials that will provide information to decision-makers,

developers and the public regarding the protection of natural features.

Action Statements:

- a) Develop design guidelines to encourage development patterns that enhance and preserve natural features.
- b) Provide educational material to developers and property owners regarding existing natural systems protection measures, alternative storm water protection techniques, and development techniques that provide long-term protection of natural features.
- c) Identify, map and characterize existing woodlands and wetlands consistent with the definitions of the natural features regulations.
- d) Increase public awareness of invasive plant species and encourage removal on private properties.
- e) Increase public awareness of natural and naturalized landscapes as an alternative to lawns.
- f) Consider the recommendation of the Washtenaw Metro Alliance coordinated Parkland and Open Space Plan regarding nature systems protections.

Objective 4: Maintain and preserve natural open space corridors that are important to wildlife and plant life habitats.

Action Statements:

- a) Identify and map existing open space corridors and seek opportunities to establish linkages.
- b) Identify public open spaces that could be improved by the introduction of native plantings.
- c) Develop techniques to create greater public awareness and appreciation of natural open spaces and corridors.
- d) Support the Parks & Recreation Open Space Plan with regard to establishing open space linkages.
- e) Coordinate with the University of Michigan, Concordia College, the Ann Arbor Public School District, Ann Arbor Township, Washtenaw County and private property owners in developing open space corridors in the City of Ann Arbor.

Goal B: To achieve and maintain high quality of the area's watersheds to protect the health and welfare of the community and maintain the balance of natural systems.

Objective 1: Improve the quality of surface water, which enters the Huron River in the City of Ann Arbor.

Action Statements:

- a) Continue working with the Huron River Watershed Council, the Washtenaw County Drain Commission and other organizations to study and model the water quality of City watersheds and to research ways to improve the quality of storm water drainage.
- b) Continue to research and implement methods to help predict the effects and mitigate the impacts of new development in floodways; reduce impervious surface areas, such as providing development incentives for private parking structures; establishing a maximum number of parking spaces for each use; encouraging alternative parking designs, shared parking, and pervious materials, where appropriate; and reducing street right-of-way, street widths, front setback requirements and driveway lengths where appropriate.
- c) Modify City ordinances to prohibit or carefully regulate any new buildings within a floodway to substantially reduce or eliminate impacts to flooding.
- d) Encourage developers and property owners to use innovative designs (i.e., "green construction") and best management practices for storm water detention.
- e) Work with adjoining townships to discuss approaches to protecting watershed systems with cross-jurisdictional boundaries.
- f) Encourage stewardship of water resources by providing educational material to decision-makers, developers and the general public regarding watershed and urban storm water management issues to raise awareness of the value of watersheds and the impacts of everyday activities on water quality. Continue to educate the public on the footing drain disconnect program.
- g) Encourage partnerships of public agencies and private property owners that work together to protect watersheds on their lands.
- h) Identify contributing non-point sources of water pollution; research and implement ways to

reduce such sources.

- i) Map city creek sheds to help the Federal Emergency Management Agency determine flood boundaries.
- j) Implement the recommendations of the Malletts Creek Study.
- k) The following hierarchy should be used to guide the selection of stormwater management approaches: 1) preservation of the natural environment; 2) minimization of impervious surfaces; 3) use of vegetative swales and natural storage; 4) infiltration of runoff onsite; 5) stormwater detention structures; 6) stormwater retention structures; and 7) stormwater conveyance.

Goal C: To improve air quality to protect the health and welfare of the public.

Objective 1: Encourage the use of mass transit and non-motorized modes of transportation through land use design and incentive programs to help reduce the total number of trips made by gasoline, diesel and other air polluting vehicles.

Action Statements:

- a) Develop incentives that encourage the location of public facilities (i.e., library, post office, and police district offices) in commercial centers or in close proximity to neighborhoods.
- b) Develop incentives in City Code to encourage development projects that provide multiple uses in close proximity to one another (i.e., mixed-use).
- c) Develop transit/pedestrian oriented development guidelines to encourage “walkable” communities.
- d) Encourage residential densities that can sustain bus transit.
- e) Develop a parking management program, such as incentives for employers who provide subsidies for alternative trip modes equal to or greater than the subsidies employers provide for drivers (i.e., free parking space).
- f) Develop incentives for employers who encourage alternatives to single passenger automobiles, such as, mass transit, high occupancy vehicles, and other techniques that reduce vehicular trips.
- g) Continue to seek state and federal grants for non-motorized public improvements.
- h) Consider requesting that developers provide on-site and off-site bicycle and pedestrian amenities to mitigate traffic impacts.
- i) Modify City ordinances to allow electric and alternative fuel and recharge centers to be installed at appropriate locations.
- j) Encourage the City, University of Michigan, Ann Arbor Public Schools, and the Ann Arbor Transportation Authority to purchase and maintain low emission fleets.
- k) Encourage the establishment of a Transportation Management Organization (TMO) for major road Corridor employers.
- l) Continue to support ozone actions alert programs.
- m) Encourage the development of bicycle lanes and non-motorized paths.
- n) Implement the recommendations of this plan.

Objective 2: Increase community understanding of air quality and air pollution sources.

Action Statements:

- a) Provide educational material to the public on point and non-point air pollution sources and on how individuals can reduce their impact on air quality.
- b) Encourage Ann Arbor retailers to sell alternatives to gasoline-powered equipment.

Goal D: To reduce and prevent soil contamination to protect the health and welfare of the community and maintain the balance of natural systems.

Objective 1: Facilitate the clean-up of known contaminated sites.

Action Statements:

- a) Identify and categorize contaminated sites on public and private lands.
- b) Prioritize clean-up for sites with underground plumes or uncontained material.
- c) Increase community understanding of underground contamination and soil quality.

Objective 2: Increase community understanding of underground contamination and soil quality.

Action Statements:

- a) Provide information to the public on contaminated sites and their impact on the environment.
- b) Provide information to the public regarding frequently used hazardous material (i.e., batteries, used automotive oil, paint, etc.) and their proper disposal.