

Chapter 4

Natural Features

Background

One measure of a community's "quality of life" can be found in its natural features. Natural features include a variety of elements such as wetlands, woodlands and bodies of water. The amount, type and location of these features help to establish the character of an area, while also providing vital habitat for a variety of wildlife (**Figure I**).

Activities such as excavation, filling, clearing, grading and construction which take place during the development of a site can significantly affect a community's natural features.

Citizens have become increasingly aware of the sensitive nature of their environment and the extent to which it affects the quality of their lives. The level of importance placed on the environment and environmental issues was apparent in a recent poll commissioned by the National Wildlife Federation. Results of the poll found that 62 percent of American voters were in favor of strong environmental protection, while only 18 percent were opposed to such measures¹.



Figure I
The Pine River lends special natural beauty to the Kimball Township landscape.

Another study, conducted in 1992, identified and ranked the State of Michigan's most pressing environmental issues. The results of the study showed that land use planning procedures that fail to consider a community's natural features and the integrity of their ecosystems pose one of the greatest risks to the quality of the environment in the future².

For these reasons, and many others, special attention should be given to the preservation of natural and *environmentally sensitive* areas in long-range planning initiatives. Environmentally sensitive areas are lands whose destruction or disturbance will immediately affect the life of the community by either one of the following:

- Creating hazards such as flooding or slope erosion;
- Contaminating important public resources such as groundwater supplies or surface water bodies; or,
- Misuse of lands with significant productivity characteristics and renewable resources.

The purpose of this chapter is to identify important natural features that exist within the Kimball Township planning area. Community leaders will then have a better idea as to where development *should* occur in the future, while also preserving the integrity of these vital ecosystems.

¹ Michigan Department of Natural Resources, Office of Great Lakes Activity Report, February 1995. (Poll conducted by Peter D. Hart Research Associates for the National Wildlife Federation.)

² Michigan Relative Risk Analysis Project. Michigan's Environment and Relative Risk. 1992.

Climate

The following climatic data for Kimball Township was taken from the United States Department of Agriculture, Soil Conservation Service's *Soil Survey of St. Clair County* (1974). The data was recorded at the U.S. Weather Station in Port Huron.

The close proximity of two large water bodies, Lake St. Clair and Lake Huron, tend to moderate lake effect weather patterns in Kimball Township. The most significant lake effect occurs in the form of increased cloudiness observable in late fall and early winter months when prevailing westerly winds move cold surface air across the warmer lake water. However, in spring and summer months, this area experiences five to ten percent more days of sunshine annually than a similar location (in latitude) in the western part of Michigan.

The average maximum temperature for St. Clair County is 57.7°F annually. The average daily minimum temperature in winter is 19.1°F, with January being the coldest month. The average daily maximum temperature in summer is 80.6°F, with July being the warmest month.

Average precipitation (rainfall) amounts to 33.01 inches annually. Snowfall totals for the area amount to 38.4 inches per year. However, total accumulations vary greatly from year to year.

Topography

The geology of Kimball Township generally consists of broad flat plains, gentle slopes and narrow, nearly level flood plains. Elevations range from a high of 678 feet above sea level at the intersection of Lapeer Road and Abbotsford Road, which is located at the northern Township boundary line. A low of approximately 600 feet above sea level is observed at the surface of the Pine River.

Soils

A number of soil types found in Kimball Township possess characteristics which present significant limitations to development. This situation is consistent with all of St. Clair County, where 95-99 percent of soils found are considered severely limited for development.

The following Soil Types Map indicates a total of 23 different soil types or miscellaneous land areas that are found in Kimball Township. Data in the Soil Association Table, **Table 4-1**, outlines the major features associated with some of the more prominent soil types in the Township. It is important to recognize that many of these soil types can be classified as sensitive soils. Sensitive soils have inherent characteristics that may either prohibit or significantly reduce the potential for future development in a particular location. Many of the sensitive soils found in Kimball Township are poorly drained and have high water tables, making them unsuitable for building, street construction and recreational site development. Areas with high water tables also limit their use for septic and waste disposal systems. Basements are difficult to keep dry in these soils. Structures placed on poorly drained soils are susceptible to frost heave and foundation cracking. Other sensitive soils are prone to flooding and are located within the Township's identified flood hazard areas.

The Soil Types Map also shows the location of hydric soils in the Township. Hydric soils are soils with poor potential for development. These soils have high water tables and are often located within the floodplains of creeks or rivers. In total, Kimball Township contains 2,694.1 acres of hydric soils comprising 11.2% of the Township.

Lands with significant slopes (above 12 percent) should also be avoided for building site construction. Steep slopes are subject to earth movement, especially where excavation and deforestation have occurred. Although the amount of movement may be slight, it can result in cracked foundations, tilted basement walls and damaged sewer and water lines. As the Natural Features Map indicates, the majority of these areas lie along the banks of the Black River. There are relatively few instances of steep slopes associated with the Pine River.

**Table 4-1
Soil Associations
Kimball Township, Michigan**

Symbol	Soil Name	General Description	Good Potential For Use As:	Poor Potential For Use As:	Limitations
AhB	Allendale-Hoytville Complex	Somewhat poorly drained to very poorly drained. Occurs in level to gently undulating lands. Slopes from 2 to 4 percent.	Woodland Habitat Wetland Habitat Cropland Pasture	Building Sites Recreation Sites Streets and Roadways	Wetness. Uniform drainage difficult to obtain. Midsummer droughtiness. Moderate erosion hazard.
AIA	Allendale-Latty Complex	Somewhat poorly drained to very poorly drained. Occurs in level to gently undulating lands. Slopes 2 to 3 percent.	Woodland Habitat Wetland Habitat Cropland	Building Sites Recreation Sites Streets and Roadways	Wetness. Uniform drainage difficult to obtain. Midsummer droughtiness.
Ata	Allendale-Lenawee-Toledo Complex	Somewhat poorly drained to very poorly drained. Occurs in level to gently undulating lands. Slopes 2 to 3 percent.	Woodland Habitat Wetland Habitat Cropland	Building sites Recreation sites Streets and Roadways	Wetness. Uniform drainage difficult to obtain. Midsummer droughtiness.
Au	Alluvial Land	Occupies first bottoms on flood plains of major rivers and creeks throughout the county. Many short, steep slopes along banks and rivers. Drainage ranges from well drained to poorly drained within short distances.	Wetland Habitat Some Cropland Some Pasture	Building Sites Recreation Sites Streets and Roadways	Extreme flood hazard. Broken surface relief. Wetness. Steep slopes.
CcB	Chelsea-Croswell Sands	Well drained to moderately well drained. Occurs in nearly level gently sloping and undulating lands. Slopes 2 to 3 percent.	Building Sites Roadways Woodlands	Cropland Pasture	Droughtiness. Low fertility.
Lha	Latty Complex	Very poorly drained to somewhat poorly drained. Occurs in level to very gently undulating broad lands. Slopes 0 to 3 percent.	Woodland Habitat Wetland Habitat Cropland	Building Sites Recreation Sites Streets and Roadways	Wetness. High clay content. Very slow permeability. Uniform drainage difficult to obtain. Ponded surface water.

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Soil Associations
Kimball Township, Michigan**

Symbol	Soil Name	General Description	Good Potential For Use As:	Poor Potential For Use As:	Limitations
LJA	Latty Complex, Sandy Subsoil Variant	Very poorly drained to somewhat poorly drained. Occurs in level to very undulating lands. Slopes from 2 to 3 percent.	Woodland Habitat Wetland Habitat Cropland	Building Sites Recreation Sites Streets and Roadways	Wetness. High clay content. Very slow permeability. Uniform drainage difficult to obtain. Ponded surface water.
MsA	Minoafine Sandy Loam	Somewhat poorly drained to poorly drained. Occupy second bottoms or terraces along flood plains of major rivers and streams. Areas normally very undulating. Slopes 2 to 3 percent.	Woodland Habitat Wetland Habitat Some Cropland	Building Sites	Wetness and flooding (mostly in early Spring).
SpB	Spinks Loamy Sand	Well drained. Occurs in gently sloping, long, low ridges, knolls and gently undulating areas. Slopes 2 to 6 percent.	Building Sites Recreation Sites Cropland Pasture	Streets and Roadways	Droughtiness. Low natural fertility. Moderate erosion hazard.
Wda	Wainola-Deford Fine Sands	Somewhat poorly drained to very poorly drained. Occurs in nearly level and very gently undulating lands. Slopes 0 to 2 percent.	Streets and Roadways Croplands	Building Sites Recreation Sites Woodland Habitat Wetland Habitat	Wetness. Uneven surface and fine sandy content difficult to drain. Sandy soils tend to flow when wet. Erosion from water and wind.

If development on steep slopes is unavoidable, one of the following five erosion control measures may help protect small residential tracts³:

1. Locate driveways, walks and fences on the contour, if possible, or straight across the slope.
2. Grade to make the surface level or gently sloping. The surface layer can be removed before grading and later used as topsoil.
3. Install building diversions that intercept runoff and keep it from flowing over sensitive erosion areas.
4. Construct or improve waterways to prevent the formation of gullies.
5. Drain seepage areas and waterlogged areas with tile or by other applicable means.

It's important to understand that these soil interpretations are *general* in nature. They do not eliminate the need for additional on-site study or testing of specific sites for the design and construction of particular uses. This data can be used to initiate a more formal site investigation and for avoiding undesirable sites for temporary land uses.

Water Bodies/Courses

As the Natural Features Map indicates, the Pine River is the most significant water feature found in Kimball Township. It enters the Township from the northwest, flows through the Township in a general southerly direction, and eventually empties into the St. Clair River near the City of St. Clair.

The river and its tributaries provide drainage for the majority of the Township. The Pine River basin is completely contained within St. Clair County, covering an area of approximately 137,000 acres. The Pine River basin is relatively narrow and flat.

In addition to the Pine River, the Black River passes through the northeastern tip of Kimball Township. The Black River is the largest river basin in St. Clair County, covering an area of approximately 149,000 acres.



Figure J
Typical topography along Black River basin

It begins its journey in Sanilac County, near the Minden City State Game Area. From there it cuts a wide path in a southerly direction, passing from Sanilac County into St. Clair County, becoming the major water course within in the Port Huron State Game Area. From this point, it changes its path slightly, winding its way through the County in a southeasterly direction, eventually emptying into the St. Clair River at the City of Port Huron. The Black River basin is a broad, flat plain bounded on both sides by hills, which range in height from 20 to 100 feet (**Figure J**). Besides the natural aesthetic beauty they lend to the community, these riverine areas also provide essential ecological habitats for the area's diverse wildlife.

The remaining water bodies within Kimball Township consist of several small man-made lakes, which dot its northern and eastern edges. These lakes formed as a result of abandon mineral extraction sites that over time filled with water.

³ United States Department of Agriculture, Soil Conservation Service, Soil Survey of St. Clair County, Michigan (1974), p. 105.

The Flood Hazard Map indicates the extent of flood hazard areas as established by the Federal Emergency Management Administration's (FEMA) Flood Insurance Rate Map (FIRM) for the Township. The flood hazard zones depicted in the map identify areas which may be subject to periodic flooding or which lie within the Township's 100-year flood zone. A 100-year flood is defined as a flood event which has a one percent chance of being equaled or exceeded in any given year. As indicated by the map, the majority of these areas lie adjacent to both the Pine and Black Rivers. Wherever possible, future development within these flood hazard zone boundaries should be discouraged.

Port Huron State Game Area

The Port Huron State Game Area encompasses several thousand acres in St. Clair County. Of this, approximately 720 acres are located within the boundaries of Kimball Township. This area occupies lands that lie primarily to the south of Interstate 69 in the north-central region of the Township. The Port Huron State Game Area provides an excellent natural setting for a number of recreational opportunities, including hunting, fishing, trapping, hiking and camping.

PA 116 Lands

In 1974, the Michigan State Legislature adopted the *Farmland and Open Space Preservation Act*. This is now known as *Part 361, Farmland and Open Space Preservation, of Act 451*. The scope of this program is to preserve prime agricultural and open space lands by allowing the land owner to enter into a legally binding document with the state, agreeing not to develop the land for a set period of time. In exchange for not developing the land, the landowner may receive special tax consideration. The legally binding agreements are for a time period of between 10 years and 90 years and are recorded at the County Register of Deeds.

When the Michigan Department of Natural Resources receives an application, the application is evaluated according to criteria established by Part 361 of Act 451. The criteria include a scoring system approved by both the Natural Resources Commission and the Commission of Agriculture. Factors considered in the selection of parcels include a mandate that at least 51 percent of the parcel be devoted to an agricultural use, and that the local governing body with zoning authority over the nominated property must approve all applications. Other factors include consideration of the productive capacity of the farmland, threat of conversion to non-farm uses, complementing *local* farmland preservation efforts, proximity to other similarly protected land, and the availability of matching funds.

According to Township Assessor record, only one parcel of land in Kimball Township is currently associated with the PA 116 Program. It is a 37-acre parcel located along Mayer Road, north of Yager Road and south of the Grand Trunk Western Railroad crossing. The PA 116 designation for this property is due to expire in July 2005.

Wetlands

In simple terms, a wetland is an area that is influenced by water in which certain water tolerant plants are likely to survive and reproduce. This classification may include areas that are seasonally wet, by either a surface or ground water influence, or are permanently saturated or ponded throughout the year⁴.

Wetlands are important because they are a contributing factor to the quality of other valuable natural resources, such as inland lakes, ground water, fisheries, wildlife and the Great Lakes. Wetlands provide places for breeding, nesting and rearing of young waterfowl and other species of birds, mammals, fish and reptiles. They intercept and hold flood or storm waters, naturally dissipating them over a period of time. They also intercept and retain excess nutrients from surface water, generated mainly by human practices such as agriculture or lawn fertilizing, sewage treatment or road salt application. Wetland systems filter these excess nutrients out of the surface runoff, lessening the occurrence of unwanted plant and algae growth in inland lakes and streams⁵.

⁴Source: U.S. Environmental Protection Agency. Wetland Protection. [Online]. Available from <http://www.epa.gov/owow/wetlands/wetland1.html>. Accessed 17 June 1999.

⁵ *Ibid.*

Part 303 of the Natural Resources and Environmental Protection Act, PA 451 of 1994, defines a wetland as:

“Land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh and which is any of the following:

- Contiguous to the Great Lakes or Lake St. Clair, an inland lake or pond, or a river or stream.
- Not contiguous to the Great Lakes, an inland lake or pond, or a river or stream; and more than five acres in size; except this subdivision shall not be of effect, except for the purpose of inventoring, in counties of less than 100,000 population.
- Not contiguous to the Great Lakes, an inland lake or pond, or a river or stream; and five acres or less in size if the department determines that protection of the area is essential to the preservation of the natural resources of the state from pollution, impairment, or destruction and the department has so notified the owner.”

The Wetland Act authorizes the Michigan Department of Environmental Quality (MDEQ) to preserve certain wetland areas. The MDEQ may require permits before altering regulated wetlands and may prohibit development in some locations. Among the criteria used by the MDEQ when conducting a wetland determination are:

- Presence of standing water (at least one week of the year).
- Presence of hydric soil types that are saturated, flooded, or ponded sufficiently to favor wetland vegetation (usually black or dark brown in color).
- Predominance of wetland vegetation/plant material, or aquatic life, such as cattails, reeds, willows, dogwood, elderberries, and/or red or silver maple trees.
- Presence of important or endangered plant or wild life habitat or a rare ecosystem.
- The area serves as an important groundwater recharge.
- Size and Location - minimum size to be state regulated is five acres unless the wetland is contiguous to a lake, pond, river or stream, or is considered to be “essential to the preservation of natural resources of the state.”

The determination that a site contains a regulated wetland can have several consequences:

- The MDEQ may issue a permit to fill the wetland.
- The MDEQ may require mitigation, such as replacing the wetlands. Sometimes this mitigation involves increasing the overall on-site wetland acreage by two or three times.
- The MDEQ may prohibit development in the wetland area if it is determined that there is a “prudent” alternative.

Wetlands and wooded wetlands identified on the Natural Features Map were determined by the Michigan Department of Natural Resources. As the map indicates, wetlands are scattered throughout Kimball Township. The largest concentrations of wetlands are located in the southeastern quadrant of Township Section 23, the southeast and southwest quadrants in Township Section 11 and the southwest quadrant of Township Section 21.

It should be noted that the map identifies significant wetlands, but not necessarily all the wetlands regulated under the State Wetland Act. Where this map or on-site observation indicates the likelihood of a regulated wetland, references should be made to such sources as a soil survey, MDEQ maps or U.S. Interior, Fish and Wildlife map to determine whether the wetland has the physical and biological characteristics that place it under the jurisdiction of the MDEQ.

Although the existence of wetlands may place certain restrictions on future development in the Kimball Township area, the community should develop regulations that promote these areas as amenities that enhance, not as detriments to avoid.

Woodlands

Woodlands are a very valuable natural asset to a community. They provide necessary functions such as: habitat for many wildlife species, climate moderators, watershed protection from siltation and soil erosion caused by storm water runoff, wind and noise buffers, as well as aesthetic and recreational enjoyment. To the extent possible, woodlands should be conserved during all future land development.

Data obtained from the Michigan Department of Natural Resources indicate significant woodland areas in the region of the Port Huron State Game Area, as well as in the majority of Township Sections 16 and 26. There are also a large amount of woodlands that skirt the western boundary of the St. Clair County International Airport property.

Woodlands located in well-drained soils of the uplands (Chelsea-Croswell) consist of deciduous species such as sugar maple, aspen, birch, oaks and beech. Poorly drained soils (Latty complex) consist of soft maple, elm and ash. Well drained, sandy soils (Rousseau, Spinks) contain several different species of pine. There are also a number of well drained to somewhat poorly drained areas that contain significant coniferous forests, consisting of such species as white, red and jack pines, as well as other upland and lowland conifers.

Special Natural Features

The Michigan Natural Features Inventory (MFNI) database is an on-going, continually updated base which identifies plant and animal species which are either endangered, threatened or of special concern at either Federal or State levels.

The presence of threatened or endangered species does not necessarily preclude development, but may require alterations in the development plan. In most instances, an endangered species permit will be required from the Michigan Department of Natural Resources, Wildlife Division, if any threatened or endangered species would be taken or harmed. Species categorized as “special concern” are not protected under endangered species legislation⁶. However, the Wildlife Division may make recommendations regarding their protection. Preserving special concern species will help prevent them from declining to the point of being listed as threatened or endangered.

**Table 4-2.
Special Natural Features
Kimball Township, 1999**

	Scientific Name	Common Name	Federal Status	State Status ^a
1	Notropis anagenus	Pugnose shiner (fish)		SC
2	Trillium undulatum	Painted trillium		E
3	Villosa fabalis	Rayed bean (mussel)		E
4	Great Blue Heron rookery			
5	Panax quinquefolius	Ginseng		T
6	Gentianella quinquefolia	Stiff gentian		T
7	Hydrastis canadensis	Goldenseal		T
8	Jeffersonia diphyllia	Twin leaf		SC
9	Mesic northern forest natural community			
10	Lithospermum latifolium	Broad-leafed puccoon		SC
11	Dentaria maxima	Large Toothwort		T
12	Pterospora andromedea	Pine-drops		T
13	Poa paludigena	Bog bluegrass		T

^a Federal and State Status abbreviations:

“E” = Endangered species: Any species of fish, plant life or wildlife that is in danger of extinction throughout all or part of its range.

“T” = Threatened species: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range.

“SC” = Special Concern species: Any species which does not fall into either the “endangered species” or “threatened species” categories, but whose level of existence warrants special concern and continued monitoring.

Source: Michigan Natural Features Inventory (MNFI), 1999.

Special Natural Features **Table 4-2** indicates those wildlife and fauna species that fall into one of the three protective categories listed above and which have been identified in Kimball Township at the present time. Questions regarding specific locations within the Township for these features should be referred to the Michigan Department of Natural Resources, Wildlife Division.

⁶Michigan Department of Natural Resources, Wildlife Division, Part 365, Endangered Species Protection, Natural Resources and Environmental Protection Act, Act 451 of the Public Acts of 1994, § 324.36501-324.36507, MCLA.