

## Section I

### Community Profile

#### LOCATION

Ross Township is located in northeastern Kalamazoo County, in the southwestern region of Michigan's Lower Peninsula. The Township's northern border is adjacent to Barry County, and its eastern border is the gateway from Kalamazoo County to Calhoun County. Ross Township is surrounded by four townships, including Barry Township to the north, Bedford Township to the east, Charleston Township to the south and Richland Township to the west.

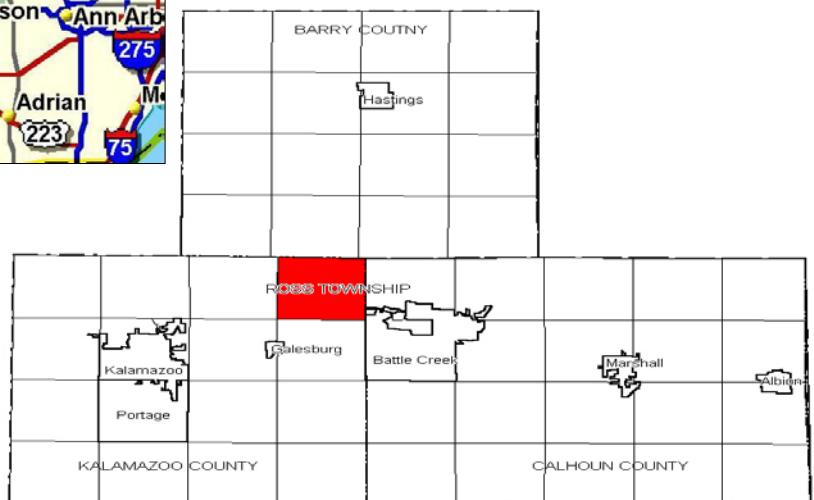
The Township encompasses 36 contiguous land survey sections, or slightly less than 36 square miles, located at Township 1 South, Range 9 West, situated at the point of intersection of Kalamazoo, Calhoun and Barry counties. There are over 433,000 people living within a 20 mile radius. The City of Battle Creek is 9 miles east of the Township. The county seat, in the City of Kalamazoo, is located approximately 11 miles southwest of Ross Township.

#### MAP 1-1- LOCATION

##### A. General Location



##### B. Regional Location



#### NATURAL FEATURES

Natural features are an essential part of a community's attraction. An understanding of Ross Township's air, land and water resources can help further define what best land use activities should occur within its borders. The composition of local soils, the natural topography of the area, the Township's general vegetation, and the quality and quantity of water all help determine the ability of the Township to locate, support and sustain certain types of land development. Natural features can also help the Township justify the denial of some development.

For the most part, natural features can be preserved or they can be modified to accommodate and sustain man-made development, preferably through integration into such development.

*Preservation* is warranted when natural features are so sensitive or valued that any alteration of those features will likely have substantive negative impacts on the functional quality and/or aesthetics of the general environment, or the immediate property. In general, development should be prohibited in preservation areas; but if it is to occur, it should take place only within those projects which have, at the most, a substantially limited negative effect on those natural features. Wetlands are an example of areas requiring the application of preservation techniques. In some instances, minor changes to natural features can be integrated into a development with only slight impacts on the character of the environment.

*Integration* may provide adequate protection by allowing natural features to remain undisturbed, yet exist in concert with the development. Integration requires more creative planning and programming than preservation, and requirements for integration should be incorporated into the Township's land development standards.

#### Local Soils

Soils are the building blocks that define the types of activities that can be sustained on the land. For example, the type of vegetation and drainage that occurs naturally in an area is determined by the soil in that area. Soils also help



determine where buildings, roads and other man-made structures can best be located. Classification of Ross Township's soils have been identified and mapped by the Soil Conservation Service in the Soil Survey of Kalamazoo County, Michigan.

There are 12 different soil types within Ross Township. Each of these types has their own unique characteristics, including limitations for development, recreation and agriculture. The majority of these soil types are a part of the Kalamazoo-Oshtemo association, which are classified as nearly level to rolling, well drained soils that have a loamy and sandy subsoil. However, in Ross Township, the topography is characterized by numerous rolling slopes and predominantly more rugged than level terrain.

Prime farmland soils are defined as those best suited to produce food, feed, forage, fiber and oilseed crops. These soils have properties that are favorable for production of sustained high yields of crops, and are designated based upon soil type and topography only.

Map I-2 shows areas in Ross Township where soil and topography may have an impact upon development. This impact comes from a variety of sources, such as the presence of wetlands, poor permeability of soils, and improper engineering properties for building development. This map and the classifications noted are intended for general planning purposes only.



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MAP I-2 – SOILS MAP



#### Topography

One of the more notable features of Ross Township is its hilly terrain in various locations, particularly south of M-89. The Township's topography ranges from a low elevation of 790 ft. above sea level within the floodplains of the Kalamazoo River to a high elevation of 980 ft. above sea level in Sections 22 and 23 south of M-89 near the center of the Township. The steepest slopes are around eight percent. Map 1-3 is a depiction of the USGS topographic map of the Township. Map 1-4 provides a 3-dimensional depiction of topography for most of the Township. The terrain makes the Township an attractive location for residential development, but also makes those areas susceptible to erosion, surface water contamination, and other environmental impacts resulting from development.

#### Vegetation

Ross Township was originally covered by a mixture of yellow oak savanna and forest, as well as scattered prairies. Forested areas are comprised of White Oak and Yellow Oak along with small numbers of Black Oak, Pignut and Shagbark Hickory. River areas and floodplains also may include types of Elm, Maple, Ash and Basswood. Non-forest vegetation consists of brush and shrub species, including autumn olive, red osier, silky dogwood, thornapple, dog bane and briar. Grasses include orchard grass, quack-grass, timothy, blue stem and fescue. These brush and grass species are found in various clustered locations throughout the Township and encompass over 3,000 acres. In some instances, they exist naturally on land that has never been modified or developed and in other cases they can be found on land that was formerly actively farmed.

Tree species are typically found in larger concentrations, or woodlands. These woodland (forested) areas cover almost 4,900 acres within the Township. Woodlands are important contributors to the "quality of life" in the Township, as they act as scenic buffers and moderate the effects of wind, flooding, noise, and airborn particles. In addition, woodlands provide a varied and rich environment for plants and animals. Forest layers, which include canopy cover, branches, trunks, shrubs and plants on the forest floor, provide areas for breeding, feeding and refuge for insects, birds and mammals.



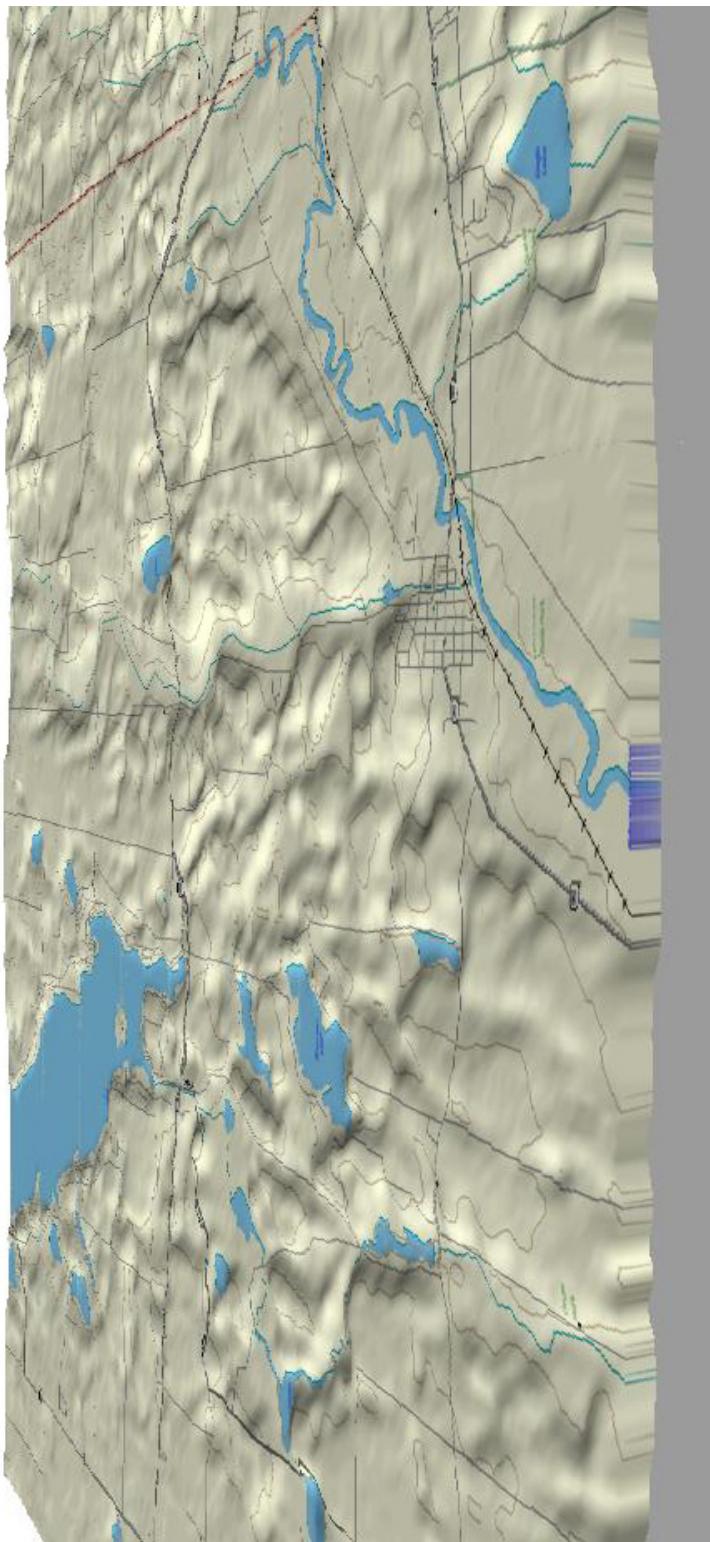
## Section I

### Community Profile

MAP 1-3 – USGS MAP



MAP 1-4 – 3 DIMENSIONAL TOPOGRAPHY



Woodlands protect water resources and soils by creating forest vegetation that moderates the effects of winds and storms, stabilizes and enriches the soil, and slowing runoff of rain and snow, allowing the forest floor to infiltrate water. In addition, extensive areas of woodlands have a moderating effect on the local climate. The microclimate of a forest, which is partially the result of the shade of the trees and the transpiration of water from leaves, keeps surrounding air at a relatively more constant (cooler) temperature during the day and warmer temperature at night than unforested areas.

Development can have a profound impact on woodlands. Typically, construction of homes and businesses in wooded areas will require the removal of some or a majority of the trees in the area that is to be developed. Historically, clearing land for agricultural production has resulted in substantial reduction of woodlands. The construction of roads and utility easements typically require removal of large sections of woodlands.

It is unlikely that woodlots will be removed or modified to any great extent in the future for agricultural purposes. It is more likely that construction of new residential and commercial land uses, as well as new or expanded County roads and utility easements will have the greatest impact upon woodlands and tree cover in general. Good site design for residential and commercial developments will include the placement of buildings and site amenities, such as parking lots, in locations that minimize the removal of larger trees. This essentially requires integration of improvements into the natural features of the site to the greatest possible extent. Likewise, in the construction of new roads or the widening of existing roads, and the placement of new utilities, existing mature trees should be maintained and protected to the maximum extent possible to preserve the character of the Township.

Without tree cutting regulations, the Township risks losing its forest and tree resources. Damage to other natural and man-made resources may result from the unregulated removal of woodlands and create additional financial burdens to the general public as well as individual property owners. Designed to prevent these losses and expenses, woodland regulations can identify the specific benefits



woodlands provide to the Township. Implementing regulations assures that woodland development preserves the health of the forest resources. Enforcement of a tree preservation ordinance can be difficult, but including an evaluation of trees and other vegetative resources as part of a site plan review process is appropriate for the Township.

#### **Water Resources**

Ross Township is in the Kalamazoo River Watershed and has over 1,809 acres of lakes, rivers and streams within its boundaries. Lakes represent 8.2 percent of Ross Township's geographic area. The largest body of water is Gull Lake, which is located in the northwestern part of the Township. Other lakes include Wintergreen Lake in Section 8 (see Map 1-2), Duck Lake in Section 5, Hamilton Lake in the northeastern corner of Ross Township, Stony Lake in central Ross Township, Pond Lily Lake in Section 32 and Sherman Lake in southwestern Ross Township. The Kalamazoo River flows through the southeastern corner of the Township, entering from the east and exiting southwest in Section 34. Three major streams flow through the Township: Augusta Creek, Sevenmile Creek and Gull Lake Outlet.

Ross Township's water resources are a valuable community asset. Surface waters provide fishing, boating, swimming, and other recreational opportunities while groundwater is the only source of domestic drinking water. Protecting water resources is essential to preserving the health and welfare of those who live in the Township, as well as sustaining the overall quality of life for both residents and visitors.

Surface and groundwater resources are directly impacted by land use activities. They are closely associated with the natural functions performed by vegetation, as forests and brushlands absorb and promote the natural infiltration of storm water, which in turn protects surface and subsurface water resources. Improper or poorly planned development can increase the quantity and decrease the quality of surface water runoff.

A critical aspect of proper planning for the protection of surface and groundwater resources is the acknowledgement that the natural flow of water is associated with watersheds, rather than political boundaries. Ross Township is part of a Four



Township Water Resources Council comprised of Ross, Richland, Barry, and Prairieville townships, all adjoining each other. It should be noted that Gull Lake and its primary watershed lies within each of those four jurisdictions. The mission of the Water Resources Council is “the development and implementation of land use strategies that retain the rural environment currently enjoyed by township residents, protecting lakes, streams, drinking water, agriculture, and open space.” Within the Council project area (the four townships), there are 12 watersheds that impact, to one degree or another, the overall character of the topography, soils, vegetation, surface and groundwater resources of the area. Five of those watersheds are in Ross Township and only one (the Sherman Lake watershed) is entirely within the Township (see Map I-5). In effect, four of the watersheds that impact the natural features of Ross Township are influenced by land use activities and decisions in the other three townships. That’s why close coordination among the various townships is important in maintaining the common objective of protecting water resources.



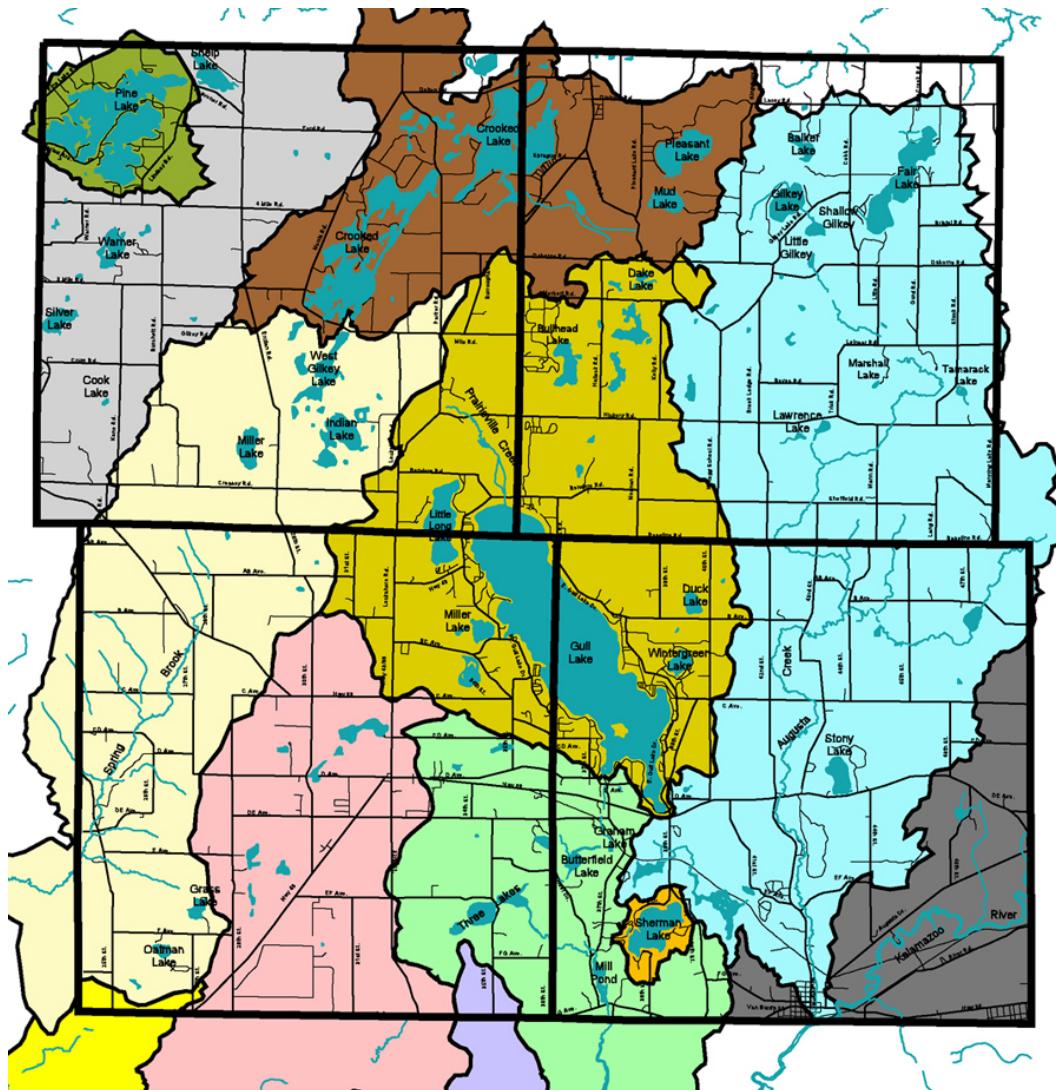
These resources are part of a fragile system that is potentially at risk. An increased amount of rural development, particularly within the past several years and the prospect of significant residential development in the near future, coupled with the substantial areas of steep slopes and wetlands, may begin to threaten the quality of the Township’s water resources.

Surface water features, such as lakes and streams, are directly affected by runoff from man-made land uses. Soil erosion, increased impermeable surfaces (primarily parking lots and roofs), soil contamination, and additional pressures from recreation activities (such as boating), can negatively impact surface water quality. Preserving water quality can help protect fish and wildlife resources, outdoor recreation opportunities, community aesthetics, the local economy and property values.

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MAP 1-5 – WATERSHEDS



#### Watershed Boundaries

[White square]	Township Boundary
[Yellow square]	Sherman Lake
[Light Blue square]	Gull Lake
[Light Yellow square]	Spring Brook
[Brown square]	Crooked Lake
[Light Blue square]	Augusta Creek
[Green square]	Pine Lake
[Purple square]	Morrow Lake
[Light Green square]	Gull Creek
[Pink square]	Comstock Creek
[Yellow square]	Spring Village
[Grey square]	Silver Creek Drainage
[Dark Grey square]	Kalamazoo River Drainage

"Map courtesy of the Four-Township Water Resources Council and Michigan State University, W.K. Kellogg Biological Station. Watershed boundaries developed by Dr. David P. Lusch, Michigan State University Center for Remote Sensing and Geographic Information Science, 2000."



Overcrowding or overuse of lakes for recreational purposes is also a potential environmental, as well as social, problem. Each lake has its own “carrying capacity” (the maximum number of watercraft that the lake can accommodate at one time without compromising public safety and environmental quality, including noise). A lake carrying capacity study, titled “Four Township Recreational Carrying Capacity Study” was completed for the Four Township Water Resources Council. A second study, the “Four Township Environmental Carrying Capacity Study,” examines the impact of development on water quality. This study indicates that: “Groundwater resources may be directly affected by man-made facilities and activities, such as increasing levels of septic system use, industrial spills, underground storage tanks, and other activities that contribute water to underground aquifers. The fact that the vast majority of households within the Township use individual wells as their source of domestic potable water underscores the importance of maintaining high quality groundwater.”\*

Threats to retaining quality water resources can come from a variety of sources, including:

- Non-Point Source Pollution - Rather than being generated from a single source, such as a leaking pipe at a sewage treatment plant, non-point source pollution results from rainfall or snowmelt moving over and through the ground from various locations. As water runoff moves, it picks up and transports natural and man-made pollutants to lakes, rivers, wetlands, or through the ground to aquifers.
- Stormwater Runoff – As urbanization occurs, natural vegetative cover is removed and partially replaced with roofs, parking lots, roads, and other impermeable surfaces. As a result, the rate and volume of stormwater runoff will greatly increase and the amount of water that would normally infiltrate into the ground will decrease. Consequently, the volume of water that would be stored underground decreases and the amount of clean water that would be deposited into streams and lakes as a result of natural filtration processes would also decrease.

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\* The “Environmental Carrying Capacity Study” was in draft form as this Plan was being written.



- Septic Systems - The majority of the Township's land area is outside of the Gull Lake sewer service area, and consequently the residences in the balance of the Township are served by individual septic systems. When properly located in soils with good drainage above the water table and in lower density residential areas, septic systems generally pose little or no health or environmental hazard. The potential exists, however, for septic system failure even in well-drained soils, resulting in contamination of groundwater, which could impact the quality of individual wells.
- Other potential threats that could impact the quality of the Township's groundwater because of past or current conditions include:
  - Sites that have been identified, or may in the future be identified, as being contaminated due to industrial or commercial activities. Leaking Underground Storage Tank (LUST) sites that have been identified by the Michigan DEQ are also threats to groundwater viability. There are two classifications for LUST sites: "open" and "closed". An "open" LUST site is a location where a release from an underground storage tank has occurred and where corrective actions have not been completed to meet the appropriate land use criteria. A "closed" LUST site is a site where a release has occurred but corrective actions have been completed. The Michigan Department of Environmental Quality maintains a database of LUST sites, and the status of individual sites on that list are periodically changed and updated. There are currently several sites within the Township that are listed in the MDEQ database. The list, however, does not always reflect the most recent changes in status.
  - Industrially used or zoned sites.
  - Existing houses that do not allow for a proper isolation between septic systems and individual water wells (typically at least 50 feet) or between the house and surface water (100 feet).
  - Residential developments that are of such a high density that septic system contamination of individual wells is possible.
  - Existing agricultural activities covering 500 acres or more.

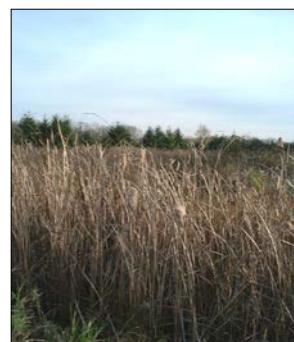


The Village of Augusta has its own municipal well, located within the Village limits. It has recently completed the delineation of its wellhead protection area, based upon the aquifer flow of water that comprises the source for the well. The Village's wellhead protection area runs in a southeast direction, beginning near the south end of Gull Lake (see Map I-6). The purpose of wellhead protection is to implement policies and programs that will ensure that the Village's municipal water supply is protected from potential contamination. Zoning is typically a primary tool for groundwater protection, including restricting or prohibiting industrial land uses and other activities that have a significant potential for polluting the groundwater.

*Wetlands* are found throughout the Township, but are particularly concentrated around the area's rivers and lakes. Ross Township is located within the large Kalamazoo River Watershed. According to the Township's September, 1998 Strategic Water Resource Management Report, 13.9 percent of Ross Township's land is classified as wetlands. The Kalamazoo River has many wetland areas along its meandering channel, and the many lakes in the Township make up an extensive wetland complex, except where shoreline development has encroached.

"Wetland" is generally used as a collective term for marshes, swamps, bogs and similar areas that are located between open waters and upland areas. The Michigan Natural Resource and Environmental Protection Act defines a wetland as "land characterized by the presence of water and 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."

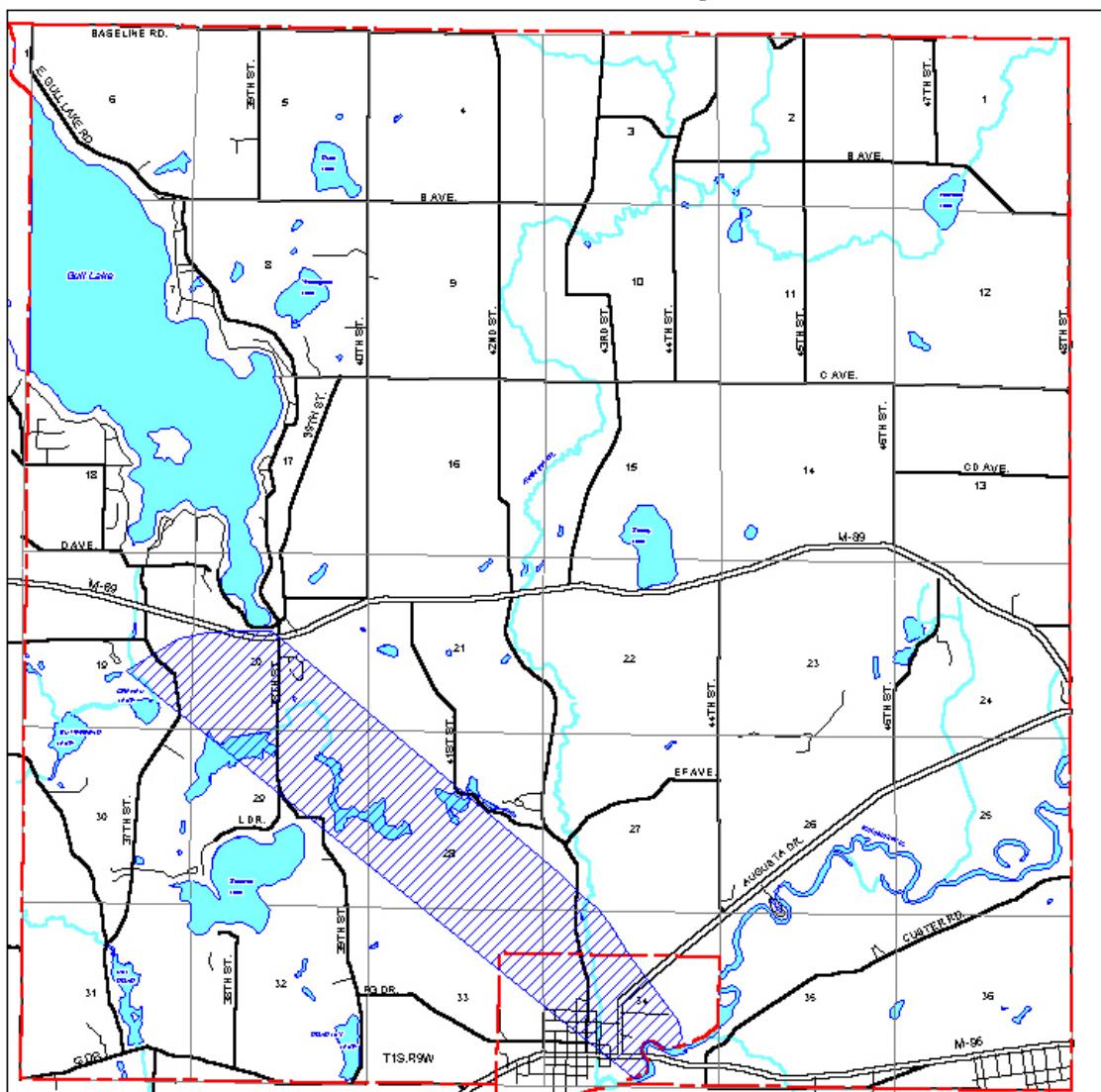
Wetlands are a valuable natural resource that provides substantial benefits to the environment. They help improve water quality and reduce flood and storm damage. They also provide important fish and wildlife habitat and support hunting and fishing activities. They also add diversity to the landscape. In other words, wetlands are critical to the preservation and re-creation of numerous plant and animal species and the natural purification of surface and groundwater.



Map I-6

### Augusta Well Head Protection Area

Ross Township,  
Kalamazoo, County



#### Legend



Gove Associates Inc.  
1601 PORTAGE STREET  
KALAMAZOO MI 49001-2716  
(269) 347-6611

NORTH

0 .25 .5 1  
Miles



The Michigan Natural Resources and Environmental Protection Act regulates land which meets the statutory definition of a wetland based on vegetation, the existence of water, and soil type. Modification of a wetland requires a permit from the Michigan Department of Environmental Quality. Permits are required for filling or placing material in a wetland, draining water from a wetland, constructing or maintaining a use or development in a wetland, or dredging or removing soil from a wetland. Recreational activities in wetlands, such as fishing, trapping, hunting, or hiking, as well as established farming and forestry activities, do not require a wetlands permit.

The Michigan Department of Environmental Quality regulates wetlands that are five acres or larger in size, or within 500 feet of the ordinary high water mark of a lake stream or pond, or which are considered to be essential to preserving natural resources. Ross Township may regulate wetlands that do not fall within the jurisdiction of the state, if the state definition of a wetland is used and the Township conducts a complete wetlands inventory. If the Township wants to regulate a wetland that is less than two acres, it must provide a formal finding that the wetland is essential to preserving the Township's natural resources.

Scenic Views are also a resource within the Township that contributes to the overall quality and character of the area and which should be preserved when and where



possible. Viewsheds are broad areas of view, often encompassing one or more views of man-made elements (such as houses in a valley or on a hillside) and/or physical features, such as Gull Lake. Viewsheds can be further classified as *critical* or *scenic*. A critical viewshed includes sites that are so unique to the area that they are an integral

and important component of the tourist economy. They encompass all that is within sight from specific public vantage points and uniquely identify the character of the area. Consequently, they should be protected from the negative visual impacts of development. That can be achieved through not permitting development to occur or regulating it through voluntary measures or local ordinances. Cluster development, site design, setback requirements, and other similar techniques can be applied to minimize the effects of development on critical views.

Scenic viewsheds typify the aesthetic qualities of the area, such as views of rolling hills, open spaces or lakes. While development within these viewsheds may be allowed, they should be regulated by zoning standards, such as height and size of buildings, lot widths, building setbacks along lakefronts and roadways, and sign regulations. By encouraging the retention of natural vegetation between the residence and the lakefront or roadway, negative impacts on the viewshed can be mitigated. Building height restrictions and requirements for horizontal “lines of sight” through appropriate building setbacks will help to preserve views for lakefront property owners.



#### Summary

Ross Township is blessed with one of the more varied natural environments in Kalamazoo County. The major features of the Township that contribute to its attractiveness include the relatively steep topography in the south central portion of the Township, substantial areas of mature tree cover, and open lands that have never been developed. Other major features include parcels in active agriculture, numerous wetlands, the Kalamazoo River, Augusta Creek, and several lakes, with Gull Lake being the largest lake within the County as well as a major economic and social resource.

With such a varied and relatively undeveloped landscape (outside of Gull Lake), a priority among residents is the protection and retention of the Township's natural resources. That includes the more visible resources, such as viewsheds, woodlots and open spaces, lakes and wetlands as well as those less visible, including groundwater and productive soils. To accomplish that, in light of continuing development, new and creative site design methods as well common-sense conservation applications have to be applied by the Township, the development community, and individual residents.