HAMBURG TOWNSHIP
LIVINGSTON COUNTY, MICHIGAN



MASTER PLAN

McKenna ASSOCIATES

TOWNSHIP OF HAMBURG TOWNSHIP
RESOLUTION TO ADOPT MASTER PLAN

At a regular meeting of the Township Board of the Township of Hamburg, Livingston County, State of Michigan, held at the Hamburg Township Board Room on Tuesday, January 18, 2011, beginning at 7:00 p.m., Eastern Standard Time, there were

PRESENT: _____

ABSENT: _____

and the following preamble and resolution was

MOVED FOR ADOPTION BY: _____

SUPPORTED BY: _____

RESOLUTION

WHEREAS, the Township Board of the Township of Hamburg desires and intends to guide and accomplish, in the planning jurisdiction and its environs within the Township of Hamburg, development and related activities pursuant to Public Act 33 of the Public Acts of 2008 of the State of Michigan ,

NOW THEREFORE, BE IT RESOLVED, that the Township Board of the Township of Hamburg adopts as its Master Plan the document attached hereto and incorporated herein by reference, effective immediately.

A roll call vote on the foregoing resolution was taken and was as follows:

AYES: _____

NAYS: _____

ABSENT: _____

RESOLUTION DECLARED:_____

CERTIFICATION

I, James A. Neilson, being the duly elected Clerk of the Township of Hamburg, Livingston County, Michigan hereby certify that (1) the foregoing is a true and complete copy of the Resolution duly adopted by the Township Board on January 18, 2011; (2) the original of such resolution is on file in the records of the Clerk's office; (3) the meeting was conducted, and public notice thereof was given, pursuant to and in full compliance with the Open Meetings Act (Act No. 267, Public Acts of Michigan, 1976, as amended); and (4) minutes of such meeting were kept and will be or have been (or will be) made available as required by the Open Meetings Act.

DATE: January 18, 2011

_____
James A. Neilson, Hamburg Township Clerk

Master Plan

HAMBURG TOWNSHIP | Livingston County, Michigan

Prepared by:

McKenna Associates

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Acknowledgments

The participation and cooperation of community leaders and residents in the preparation of the Hamburg Township Master Plan is greatly appreciated. In particular, we acknowledge the efforts of the following individuals:

Township Board
Pat Hohl, Supervisor
James Neilson, Clerk
Allen Carlson, Treasurer
Bill Hahn, Trustee
Charles Menzies, Trustee
Philip Semprevivo

Township Planning Commission
Fred Goetz, Chairperson
Howard Dillman
Ron Muir
Andrew Eckman
Victor Leabu, Jr.
Charles Menzies
Annette Koeble

Past Contributing Members
Rod Danko
Jerry Janiga
Marcia Jablonski
Simon Ren

Township Administration
Pat Hagman, Planning, Zoning,

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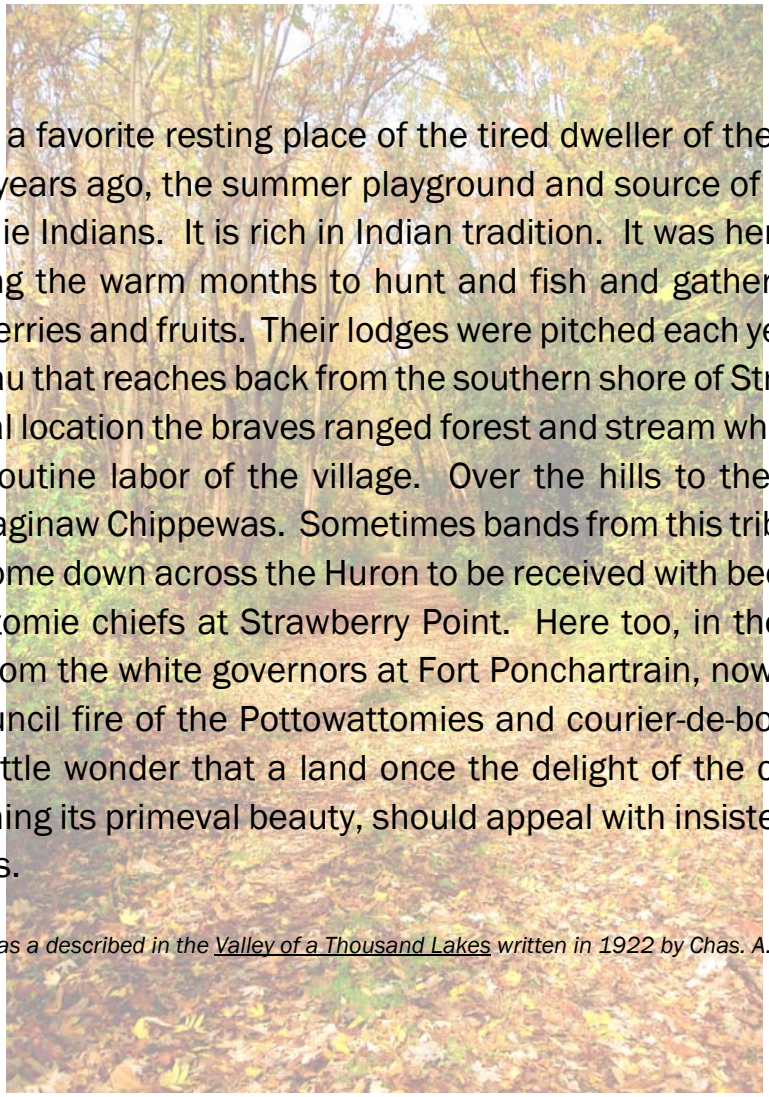


This region, now a favorite resting place of the tired dweller of the city was, less than a hundred years ago, the summer playground and source of food supply of the Pottowattomie Indians. It is rich in Indian tradition. It was here that the red men came during the warm months to hunt and fish and gather the bountiful harvest of wild berries and fruits. Their lodges were pitched each year on the high and broad plateau that reaches back from the southern shore of Strawberry Lake. From this central location the braves ranged forest and stream while the squaws performed the routine labor of the village. Over the hills to the north lay the territory of the Saginaw Chippewas. Sometimes bands from this tribe would cross the divide and come down across the Huron to be received with becoming dignity by the Pottowattomie chiefs at Strawberry Point. Here too, in the earlier days, came couriers from the white governors at Fort Ponchartrain, now Detroit, to be heard at the council fire of the Pottowattomies and courier-de-bois to trade for Indian peltry. Little wonder that a land once the delight of the children of the forest, still retaining its primeval beauty, should appeal with insistent call to their white successors.

Hamburg Township area as a described in the Valley of a Thousand Lakes written in 1922 by Chas. A. Ward.

Executive Summary

MASTER PLAN | **HAMBURG TOWNSHIP**

Executive Summary

Hamburg Township is a growing community that faces the difficult challenge of accommodating ever increasing development while retaining its unique natural and rural characteristics. The Hamburg Township Master Plan, like the community itself, is an evolving set of policies that embodies the vision of the Township in response to this concern. In order to determine methods of striking this balance, values and goals of the community were developed with input from residents, landowners, and the Township Board. These values and goals are regularly revisited in the face of changing trends and conditions both within the township and beyond. Ultimately, it is these values that have become the principal basis for recommendations discussed in this Master Plan. Under the Michigan Planning Enabling Act, Act 33 of the Public Acts of 2008, the discussion and resolutions in this plan will legitimize all legal enforcement through township ordinances. With this in mind, all sections of the plan will be used as tools to provide a quality residential community while it protects the natural features that create a sense of identity for Hamburg Township.

The Hamburg Township Master Plan is divided into a number of sections and specific studies. The primary plan for the Township covers four fundamental areas:

- Population and Housing
- Existing and Future Land Use
- Environmental Conditions and Natural Resources Management
- Transportation

In addition, there are specific subarea plans that address unique areas of the Township in more detail:

- The M-36 Corridor Plan
- The Hamburg Village Area Plan
- Hamburg Greenways Plan

The elements and recommendations of the Master Plan are summarized as follows:

Population & Housing: Like much of Livingston County, the population of Hamburg Township has been rapidly growing since the mid to late 1980's. The population in 1990 was 12,813 and in 2000 it was 20,380. Although this trend is anticipated to continue it is expected to level off. Between 1998 and 2000, there were 724 building permits issued. Between 2001 and 2003, there were approximately 335 building permits issued.

The recent establishment of a growth boundary around the City of Ann Arbor will likely contribute to continued development in Hamburg Township. SEMCOG projects that there will be a total of 13,549 households in 2030 compared to 7,086 households in 2000 increasing the population to over 36,000.

Existing Land Use: According to the Township's existing land use information, over 4,000 acres of land has been developed for single family use since 1996. Over 1,000 acres of land has been permanently preserved by private development through the use of Township's open space ordinance.

Commercial & Industrial Land Uses: The principal node of most commercial and all industrial activity continues to be the Hamburg Village Area in the southeastern corner of the Township. The first phase of Town One North, a mixed use development on M-36, was complete in 2000.

Recent commercial market studies have indicated that the residential development in the Township has created the demand for community commercial uses. This demand will largely be met by a recently approved shopping center at M-36 and Chilson road. The demand has also resulted in a number of improvements to existing commercial facilities within the Township.

The Township does not anticipate a large increase in industrial development. However, the Township is positioning itself to take advantage of new trends in high-tech and live-work based businesses.

Water and Sanitary Sewer: The Township, with the assistance of Ayres, Lewis, & May, Inc., prepared the Water and Sewer Master Plan for Hamburg Township. The plan proposes the logical extension of the sewer system to serve the higher density areas of the Township and to protect the Township's natural features.

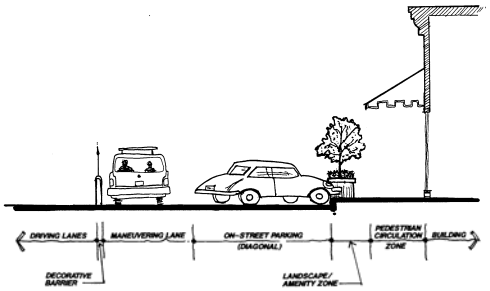
Water, through the Livingston Community Water Authority, is available for the higher density areas in and around the Village Center.

Future Land Use: The Master Plan can largely justify future land use designations by analysis of existing land use patterns, transportation conditions, availability of public facilities, and natural resource management. Additionally, regional market and projected demographics were important factors considered. The Future Land Use Plan recommends the following land uses:

Public and Private Recreational (40 acre lot size) provides an exclusive area for specified government, civic, and private recreational facilities. This will assist in protecting the Brighton State Recreation Area and private recreational facilities from intrusion by more intense suburban development that would otherwise detract from the natural amenities and resources of this area.

- Rural Low Density Residential (two acres per dwelling unit) is planned for land areas within the southern two-thirds of the Township that are least capable of supporting development due to significant natural features such as wetlands and floodplains.
- Medium Density Single Family Residential (one acre per dwelling unit) is intended for existing areas of this nature and undeveloped land areas which are capable of supporting development at moderate densities. These areas are generally located in the central portion of the Township.

- High Density Single Family Residential (4 dwelling units per acre) is intended for areas characterized as higher density single family residential homes and capable of supporting this development because of stable soils and surrounding land uses. These areas are located around existing nodes of higher density development.
- Multiple Family/Mobile Home Park Residential is specifically identified for areas capable of supporting development at high densities. Densities will vary depending upon site conditions, but is planned to be a net of four dwelling units per acre.
- The Natural River District 1 is located within the Huron Natural River District, as established by Huron River Management Plan adopted by the Natural Resources Commission. All land within 400 feet of the shoreline of the Huron River is included in this designation.
- The Natural River District 2 is located along the Huron River in the Village Center a short way to the east of the Village Center along the river. This designation is intended for residential uses as long as public access is provided along the Huron River.
- The Waterfront Residential is located along the major lakes within the Township and intended to regulate the small waterfront parcels, typically less than one acre. These parcels should maintain their existing character and setbacks from the lakes..
- Village Center is intended to be maintained as a traditional village with a variety of uses, small lots, shallow building setbacks and a quaint appearance. Uses will include a mixture of commercial, apartment, townhouse and single family residential homes as described in detail in the Village Center Plan.



- Neighborhood Commercial is designated for areas surrounding existing commercial clusters located along M-36. Neighborhood commercial also is designated for two areas along the chain-of-lakes to accommodate low intensity uses that serve the immediate neighborhood and boaters.
- General Commercial uses are designated around existing commercial clusters located along M-36. Expansion of development along M-36 beyond these community nodes should be prohibited.
- Industrial areas are proposed to be contained within established industrial areas around the Hamburg Village.

Protection of Natural Resources: Hamburg Township is blessed with an abundance of natural resources including water features, sandy soils, woodlands, and rolling topography. These features make an important contribution to the quality of life in the Township. The Huron River and the Chain of Lakes are unique and the most valuable resources to the Township.

The plan recommends a number of means to accommodate development while protecting the valuable resources that are critical to Hamburg Township's quality of life. Development densities should be limited in areas that contain fragile natural features and pristine natural conditions. Setbacks and site

plan design standards should be established as well. Wetlands and floodplains should be protected, and where possible, altered wetland areas should be restored to their natural condition. As the population continues to grow more attention will need to be given to lake access and boat usage levels. **Existing Transportation Conditions:** Many of the natural features within Hamburg Township, such as rolling topography, the Huron River, lakes and wetlands, present limitations to the transportation network. These result in roadways with sharp curves, poor sight distance and irregular intersections.

There are only two bridges crossing the Huron River within the Township which limits continuous connections across the Township. On a positive note, these restrictions contribute to the unique character of the area and provide a growth management tool.

M-36 is nearing capacity with the highest traffic levels at the intersection of M-36 and Chilson Road. Traffic levels are expected to continue to grow as the Township develops with M-36, Chilson Road, Pettysville Road and Winans Lake Road carrying the largest levels of traffic.

Transportation Improvements: The intent of this analysis is to retain the rural character of the Township by minimizing road widening to meet just the peak hour congestion. This can be accomplished through careful arrangement of land uses, access management and other innovative methods. A number of transportation improvements are recommended for consideration as the Township grows:

- Signalization or other traffic control improvements have been installed at Hamburg, Chilson, and Pettysville Roads, others are proposed for major intersections along M-36 including Merrill Road.
- Roundabouts have been installed at the intersections of Hamburg Road and Winans Lake Road and Chilson Road and Swarthout Road.
- M-36 is proposed to be widened to three lanes within the commercial areas of the Hamburg Village and at the community commercial node at M-36 and Chilson Road.

Hamburg Village Area: Subarea plans are created to focus in on a certain section of a community where specific goals would like to be accomplished. This component of the Township Master Plan has served as a catalyst for detailed standards outlined in the Township's adopted Zoning Ordinance.

The Hamburg Village area is proposed to be maintained as a traditional village, and that new development follow similar design principals (commonly referred to as Atraditional neighborhood design@). This plan details the land use, transportation and urban design framework for continued development of the village. Streetscape elements are proposed throughout the village area, including: street trees, ornamental street lights, sidewalks

and road curbs. The plan also designates areas for neighborhood open space and village greens.

M-36: The M-36 Corridor Subarea Plan provides a detailed guide to future development along the highway. Existing commercial development centers are located at several locations along the corridor. The plan makes recommendations for these areas aimed at creating well defined commercial nodes that serve the surrounding neighborhoods and motorist on M-36. Between these commercial areas are segments of M-36 which are characteristic of a very rural, natural environment. The plan provides for lower intensity development in these areas that maintains or enhances their natural quality.

The M-36 Corridor Subarea Plan provides detailed recommendations for future land use, transportation improvements, access management, streetscape improvements and site design standards including parking, signs landscaping, open space preservation and architecture.

Hamburg Greenways Plan: In conjunction with the Southeast Michigan and Livingston County Greenways Plans, Hamburg has adopted local standards for providing useful pathway and greenway connections between the Township's commercial areas, residential, and recreational areas, and between the natural habitats within the Township. Each project that is developed within the Township is evaluated for the potential of connecting existing, future, and planned greenways.

The Township is also exploring creative methods for providing pedestrian connections across M-36.

Community Goals

MASTER PLAN | **HAMBURG TOWNSHIP**

A key element in the preparation of the Master Plan is the identification of community goals which reflect the community's desires regarding the development of the Township. Community goals, combined with the technical studies conducted in conjunction with this plan, serve as the foundation upon which the Master Plan is built. In return, the Master Plan is formulated to provide guidance and direction towards the achievement of Township goals.

The following are the community goals for Hamburg Township:

- To protect and promote the public health, safety, comfort and general welfare.
- To protect, preserve, and enhance whenever possible the unique and desirable natural amenities of Hamburg Township.
- Preserve the natural and historic character of Hamburg Township by accommodating a reasonable amount of development, but ensuring the development is in harmony with the natural features and the unique environmental requirements of the Township.
- To direct future development to those areas most suited for that type of development.
- Cluster and contain future commercial development around existing commercial areas in the Hamburg Village, Village Center, M-36/Chilson Road, Lakeland, M-36 / Pettysville Road areas to enhance and serve the residents of the surrounding neighborhoods and motorists on M-36.
- To retain industrial growth within the area of the Township where it will least conflict with surrounding land use.
- To provide and promote a vehicular and non-motorized transportation network that is a vital component of a high quality community environment for people who live, work, shop and recreate in Hamburg Township.
- Accommodate increases in traffic volumes through selected widening of M-36, intersection or traffic signal improvements, access management, preservation of select right-of-way and construction of indirect access systems.
- To provide utility improvements in locations best suited for development to support managed growth.
- Preserve the existing landscaping and natural features viewed along the Township's roads.
- Encourage the development of the Village Center as indicated in the Village Center Master Plan.
- Direct the development of M36 as indicated in the M36 Corridor Plan.
- Encourage the development of a non-motorized trail way system as indicated in the southeast Livingston Greenways Plan.
- Identify and encourage specific sensitive natural areas to be preserved.
- Provide and avenue for attainable housing within the village center
- Promote storm water management practices to provide the necessary framework for handling storm water runoff in a manner that does not have a negative impact on the lakes, streams, wetlands, and other ecologically sensitive areas of the Township.

The following are the community goals for the Village Center:

- Create a distinct community center and focal point in the Township.

- Encourage development and redevelopment consistent with the historic architecture, mixture of uses and compact layout of a traditional village.
- Provide a land use transition between the village area and adjacent areas of the Township.
- Establish a complimentary and integrated mixture of employment, shopping, entertainment and civic uses which create a walkable village with less reliance on automobile travel.
- Help ensure a consistent architectural theme without restricting innovation.
- Integrate public gathering places with a pedestrian circulation system.
- Promote long term viability in the established village area.
- Preserve street capacity and improve safety through control of traffic conflict points along M-36 by using a system of internal streets and well spaced access points.
- Create an internal street system which provides improved access between the existing village center, township offices, Bennett Park, and surrounding existing and future development.
- Establish a hierarchy of roads to designate future collectors. Permit more narrow local streets with on-street parking where streets are not intended to serve through traffic.
- Promote development and redevelopment compatible with the existing and new village environment.
- Promote a concentration of traditional village uses, other than industrial, rather than permitting the commercial strip along M-36 with its inherent traffic congestion, hazards, environmental degradation and poor aesthetics.
- Create a focal point for higher density attainable housing with a mixture of housing type
- Implement the necessary public utilities (sewer/stormwater/water/lighting etc.) to service the needs of a traditional village center. Especially a centralized stormwater facility that will accommodate the more intense development envisioned in the Village Center.
- The following are the community goals for the <u>M-36 Corridor</u>:
- Preserve the character of Hamburg Township by accommodating a reasonable amount of development, but ensuring the development retains or adds to the traditional recreational character and natural features.
- Existing landscaping and natural features viewed along M-36 should be preserved. Development should be situated away from the roadway and key viewsheds protected to retain an appearance of low intensity development. Development shall be contained at the Village Center Area and key commercial nodes along M-36.
- Increases in traffic volumes should be accommodated through selected widening, intersection or traffic signal improvements, and construction of indirect access systems promote alternative routes and technologies
- Promote improved site design for new development and redevelopment of existing sites through site development and architectural standards.
- Cluster future commercial development around existing commercial areas at the major intersections of M-36 and Chilson Road, Lakeland Road, and Pettysville Road to enhance nodes that serve the residents of the surrounding neighborhoods and motorists on M-36.

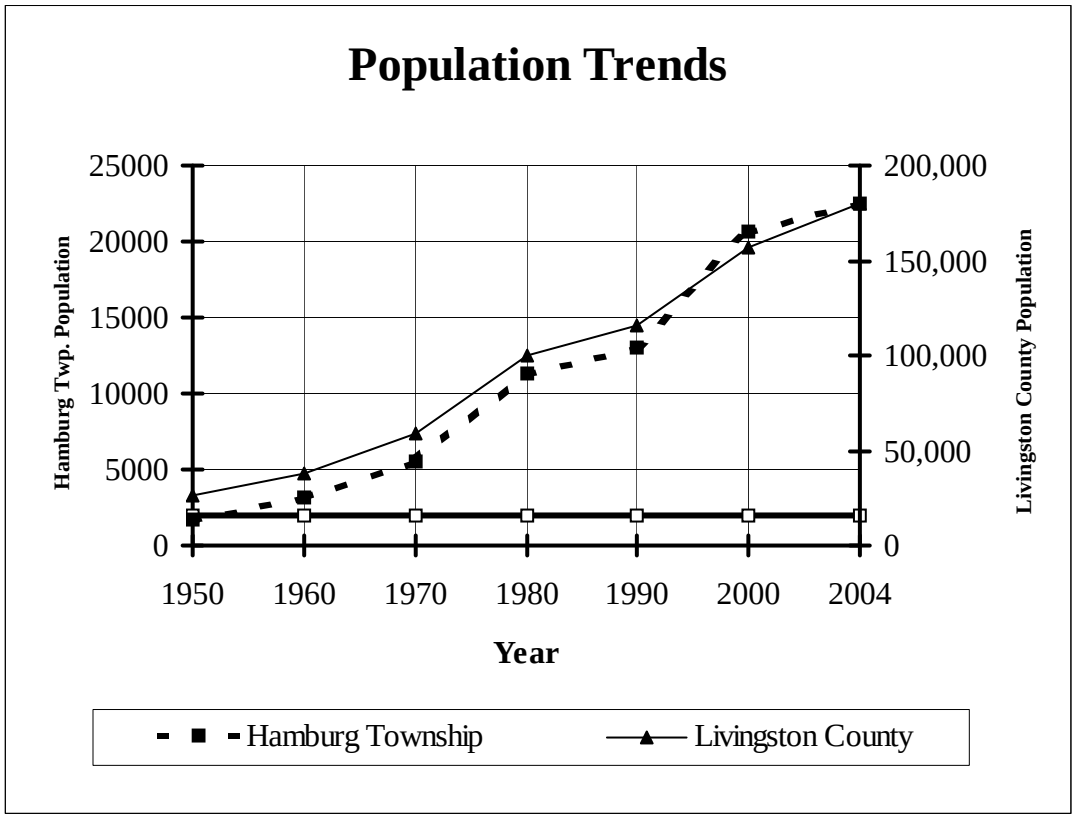
Population and Housing

Population Trends

The once dominant rural/lake resort character of Hamburg Township has been slowly changing since the early 1970's, when suburbanites from the Detroit and Ann Arbor area began looking at Livingston County as a convenient commute between the rural lifestyle and metro area employment. The growth in population in Hamburg Township, as well as many of the surrounding Townships, has been substantial since 1960, as shown in Table 1. The growth rate from 1960-2000 for Hamburg Township was consistently greater than the total growth rate for Livingston County. Population in the Township increased almost four times between 1970 and 2000, as shown in Table 2.

The growth rate from 1980 to 1990 for Hamburg Township was the smallest since 1950. Hamburg Township's growth rate during this period was approximately the same as the total growth rate for Livingston County. This county wide reduction in the growth rate is largely attributed to the Arab oil embargo and economic conditions in Michigan which temporarily slowed migration into Livingston County.

The 2000 Census indicated Hamburg Township had 20,627 people; making it the largest municipality in Livingston County, in terms of population. This represents a ten year growth rate of 57.7 percent from 1990 to 2000, as compared to the annual growth rate between 1980 and 1990 of 15.6 percent. The Southeast Michigan Council of Governments (SEMCOG) has estimated a population of 22,469, as of November 2004, which is an increase of 1,842 persons since the 2000 Census.



Source: U.S. Bureau of Census, 2000 SEMCOG, 2004

Table 1: Population Trends Hamburg Township, 1950-2004

Year	Population	Numeric Change	Percent Change
1950	1,713	--	--
1960	3,189	1,476	86.2%
1970	5,481	2,292	71. %
1980	11,318	5,837	106.5%
1990	13,083	1,765	15.6%
2000	20,627	7,544	57.7%
2004*	22,469	1,842	8.9%

*Source: *SEMCOG 2004 estimate, U.S. Bureau of Census, 2000*

Table 2: Population Trends Hamburg Township and Surrounding Areas, 1960-2000

	1960	1970	% change 60-70	1980	% change 70-80	1990	% change 80-90	2000	% change 90-2000	2004*
HAMBURG TOWNSHIP	3,189	5,481	71.9 %	11,318	106.5%	13,083	15.6%	20,627	57.7%	22,469
City of Brighton	2,282	2,457	7.7 %	4,268	73.7 %	5,686	33.2 %	6,701	17.9%	7,205
Brighton Township	2,875	5,882	104.6%	11,222	98.8 %	14,815	32.0 %	17,673	19.3%	18,327
Genoa Township	2,402	4,800	99.8 %	9,261	92.9 %	10,820	16.8 %	15,901	47.0%	19,693
Green Oak Township	4,631	7,598	64.1 %	10,802	42.2 %	11,604	7.4 %	15,618	34.6%	17,600
Putnam Township	1,471	2,433	65.4 %	4,253	74.8 %	4,580	7.7 %	5,359	16.9%	5,911
Village of Pinckney	732	921	25.8 %	1,390	50.9 %	1,603	15.3 %	2,141	53.6%	2,432
Livingston County	38,233	58,967	54.2 %	100,289	70.1 %	115,645	15.3 %	156,951	35.7%	179,802

*Source: *SEMCOG 2004 estimate, U.S. Bureau of Census, 2000*

Characteristics

A review of the general characteristics of the population is important to assist in determining future land use, community facility and service needs. The following is a summarization of general population characteristics of Hamburg Township compiled by the U.S. Bureau of the Census:

- The 2000 Census indicated a total population of 20,627; 10,508 or 50.9% were males and 10,119 or 49.1% were female. Of the total population, non-white residents numbered 464 or 2.8%.
- Distribution of age for 2000 is indicated on Table 3. According to these figures, the population over 64 increased the most as a percentage of the total population although there was and continues to be a projected increase for all age groups. This suggests that while a certain portion of the population in aging in place, the Township continues to be an attractive place for families with children.
- The educational attainment for persons 25 years and older in 2000 was greater than the county or state averages. The percent of Hamburg Township residents over the age of 25 with high school diplomas only was lower than the State of Michigan. For percentage of residents with college degrees, Hamburg Township is higher than the County or State averages. The number of residents with college degrees in 2000 has increased by over 30% from 1990.

Table 3:
Educational Attainment Percentages for Residents 25 Years and Older 1990 and 2000

	1990		2000	
	High School Diploma	College Degree	High School Diploma	College Degree
Hamburg Township	29.8 %	29.6 %	25.8%	41.5%
Livingston County	32.4 %	27.6 %	36.9%	28.3%
Michigan	32.3 %	24.1 %	31.3%	28.8%

Source: U.S. Bureau of Census

Table 4: Population by Age Group 1990, 2000 and 2010

		1990		2000			2030 Projected		
Group	Age	Population	Percent of Total	Population	Percent of Total	1990 to 2000 Change	Population	Percent of Total	2000 - 2010 Change
Pre-school	Under 5 yrs	1,032	7.89%	1,594	7.7%	562	2,758	8%	1,164
School Age	5-9	1,023	7.82%	1,787	8.7%	764			
	10-14	908	6.94%	1,789	8.7%	881			
	15-19	870	6.65%	1,373	6.7%	503			
Subtotal	5-19	2,801	21.41%	4,949	24.1%	2,148	7,219*	20%	N.A.
Labor Force	20-24	688	5.26%	700	3.4%	12			
	25-29	1,031	7.88%	-	-	-			
	30-34	1,380	10.55%	2,729	13.2%	318			
	35-39	1,388	10.61%	-	-	-			
	40-44	1,196	9.14%	4,296	20.8%	1,712			
	45-49	941	7.19%	-	-	-			
	50-54	699	5.34%	3,332	16.2%	1,692			
	55-59	541	4.14%	1,063	5.2%	522			
	60-64	431	3.29%	662	3.2%	231			
Subtotal	20-64	8,295	63.40%	12,782	62%	4,487	22,179*	61%	N.A.
Seniors	65-70	383	2.93%	-	-	-			
	70-74	285	2.18%	803	3.9%	135			
	75-79	158	1.21%	-	-	-			
	80-84	76	0.58%	402	1.9%	168			
	85 and over	53	0.41%	97	0.5%	44			
Subtotal	65 and over	955	7.30%	1,302	6.3%	347	4,175	11%	2,873
TOTAL		13,083	100.00%	20,627	100.0%	7,544			

Source - U.S. Bureau of Census ** SEMCOG 2030 projections are based on 5-17 and 18-64 year old cohorts.*

Housing Characteristics

Housing Costs

Hamburg Township is almost entirely a single family residential community. The median values of owner occupied housing in Hamburg Township was $204,200 in 2000 which has doubled since 1990 when the median value for an owner occupied dwelling was $100,200. As such, there continued to be very limited housing opportunities for young families or senior citizens in the Township.

The Livingston County Planning Department completed a study of affordable housing in Livingston County. This study pointed out that expansion in housing opportunity is necessary if there is to be expansion in the community's employment base. Maintenance of housing opportunity is also necessary to preserve the diversity in the community's population. There is a need within Hamburg Township to not only provide housing for middle class families, but also the younger and older populations. Some measures that are or can be taken to ensure that there is attainable housing in Hamburg Township are as follows:

- The Open Space Community (PUD) option provides for a more efficient use of land through clustering to lower the cost of development which may be passed on in the form of lower cost housing. The current regulations could be modified to provide a density bonus if the developer agrees to set a percentage of the housing aside as Aattainable housing@.
- The Township adopted an Elderly Cottage Housing Opportunity ordinance that allows for the development of clustered small scale housing designed specifically for seniors. Another form of attainable housing available to seniors and others is in the form of accessory dwelling units on the same lot as a principal dwelling, commonly referred to as Amother-in-law cottages@. This type of housing allow a senior to be close to and cared for by family members while still maintaining a level of independence and remaining in the community.
- Revisions to development regulations, such as reducing required lot sizes or reducing road standards, are other approaches to decreasing housing costs. Hamburg Township has done this through the creation of the Village Residential and Village Center zoning districts which allows for 10,000 square foot lots.

Areas of the Township that have public sanitary sewer service or are planned to have service available include residential areas around the lakes and the Village Center and Village Residential areas. The recently adopted Village Center and Village Residential zoning districts both provide for smaller lot single family and multiple family housing developed in a style that is consistent with the traditional "Old Hamburg" village area.

Household Size

There has been a small decrease in the average household size recently, as shown in Table 5. The decrease in household size reflects the national trend of decreasing household size, especially since many couples are delaying having a family to complete their education or to pursue a career. With a 50% increase in the amount of households, only six percent is renter-occupied housing, such as in multiple family developments. The stable household size in Hamburg Township is an indicator that new residents attracted to the community tend to be families, without making a shift in housing stock towards multiple family development.

Table 5: Household Trends Hamburg Township 1980-2030

	1980	1990	1980-1990 % change	2000	1990-2000 % change	2030	2000-2030 % change
Total Population	11,318	13,083	16 %	20,627	58 %	36,560	77 %
Average Persons Per Household	3.12	2.95	- 5 %	2.69	-9 %	2.66	-1 %
Total Number of Households	3,626	4,438	22 %	7,086	60%	13,744	94 %

Source - U.S. Bureau of Census
SEMCOG 2020 Regional Development Forecast, 1995

The average household size in 2000 was 2.69 persons per occupied household. This is close to the county average of 2.80 persons per household. The greatest category of household size is two person households. There are also a significant proportion of three and four person households. SEMCOG has estimated that as of November 2004, there are 600 additional households in the Township, for a total of 7,686.

Future projections estimate that in the next 30 years though the number of households will increase 77%, the average persons per household will maintain a steady decline.

Seasonal Housing

In 2000 there were a total of 7,687 housing units, which is 2,597 more or 51% additional units as compared to the 1990 Census. Of these, 406 are not year round owner occupied homes. In comparison, there were a total of 5,090 housing units in 1990, 522 of which were not year round owner occupied homes. This would indicate that there is a decreased amount of seasonal housing or cottages that are being converted to permanent year round homes.

Housing Construction

Historically there was a significant reduction in the rate of housing construction in Hamburg Township during the early to mid 1980's. This reduction in the growth rate is largely attributed to the economic conditions in Michigan which temporarily slowed migration into Livingston County. During the late 1980's, Hamburg Township saw an increased and steady growth in housing construction, with 18.5% of all homes constructed during this time frame. Since 1990, the rate of housing construction has increased by 17.8%. By March of 2002 approximately 39 percent of all homes in the Township were constructed within the last twelve years. While this level of development is characteristic of Southeastern Livingston County and the economic growth of the region, the pace of development is having an impact on the community. Traffic levels on local roads continue to increase and the natural character of Hamburg Township continues to be threatened.

Population Projections

The three factors which modify the population of an area are births, deaths, and migration. The birth and death rate are factors over which local government can exert the least control. However, in and out-migration are very much influenced by the local economy, transportation accessibility, development policies and local lending policies.

The inability to predict population growth with pinpoint accuracy does not diminish the importance of projections as a guide to local decision-making. For purposes of this plan, projections are used to assess the affect of growth on current and desired conditions in the Township. In this manner, population projections serve as a target of the desired level of growth the community can bear without harming the physical and social environment. The Township Master Plan is formulated in response to meeting that desired level of growth.

Several projection techniques were reviewed to determine which most accurately depicted expected conditions in Hamburg Township. It was determined that the population projections prepared for the 2030 Regional Development Forecast by the Southeastern Michigan Council of Governments (SEMCOG) would provide the most useful guidance in projecting future population growth.

In addition to the SEMCOG projections, statistical extrapolations of historic population trends, projected county growth and household building permit activity were analyzed. The following models were used:

Linear progression: This model is used when the population of the township has exhibited a trend of uniform growth, and is anticipated to do so in the future. The results of this model indicate a trend that is much lower than SEMCOG projections and the recent trend in housing construction. This would be an indication that Hamburg Township is entering a stage of growth that will exceed historic growth rates.

Modified exponential: This model represents a pattern of a declining rate of growth approaching an upper capacity limit. For the purpose of this model, the Livingston County Planning Department's Build-out Analysis for Hamburg Township was used. The Build-out represents the capacity of undeveloped, buildable land under current zoning regulations. This figure was estimated at 24,862 persons.

Ratio: The ratio model was used to derive the projected township population as a ratio or proportion of the county population. This model assumes that the growth within the township has been, and will continue to be dependent with the growth of the county. Using projected county population growth, a proportionate share of that growth can be attributed to Hamburg Township. This model yields a trend that is less than SEMCOG projections and the recent trend in housing construction. This would be an indication that Hamburg Township will be receiving a larger proportion of Livingston County's growth.

Building Permits: This method involved taking recent trends in housing construction and projecting this construction activity into the future to determine number of households. Then based upon average household size, future population can be approximated. While this method assumes that housing construction rates will remain constant, it provides a comparison of the Township's recent development trends with the long range development of the community. Projections based upon housing construction

rates yields almost the same result as the SEMCOG projections. This could be an indication that current development rates are projected to continue.

The results of these various population projections are as follows:

Table 6: Population Projection Hamburg Township, 1990-2020

	2000	2010	2020	2030
SEMCOG	20,627	25,938	31,249	36,560
Linear progression	20,627	24,410	28,193	31,975
Modified exponential	20,627	24,311	25,770	26,347
Ratio	20,627	26,123	31,619	37,115
Building permits	20,627	24,394	30,204	36,015

Income

Household incomes in Hamburg Township tend to be somewhat higher than other areas of Livingston County and significantly higher than the State of Michigan overall. The median household income in Hamburg Township was $75,960 in 1999; as compared to Livingston County's median household income in 1999 of $67,400 dollars and the State's median household income in 1999 of $44,667. This is a 57 percent increase in the 1989 Hamburg Township median household income by $48,481.

The higher proportion of middle and upper income residents can be attributed to a number of factors. As noted in Table 4, Hamburg Township has a relatively high educational attainment, indicated by the percentage of residents with college degrees. Hamburg Township also possesses many natural features such as lakes, rivers, mature forest, and the Brighton State Recreation Area which make it a highly desirable place to live. As stated earlier in this section, Hamburg Township is also within a reasonable commute to major employment centers in the Detroit and Ann Arbor areas.

Of the 5,798 total families in Hamburg Township, 89, or 1.5% were reported to be below the poverty level in 1999. This is lower than Livingston County's average of 2.4% and significantly lower than the State's average of 7.4% of all families below the poverty level. Of these Hamburg Township families for which poverty status was determined, 54 were female headed households, which is 28 more than reported in 1989.

Employment

Hamburg Township tends to have relatively low levels of unemployment. In 1999 the unemployment rate for Hamburg Township residents was only 2.0%. This was much lower than the State of Michigan, which had an unemployment rate of 3.7% during this same year.
Source - U.S. Bureau of Census

Table 7: Labor Force Status Hamburg Township, 1989 and 1999

	1989		1999	
	Persons	Percent	Persons	Percent
Persons 16 years and over	9,951	- -	15,130	--
Persons in labor force	7,211	72.5 %	11,201	74%
Civilian labor force	7,205	99.9 %	11,201	74%
Employed	6,949	96.4 %	10,900	72%
Unemployed	256	3.6 %	301	2.0%

Source – U.S. Bureau of Census

The occupation of Hamburg Township residents is fairly diverse. White collar occupations are the most prevalent, but there are a significant number of skilled precision production, craft and repair occupations.

Table 8: Occupation Hamburg Township

Occupation	2000	Percent
Management, Professional and related positions	4,493	41.2%
Service occupations	1,173	10.8%
Sales and office occupations	2,812	25.8%
Farming, fishing and forestry occupations	4	-
Construction, extraction and maintenance occupations	1,157	10.6%
Production, transportation and material moving occupations.	1,261	11.6%

Source - U.S. Bureau of Census

The industry that employs the largest group of Hamburg Township residents is durable goods manufacturing. Employment in retail trade is also significant. Hamburg Township being a reasonable commute from Ann Arbor makes employment in health care and educational services a major employer of township residents.

By and large, Hamburg Township can be considered a residential community for people who work elsewhere. Commuting patterns indicate that nearly 70 % of the workers reporting their place of work in the 1990 census were employed outside of Livingston County. Outside of Livingston County the major recipients of the Homburg work force were the City of Ann Arbor, Oakland, Washtenaw and Wayne Counties.

Table 9: Industry Hamburg Township, 1989 and 2000

Industry	1989	2000
Agriculture, forestry, fishing, hunting and mining	2 %	0.2 %
Construction	8 %	8 %
Manufacturing	28 %	22.9 %
Transportation, warehousing and utilities	2 %	2.7 %
Communications and public utilities	1 %	-
Wholesale trade	5 %	4.7 %
Retail trade	15 %	12.2 %
Finance, insurance, real estate, rental/leasing	5 %	6.2 %
Business and repair services	5 %	7.6 %
Personal services	2 %	3.7 %
Arts, entertainment, recreation, accommodations and food services	1 %	5.8 %
Educational, health and social services	18 %	20.6 %
Other professional and related services	6 %	8.5 %
Public administration	2 %	2 %

Source - U.S. Bureau of Census

Hamburg Township is not without some local employment base. There are a number of commercial, recreational and industrial employers in the Township. A number of Livingston County's 20 largest employers are located in Hamburg Township.

Livingston County's 20 largest employers: 2003

Company	Location	Product
General Motors	Brighton Township	Proving Grounds
Howell Public Schools	City of Howell	Educational Services
Citizens Insurance	City of Howell	Insurance
Brighton Area Schools	City of Brighton	Educational Services
St. Joseph Mercy Livingston Hospital	City of Howell	Health Services
Hartland Consolidated Schools	Hartland Township	Educational Services
Pinckney Schools	Hamburg Township	Educational Services
Livingston County Government	City of Howell	County Government
Meijer	City of Brighton	Retail
Ontegra	City of Brighton	Tier I Auto Supplier
Wal-Mart	Wal-Mart	Genoa Township Retail
Tanger Outlet	Howell Township	Factory outlets
Ogihara	City of Howell	Tier I Auto Supplier
Meijer	Genoa	Township Retail
Livingston Educational Service Agency	City of Howell	Educational Services
Metaldyne Tubular	Hamburg Township	Pipe and fittings
Gordon Food Service	Green Oak Township	Wholesale Distributor
Uni Boring	Howell Township	Tier I Auto Supplier
Fowlerville Community Schools	Village of Fowlerville	Educational Services
Intier Automotive	Howell	Tier I Auto Supplier

Existing Land Use

MASTER PLAN | **HAMBURG TOWNSHIP**

Growth and Settlement

Historical Perspective

The attractiveness of Hamburg Township as a place of residence and recreation is not a recent phenomenon. As illustrated by the cover page quote from the Valley of a Thousand Lakes, Hamburg Township provided hunting, fishing and recreational grounds for the Pottowattomie Indians.

The first white settler to the Hamburg area was Jesse Hall who purchased Section 25 from the United States government in 1831 and built a cabin in the northeast quarter section. This was the beginning of the settlement of Hamburg Village. By 1835, property owners established the organization of the Township and elected the first Township officials.

Due to the availability of inexpensive farm land, Hamburg thrived as an agricultural community throughout the 19th century. However, except for a brief resurgence during the Depression, agricultural activities declined in the 20th century.

In the latter part of the 19th century, Livingston County began to be recognized as a recreational haven for Detroit and Ann Arbor residents, thereby establishing a trend that remains today. Prior to 1900, the sole occupants of Zukey Lake were the Ann Arbor Sporting Club and the Oak Grove Club, both private hunting and fishing clubs. The improvement of county and state roads, and the completion of the Ann Arbor Railroad through Hamburg Township, opened the lakes to more summer visitors by the early 20th century. Lakeland, located in the heart of the lakes region, emerged as a Aport of entry@ to the lakes upon completion of its railroad station.

The Great Depression and World War II slowed the development of Hamburg Township as a recreational community. The transformation of Hamburg Township from a seasonal recreational to a permanent residential environment occurred largely after World War II with the conversion of cottages to year-round residences.

1970-1995

The once dominant rural character of the Township has been slowly changing since the early 1970's, when suburbanites from the Detroit and Ann Arbor area began looking at Livingston County as a convenient commute between the rural or lake front lifestyle and metro area employment. Population in the Township nearly doubled between 1970 and 1980, until the Arab oil embargo and economic conditions in Michigan temporarily slowed migration into Livingston County. A review of recent building permit activity in the Township from 1990 through 1995 indicated an upswing in residential development.

1995-2003

Still rural in character, the Township has seen significant population change since the 1990 census. From 1990 to 2000 the Township's population has increased by 7,544 persons, and SEMCOG, Southeast Michigan Council of Governments, estimates that there is another 1,700 residents since the 2000 census for a total population of 22,327. SEMCOG estimates that by 2030 the population of Hamburg Township to be 33,331.

Regional Context

Hamburg Township lies within Livingston County, which is currently the fastest growing county in Michigan. The urbanization of Livingston County is part of the trend of outward migration from the Detroit Metropolitan area. Ann Arbor, Suburban Wayne and Oakland Counties and Detroit are within commuting distance from Hamburg Township. Map 1 illustrates the regional location of Hamburg Township.

A number of factors can be cited for growth in the southeastern Livingston County area:

- Interstate 96 and U.S. 23 increasing accessibility from Hamburg Township to the major places of employment in the metropolitan region.
- The availability of relatively inexpensive large tracts of land suitable for subdivision development.
- The desire of people for a rural atmosphere.
- The attractiveness of lake front or rural estate homesites.
- The expansion of public sanitary sewer from the City of Brighton.

The rural lifestyle combined with convenient access to employment centers in the metropolitan Detroit and Ann Arbor areas has sparked growth in Hamburg Township. Ann Arbor in particular will have an increasing effect on the population of the Township. As the City's population increase and property values rise people will migrate to the rural areas. As pointed out in the Population and Housing section of this plan, Hamburg Township is experiencing a large amount of residential development.

Existing Land Use

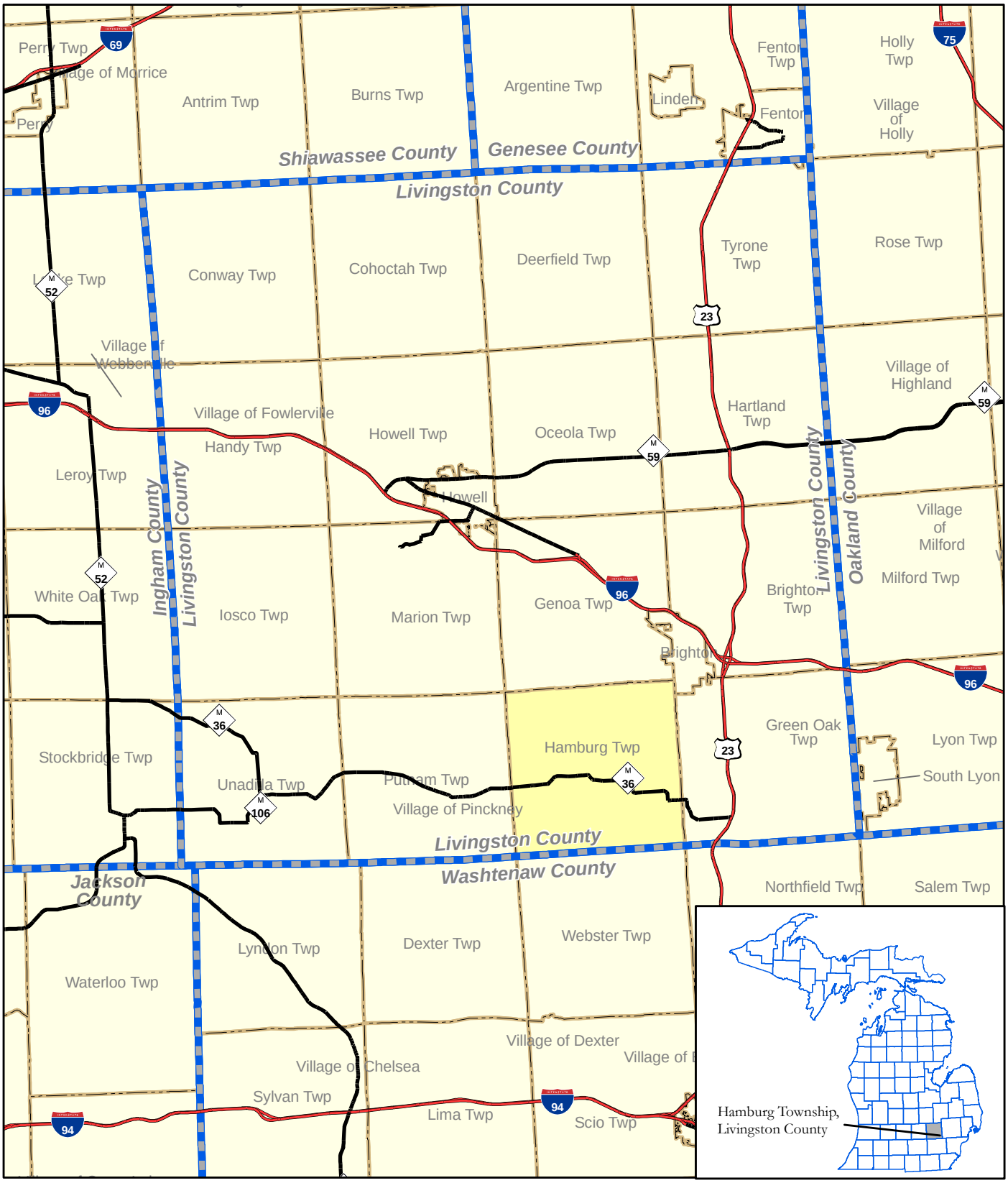
Type and Extent

An inventory of existing land use was conducted using current aerial photographs verified by field observation. Existing land uses presented in Map 2 were classified in the following categories and the extent of their acreage determined:

- Agricultural and Vacant includes lands actively used for agricultural purposes and lands not currently put to any active use. These lands comprise 4,136 acres. Water includes major water bodies and comprises 2,525 acres.
- Single family residential land use comprises of 10,025 acres. These can be categorized into the following:
- Low density residential includes all lands where single family residences are located at a density of one dwelling unit per two acres or more. There are large lot single family development throughout the Township; generally created over time through meets-and-bounds parcel splits. The north and western portions of the Township are most notably characterized by development on large estate sized lots.
- Medium density residential includes all lands where single family residences are located at a

density of one dwelling unit per 30,000 square feet to two acres. These developments generally include subdivisions that have been developed since the Township enacted its first Zoning Ordinance in 1967 which required a 30,000 square foot minimum lot size for a majority of the Township. The 30,000 square foot lot area requirement was recently increased to one acre. This is currently the most extensively developed use of land in the Township.

- High density residential includes all lands where single family residences are located at a density of two to four dwelling units per acre. This area consists of older subdivisions that were platted prior to the 1967 Zoning Ordinance. Much of this area was originally developed as resort cottage communities that have been converted to permanent year-round homes.
- There are a few small multiple family developments in isolated areas around the Township. Multiple family developments comprise 39 acres.
- There is currently a Mobile Home Park located in the southeast corner of the Township. This development comprises 88 acres.
- Commercial includes all land and buildings where products, goods or services are sold. There are several commercial clusters located along M-36. The predominance of commercial activity is located on the north side of the AHamburg Village@ along M-36. Commercial uses comprise 268 acres.
- Industrial includes all lands and buildings devoted to manufacturing, processing, warehousing and related storage. Industrial uses are limited to locations around the AHamburg Village@ area. There is an industrial park at the eastern portion of the Township north of M-36. Industrial uses comprise 156 acres.
- Public and Quasi-Public includes all lands and buildings devoted to governmental facilities, schools, churches and cemeteries. Public facilities are generally located in the southern portion of the Township along M-36 and in the AHamburg Village@ area. These uses comprise 688 acres.
- The Brighton State Recreation lands area within the northern portion of the Township. State lands comprise 4,345 acres.
- Private Recreation and Preserved Open Space includes golf courses, private recreation clubs and open space areas that are part of a clustered residential development and are preserved through Planned Unit Development or Open Space Community regulations. Private recreation and open space lands comprise 770 acres.



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Map 1
Regional Location

Surrounding Counties
Hamburg Twp
Surrounding Municipalities
Lakes and Rivers
Interstates
US Highways
State Highways

Data Source: Michigan Geographic Framework, Michigan Center for Geographic Information,v5a.

0 1 2 3 4 5 Miles

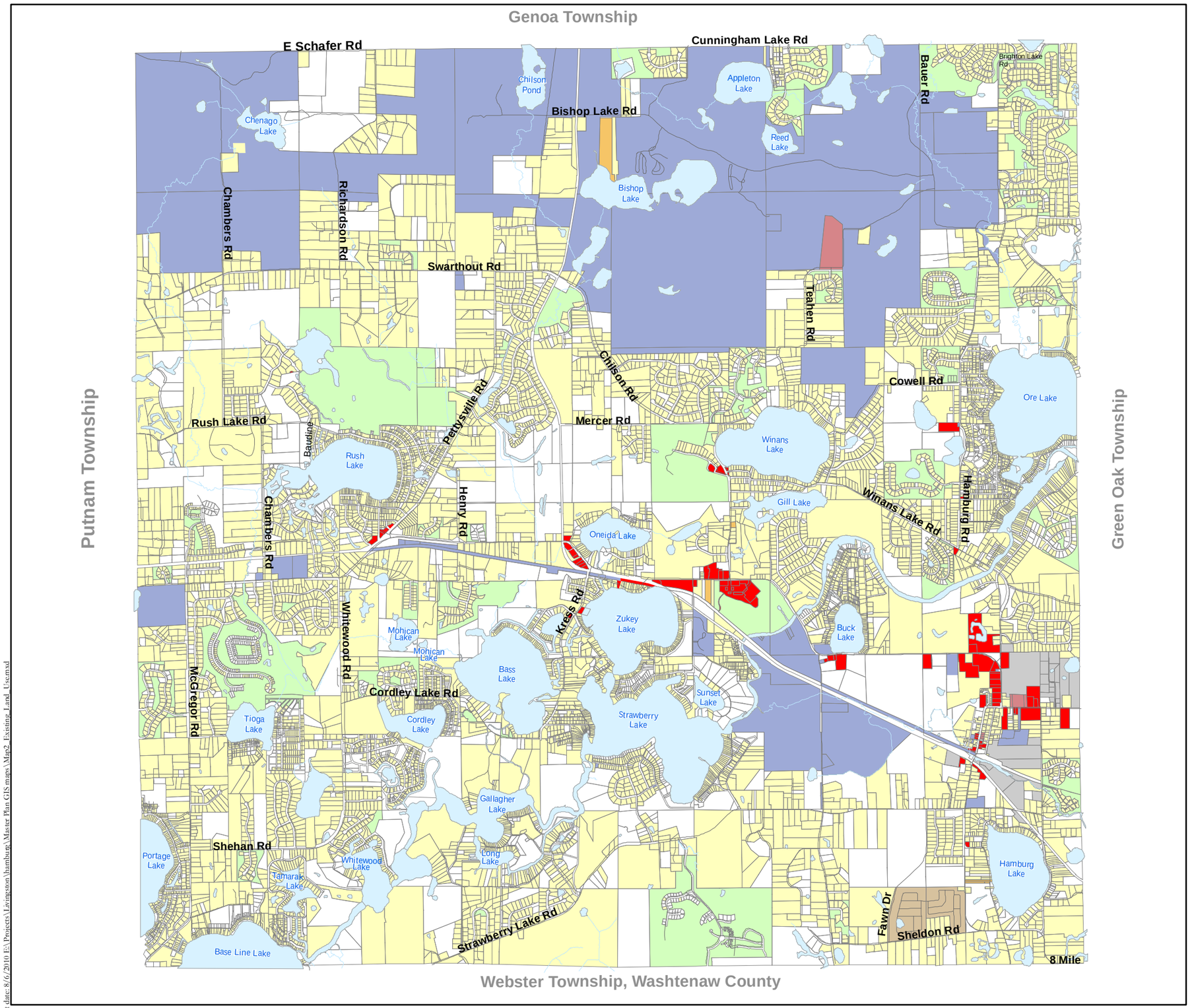
Hamburg Township
Livingston County, Michigan

McKenna Associates Incorporated

8/03/2010

Map 2
Existing Land Use

Hamburg Township,
Livingston County, Michigan



- Single Family Residential
- Multiple Family Residential
- Manufactured Housing Community
- Commercial
- Industrial
- Conserved Open Space
- Institutional
- Public
- Vacant
- Lake
- River or Stream

0 2,000 4,000 Feet

McKenna Associates Incorporated

Source: Hamburg Township, 2004

8/03/10

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Patterns

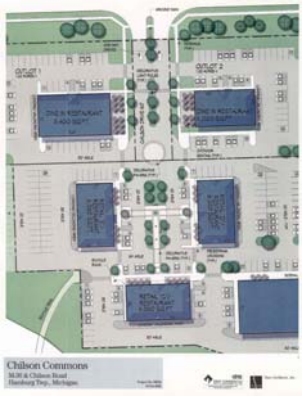
Land use patterns in existence today were largely established during the first thirty years of this century with the proliferation of cottage construction from Ore Lake to Portage and Baseline Lakes. The greatest concentrations of medium and high density residential uses are surrounding the lakes. Much of this development is located in subdivisions originally platted as recreational lots, thirty to forty feet wide. The conversion of seasonal cottages to year round residences has resulted in a more intensive use of land than was originally intended.

Since adopting of the Township Zoning Ordinance in 1967, low density residential subdivision activity has increased in the non-lake areas of the Township due to the lack of available lake front property and the desire of people to live on larger tracts of land. Further, more stringent health regulations have required larger lots to permit the use of on-site waste disposal.

The predominance of state-owned lands in the northern one-third of the Township has prevented the growth of residential development. The northern portion of the Township has a very distinct rural character. Most of the roads in this area are gravel and residential development is characterized by large rural estate lots. The State lands serve as a buffer between the expanding Brighton area and Hamburg.

Commercial uses are largely located in Hamburg Village and north of the Village on M-36. Smaller clusters of commercial activities can be found on M-36 near Buck Lake, Lakeland and at Pettysville Road. Industrial uses are predominantly confined to the area in close proximity to M-36 near Hamburg Village.

Development Trends



Present growth can be attributed to new developments such as Riverpark (67.1 acres), Haycreek (29 acres), Whispering Pines (37.26 acres), Mystic Ridge (259 acres), and Chilson Commons (13 acres). Chilson Commons is a commercial development located along M-36 and is the largest area commercial activity seen by the Township. Although the Township has approved these significant developments, there has been a decline in single family building permits each year. Annual single family building permits peaked in 1996 at 342, and have fallen to 108 as of November 2003.

Neighboring Land Use

Land use patterns and decisions in Hamburg Township and neighboring units of government have a degree of influence on one another. Land use in Township areas surrounding Hamburg is predominantly low density residential, recreational, agricultural, and vacant. The City of Brighton, bordering the northeast corner of Hamburg Township, represents the most urbanized neighbor.

Hamburg Township's relationship with its neighbors will be closely tied to land use activities along the

major growth corridors linking Hamburg Township with neighboring units. These corridors include M-36 west to Putnam Township, M-36 east to Green Oak Township, Brighton Road north to the City of Brighton and Chilson Road north to Genoa Township and the City of Howell. All units of government should carefully weigh the impact on their neighbors of land use decision within the major growth corridors.

Sanitary Sewer Service Area

Much of the historic development in Hamburg Township was around the chain-of-lakes. These areas were developed with resort cottages on small lots with individual septic drain fields. Over time, these areas have been converted to year-round homes. Areas surrounding the lakes have soil conditions that are not well suited for drain fields due to poor soil texture and a high water table. The combination of the natural soil characteristics and increased residential use of the lake areas has led to significant problems with septic tank systems. The septic tank leakage is affecting the quality of wells and the lakes.

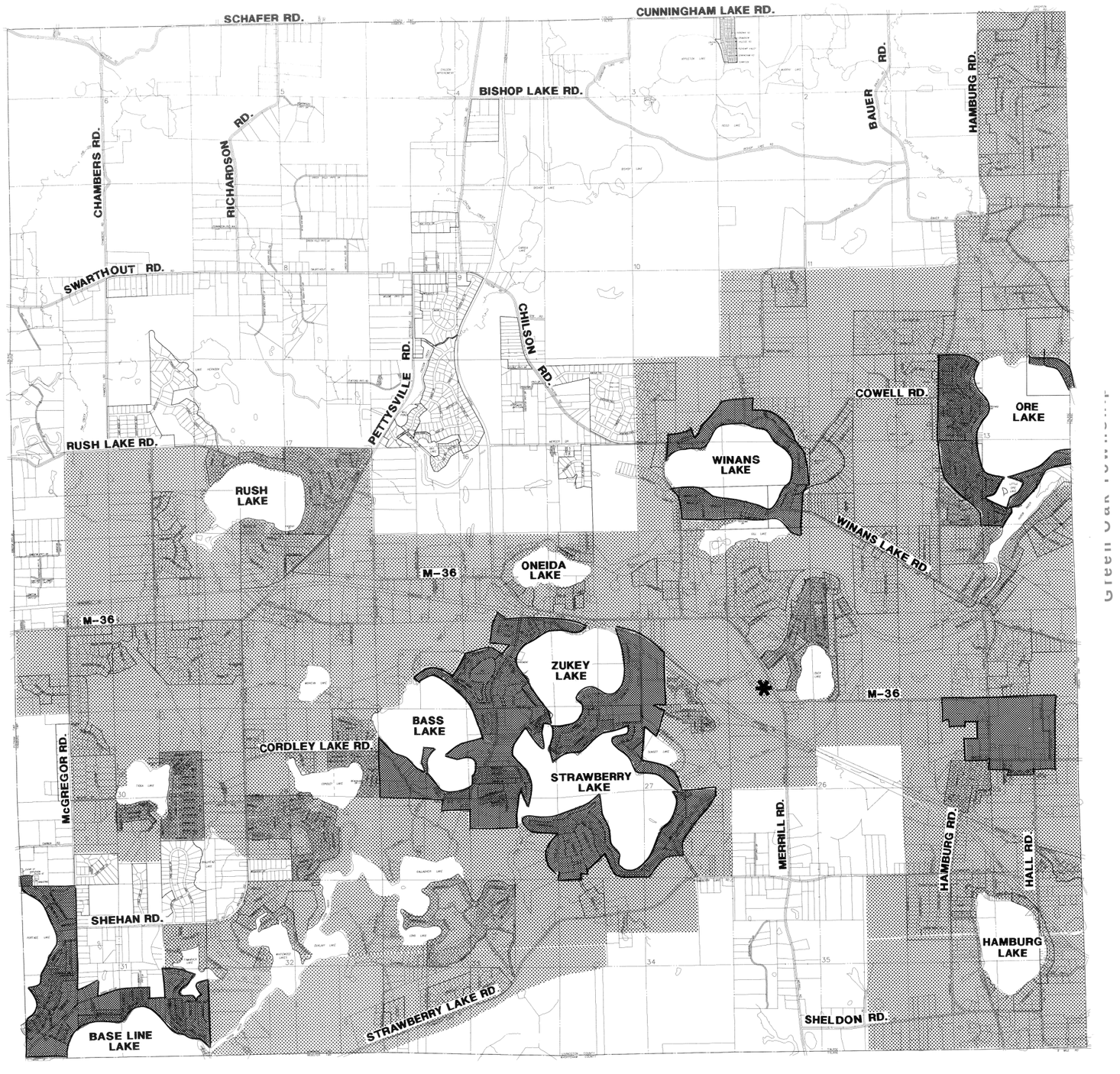
In response to these problems, Hamburg Township has provided a sanitary sewer system to serve the most intensely developed areas around the lakes. Currently, in conjunction with the Township's system, there is an agreement between Hamburg Township and the City of Brighton for treatment. The City of Brighton Sewage Treatment Plant is located in the northeast corner of Hamburg Township.

To accommodate the current and projected level of development, Hamburg Township prepared a Water and Sewer Master Plan. The plan indicated and increased service areas including the Village Center and the area around Rush Lake. Sanitary sewer services have also been expanded to serve most of the southern and eastern portions of the Township.

Public Water

The growth of Hamburg Township has led to the development of a public water supply system. Township residents and businesses used to rely on individual wells for water supply. The need has been greatest within the Hamburg Village area, because the Village is planned for much of the higher density development within the Township.

Genoa Township



Putnam Township

Green Oak Township

Webster Township, Washtenaw County

Map 3
Public Sanitary Sewer Service

Hamburg Township,
Livingston County, Michigan

EXISTING SANITARY SEWER SERVICE DISTRICTS

FUTURE SANITARY SEWER SERVICE DISTRICTS

* PUBLIC SANITARY SEWER SERVICE HAMBURG TOWNSHIP MASTER PLAN

BASE MAP SOURCE: Holland Engineering, Inc., 1995
SEWER DISTRICTS SOURCE: McNamee, Porter & Seeley, Inc. 1996

0 2,000 4,000 Feet

McKenna Associates Incorporated

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Environmental Conditions

Environmental Conditions

Hamburg Township is blessed with an abundance of natural resources including water features, sandy soils, woodlands, and rolling topography. These features make an important contribution to the quality of life in the Township. In terms of development, these features provide both constraints and opportunities. Thus the natural features have a significant influence on the future land use pattern for the Township, in conjunction with other factors such as existing land use, infrastructure, market factors, transportation, and community regulations

The natural environment is a critical element of the physical basis upon which the Township develops. The various components of the natural environment function, change and interact as part of an ecosystem. An ecosystem is a biological energy system made up of food chains along which energy is passed one group of organisms to another. Therefore a particular ecosystem is defined by its climate, geology, hydrology, soils, topography, and the presence of specific wildlife and vegetation within the environment. The importance is understanding the interaction between these components and that alteration to one element will inevitably effect all others. In Hamburg Township with the Huron River and associated riparian wetlands, natural ecosystems are going to be dominated by flooding and stream flow.

Quite often the attempt to protect this system imposes certain constraints on development dependant upon a community's distinctive ecosystem. Hamburg Township's ecosystem is unique in that it is primarily defined by the prevalence of hydrology. The existing hydrology has contributed to the presence of rolling topography, an abundance of various plant life and many types of fish and wildlife. Alterations to any of these features resulting from development need to be carefully considered to minimize impact and insure mitigation where necessary to maintain the natural balance. Not doing so will alter the system and possibly result in such things as increased erosion and sedimentation, decreased ground water recharge, and increased surface runoff. To ensure that community development is compatible with the natural features of the Township, all new development needs to consider maintaining the natural functions of the environment.

Environmental Conditions:

- Geology
- Topography
- Soils
- Drainage
- Groundwater
- Surface Water
- Wetlands
- Floodplains
- Woodlands
- Fish & Wildlife
- Endangered Plant & Animal Species
- Scenic Features
- Contamination Sites

In Hamburg Township, limitations on the type and extent of future development occur in certain areas that are unsuitable for septic systems, unstable for building foundations, poorly drained, and susceptible to flooding. While these factors place restrictions upon development, other natural resource factors present opportunities for development. The scenic and recreational attractiveness of the lakes, hills and woodlands offer a unique residential setting. It is helpful to examine these natural resource factors in

detail to determine both the opportunities and constraints. The examination involves an inventory of resource factors, and a determination of the capability of the natural resource base to support future development.

The importance of natural features in Hamburg Township is seen with the Hamburg Environmental Review Board (HERB). The HERB is an advisory board that makes recommendations to the Township Board and Planning Commission on environmental issues related to official duties of the Township, such as site plan reviews. Most development sites are visited by the HERB and recommendations relative to environmental conditions are made to the Planning Commission on site plans, as requested. The HERB also works with the Township Board and Planning Commission to draft ordinances for the protection of the Township's natural resources and environmental conditions. Most recently, the HERB drafted the Township Storm Drainage ordinance and assisted the Planning Commission in drafting zoning standards for protection of state regulated wetlands.

The following is a brief overview of some of the major natural features that are prevalent throughout the Township. As development occurs, the following features should be considered in addition to other site specific conditions that may be pertinent to each individual location.

Geology

The soils and geology in the township are characteristic of glacially formed landscapes consisting mainly of moraines (glacially deposited sands and gravel) and till plains. The underlying bedrock is a gray shale known as the Coldwater Formation. The surface geology of the Township was formed 10,000 to 12,000 years ago when glacial activity deposited rock, soil, and large blocks of ice. The glacial drift is a very thick layer of soil material that has been deposited by the advancement and retreat of the Wisconsin glacier during the last ice age. The ice blocks embedded within the soil eventually melted and left depressions which are today's lakes. These lakes were connected by an outwash channel which is now the Huron River and chain of lakes system.

Since the last ice age, the soils on Hamburg Township have formed as a result of a number of soil forming factors. These include water drainage, wind, slopes, climate, biological activity, and human activity.

Topography / Slope

The topographic features of the area and the relative elevations of the Huron River, chain of lakes, and the upland moraines to the north and south are depicted in Figure 1, which illustrates a typical cross-section through the Township. Most of the residential development within the Township is located within the lower elevations. There is limited development at the higher elevations to the north and to the south of the river corridor. These uplands have become an attraction for development because of the unique contrast to the flat terrain of Southeastern Michigan.

Slope is an important development consideration associated with topographic features. Areas of extreme slope have been included in the development suitability map so that opportunities and constraints for potential development can be identified. There are three common slope problems:

- Mechanical cut and fill where slopes are reshaped, and in some locations steepened, results in a significant change in the natural functions of the hillside.
- Deforestation from past agricultural operations, and now by development, cause both a weakening of the slope and increased surface runoff rates.
- Improper location of structures on slopes causing changes to vegetation, slopes, and drainage patterns.

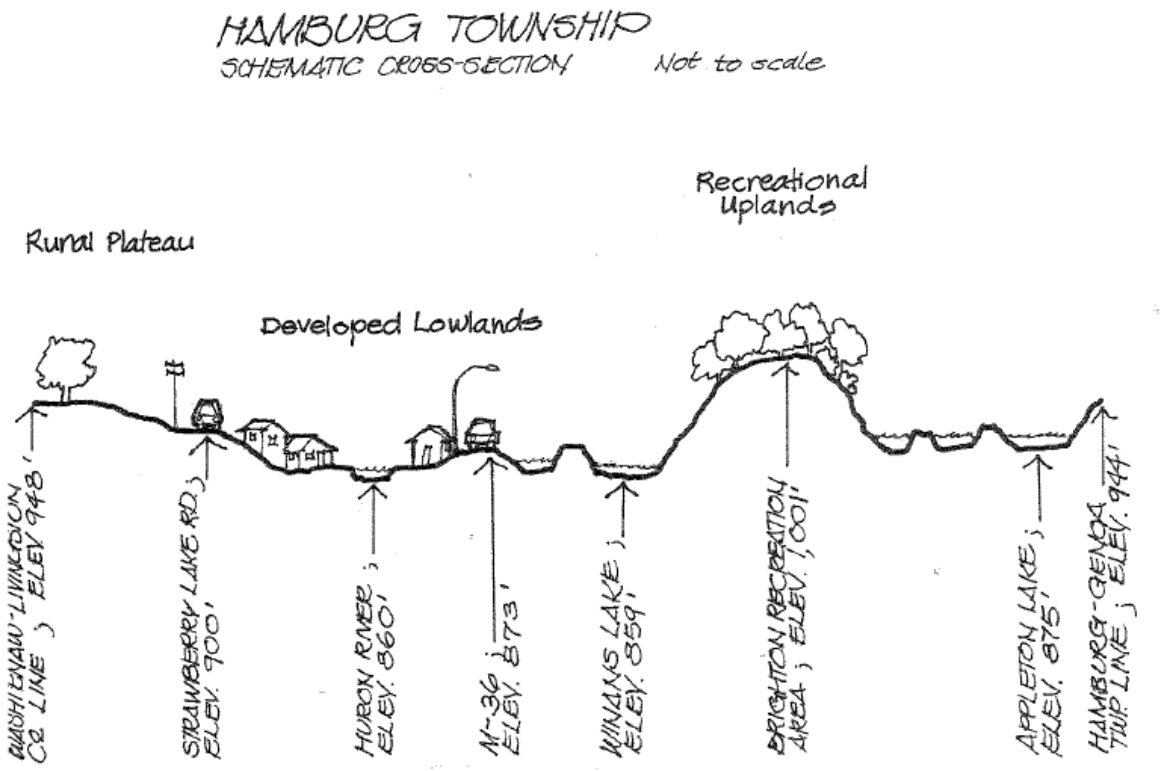


Figure 1

There are two major areas of extreme slope. These are the areas north of Winans Lake and the area west of the Chilson Impoundment. The remainder of the Township is generally flat to gently rolling with isolated areas of severe or moderate slope. Steep slopes will require sensitive site planning prior to development. Care should be taken to insure that extensive grading is minimized and to insure that natural features such as vegetation, and top soil are protected.

Above the floodplains and wetlands that line the Huron River and the other drainage ways of the Township, there are steep banks or bluffs which separate the lowland and the upland. These will generally have steep slopes and be heavily vegetated. Disruption of the vegetative cover on these bluff areas may cause significant erosion problems and effect stream ecology.

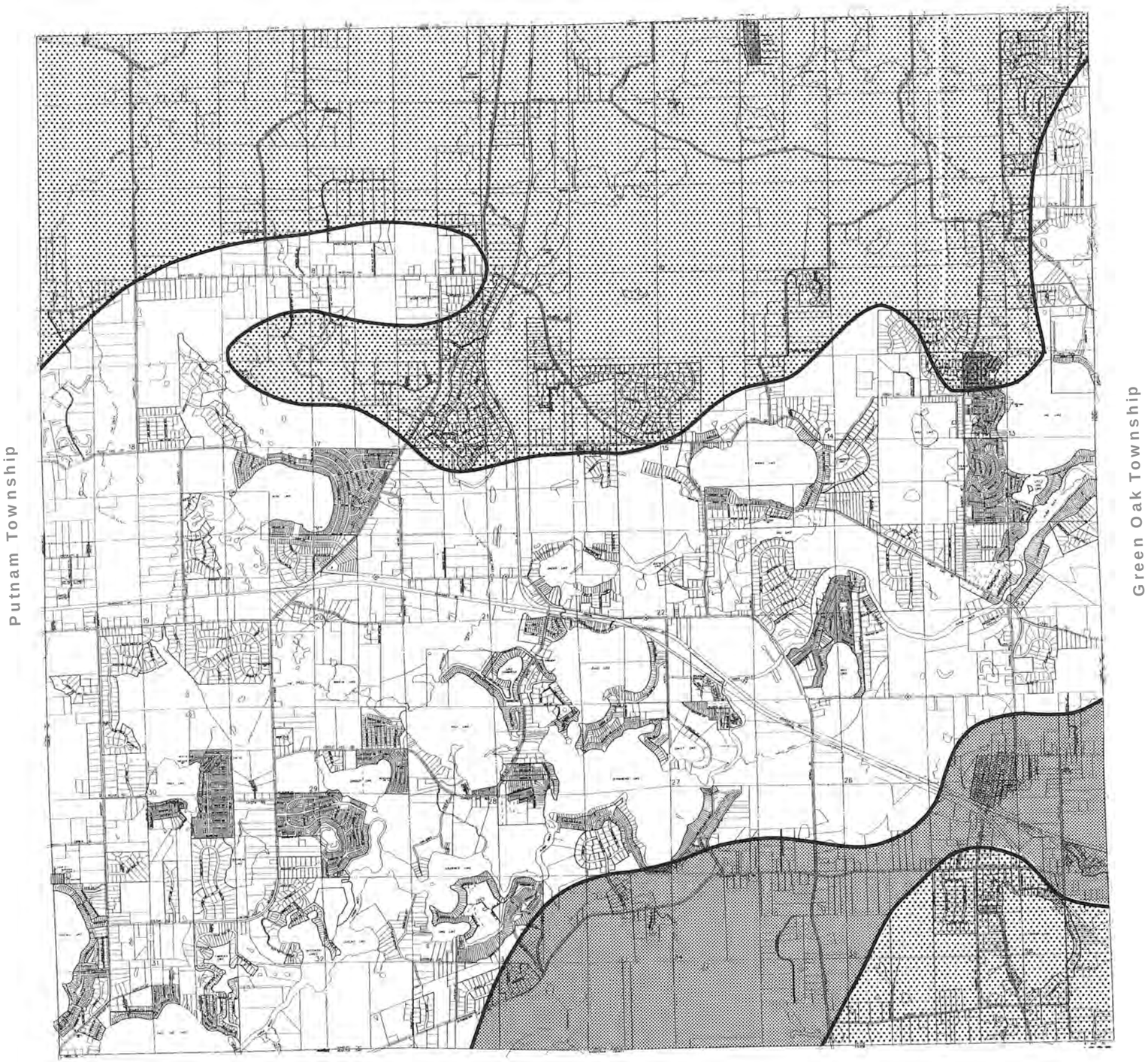
Soils

In order to minimize construction costs and risks to the environment, it is desirable for future development to be constructed upon sites with suitable soils. Poor soils present problems such as poor foundation stability and septic field failure. The three major soil characteristics considered in the analysis of soil conditions are drainage, foundation stability, and septic suitability characteristics. Each of these factors have been inventoried and mapped by the Livingston County Soil Survey, prepared by the Soil Conservation Service. Map 4 illustrates the generalized soils identified by the soil conservation service in Hamburg Township.

Drainage: Soil drainage characteristics are examined because of the potentially high development costs, maintenance costs and sanitary problems encountered on poorly drained soils. These costs and problems are often associated with septic field failures, flooded basements, and susceptibility to frost action. Dense mucks, silts, and clays with high water tables are the soils most often associated with drainage problems.

In general, poorly drained lands lie within the floodplains of the Huron River and chain of lakes. Other areas include lands associated with Hay, Chilson, South Ore and Horseshoe Creeks and the numerous small ponds or depressions throughout the Township. Moderately drained and well drained soils consist of loamy sands which allow the passage of water from surface layers to lower soil depths. These areas are sufficiently above the groundwater table to assist drainage and provide a suitable foundation for construction.

Foundation Stability: Shifting foundations, cracked walls, and cracked pavement and roadways are some of the potential problems associated with foundation instability. These problems often result in increased development and maintenance costs or, in extreme cases, structural failure.



Map 4
General Soil Survey

Hamburg Township,
Livingston County, Michigan

FOX-BOYER-OSHTEMO ASSOCIATION: STEEP OR HILLY, WELL-DRAINED, MODERATELY COARSE TEXTURED AND COURSE TEXTURED SOILS ON MORAINES

FOX-BOYER-OSHTEMO-HOUGHTON ASSOCIATION: NEARLY LEVEL TO STEEP, WELLDRAINED, MODERATELY COARSE TEXTURED AND COARSE TEXTURED SOILS AND VERY POORLY DRAINED ORGAINIC SOILS ON OUTWASH PLAINS

MIAMI-CONOVER ASSOCIATION: NEARLY LEVEL TO STRONGLY SLOPING, WELLDRAINED AND SOMEWHAT POORLY DRAINED, MEDIUM-TEXTURED SOILS ON TILL PLAINS AND MORAINES

BASE MAP SOURCE: Holland Engineering, Inc., 1995
SEWER DISTRICTS SOURCE: Livingston County Soil Survey, 1974

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Generally, well-drained, coarse-textured soils provide the most suitable foundations. Soils with good or fair stability are located in the upland sections of the Township. Poor soil stability occurs with soils containing large concentrations of organic material, such as muck, silt and clay. The areas of poor soil stability are concentrated in the low lying and poorly drained areas adjacent to lakes and creeks. In those low lying areas the presence of water in and near the surface contributes to frost heave, compression, shrinkage and swelling.

Septic Suitability: Because many of the residential dwellings within Hamburg Township are served by individual septic systems, the location of septic systems on proper soils is extremely important. Inspection and approval for use of a septic system is Livingston County's jurisdiction and ultimately their responsibility to maintain high standards of review to prevent system complications or failures. Septic field failures are often the result of poor soil permeability, high water table or excessive slope. Soils such as compacted clays and silts will not allow wastewater to percolate through the filtering layers of soil. A high water table prohibits adequate filtering thereby allowing the sewage effluent to pollute the groundwater supplies and contaminate residential wells, lakes, and streams. Finally, the County must also consider that excessive slope does not provide adequate time for percolation. Instead wastewater will drain to the low end of the septic field and the filtering action of the entire septic field will not be utilized.

Areas of slight septic suitability are scattered throughout the Township, but are predominantly in upland areas. Important areas of suitable soils are located near the Village of Hamburg, southeast of Winans Lake and along the western portions of M-36.

Soil Series: The three most abundant soil series within Hamburg Township, located in the upland areas are Boyer-Oshtemo, Fox, and Miami. Many of the low-lying, wet areas along lakes and rivers contain alluvial materials such as Carlisle and Houghton mucks. Other soils found within the Township are the Bronson, Gilford, and Oakville.

While the Boyer series is found throughout the Township, it is most abundant in the southern portion near the lakes. The Fox series is found throughout the Township, but is most abundant in the western portion of the Township. The Boyer series are well drained loamy sands and the Fox series are well drained sandy loams. Both are found at slopes ranging from 0-25 percent. Both soil series have moderate permeability and are good for a variety of uses. The major limitation of these soils for construction are areas were the slope exceeds 12 percent. For instance, removal of the vegetation which cover these steep hillsides may cause severe erosion problems. These soils do have some limitations for septic fields, as their sandy texture is a poor filter.

The Miami series is predominant throughout the eastern portion of the Township around Old Hamburg. These soils are well drained clay loams found at slopes ranging from 0 to 25 percent. The Miami series have moderate permeability and have only slight or moderate limitations for most uses. The major limitation of these soils for construction is where their slope exceeds 12 percent. Similar to the Boyer and Fox series, areas of steep slope should be protected from disturbance to avoid severe erosion problems. Because these soils percolate slowly, they do have some significant limitations for septic fields.

Carlisle mucks and Houghton mucks are both found along the drainage ways of the Township, particularly in low lying areas adjacent to the Huron River and the lakes. These soils are nearly level, very poorly drained soils. They contain high levels of organic matter which are easily compressible under the weight of construction and decay when dried out. These mucks can be used for agriculture but have severe limitations due to wetness and low strength for any other uses. These soils are generally associated with wetlands and floodplains.

Other soils encountered in the Township are the Bronson, Gilford, and Oakville series. Bronson is a level, poorly drained loamy sand. Gilford is a very poorly drained sandy loam found in low areas. Both these soils are not well suited for construction due to poor drainage and wetness. Oakville is a well drained fine sandy loam. These soils are well suited for construction.

Water Resources

Groundwater and surface water deposits are a vital resource within Hamburg Township. Because there is no central water distribution system, residents must rely upon individual wells for their water supply. Lakes and streams of the Township are also an important resource for their scenic and recreational value. These water resources should continue to be protected and managed to insure their quality and availability for future use.

Drainage: Upland areas drain to the low lying wetlands, lakes and streams that pass through the Township. Soil permeability of most upland areas are moderate to moderately rapid. As these areas become developed, the amount of water infiltrating the surface will decrease and the surface runoff will increase. This will be caused by clearing of natural vegetation, addition of impervious material to the land (buildings and pavement), and installation of storm drains. These will have the cumulative effect of increasing the peak discharge in the area rivers and streams while reducing the amount of water infiltrating to ground water. Minimization of these impacts may involve protecting native vegetation, on-site storm water retention, and clustered development.

Groundwater: Important factors in the evaluation of groundwater are the quantity and quality of the water. Quantity or yield standards for a typical residential or commercial use range from 7 gallons per minute to 20 gallons per minute. The geologic and hydrologic features of the Township provide the residents with an average of 15 gallons per minute. This figure will vary upon location within the Township. More water appears to be available within the outwash channels of the central lowlands than the upland moraines. However, water is generally available in sufficient quantity and will not likely be a factor in limiting growth.

Water quality is a more important factor than water availability. Water hardness, iron content, salinity and septic field contamination are hazards encountered in Hamburg Township. While hardness and salinity are minor problems, iron content is common throughout the Township. A more important concern is septic field contamination of well water supply. Because of the high water table and lack of protective clay coverings over groundwater supplies, contamination of domestic water supply is a possibility. According to Livingston County Health Department records, there are numerous wells that contain elevated levels of nitrates within the Township with levels exceeding 5 mg/1 PPM. These are

generally older wells that draw water from the shallow aquifers. Current Livingston County Health Department standards require deeper wells that are less susceptible to contamination.

Potential sources of groundwater contamination can result from all of the various land uses within Hamburg Township. The level of threat of groundwater contamination will vary based upon 1) the susceptibility of groundwater to contamination due to geologic features, 2) contamination loading rates based upon land use and hazardous materials management, and 3) the amount and type of hazardous materials utilized within the Township.

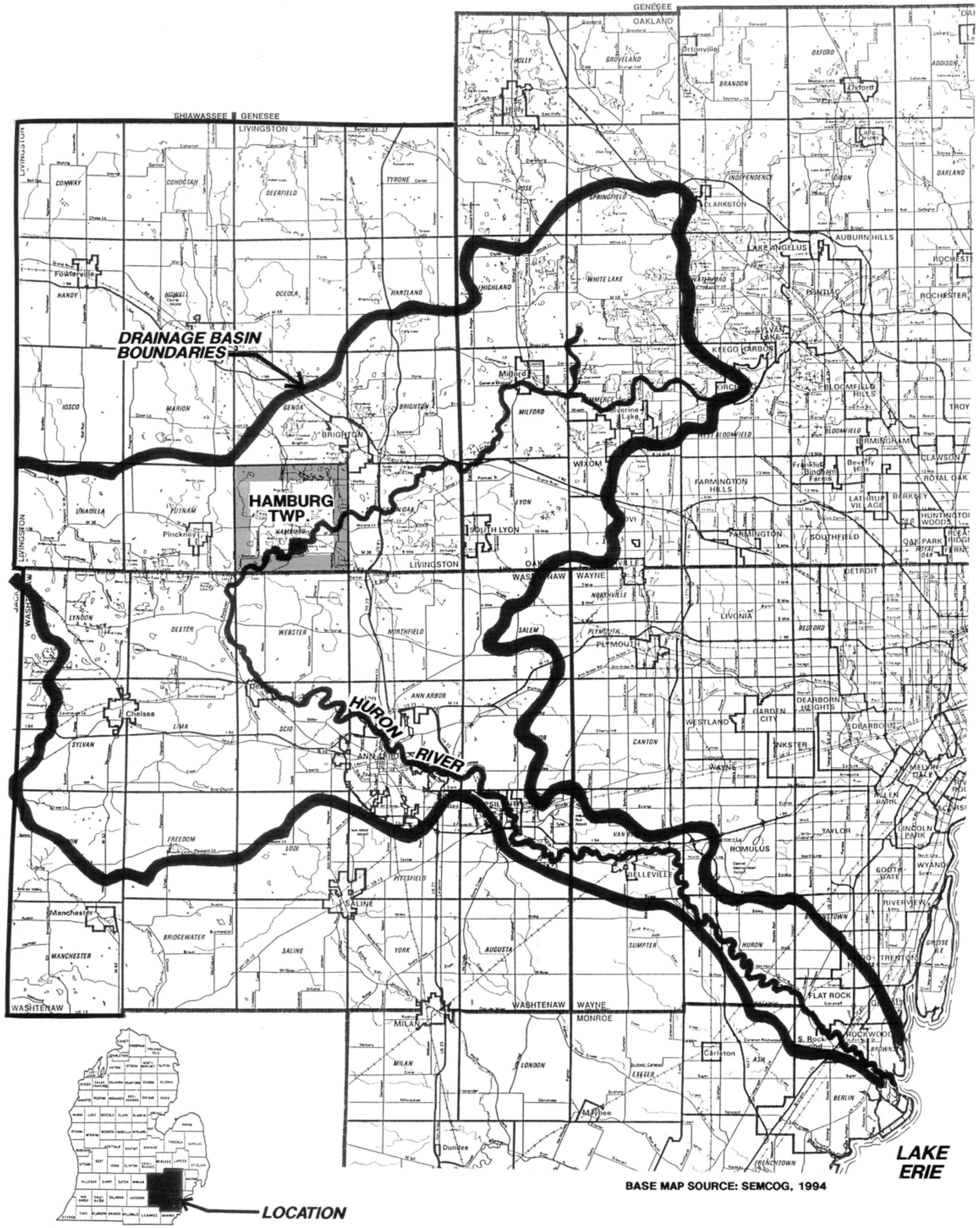
Major sources of groundwater contamination are as follows:

- Buried wastes in landfills discharges liquids referred to as leachate which can enter groundwater.
- Agricultural fertilizers and pesticides often infiltrate the soil surface and enter groundwater.
- Urban stormwater run off from buildings, streets and parking lots contains contaminants that enter waterways and infiltrates the soil.
- Septic drainfields release sewage effluent into the soil through seepage beds.
- Spills and leakage of hazardous materials such as underground storage tanks and spills of hazardous materials will infiltrate the soil surface and enter groundwater if not properly contained.

Surface Water: Connected by the Huron River are the Chain of Lakes which pass through the Township and are among the most valuable natural resources of the community. In combination, the river, lakes, and rolling hills create picturesque views. The numerous lakes and Huron River provide a number of recreational opportunities such as boating, fishing, and swimming. The quality of these water features enhance the value of adjacent property for residential opportunities. Furthermore, vital functions are provided to the region for drainage and water supply, fish and wildlife habitat, industry and recreation by the Huron River. Quality lakes also enhance the value of adjacent property for residential opportunities.

The Huron River passes diagonally through the Township from the northeast to the southwest. This valuable regional resource, which has its headwaters in Oakland County, flows southwesterly through the Hamburg Township, towards Ann Arbor, then discharges to Lake Erie. Map 4 shows Hamburg Township in relation to the regional Huron River drainage basin. A vast number of communities are linked by this river in Oakland, Livingston, Washtenaw, Wayne and Monroe Counties. This river provides vital functions to the region for drainage and water supply, fish and wildlife habitat, industry and recreation. Development of the Township should maintain or enhance this resource.

The inland lakes and Huron River corridor are unique because of their residential attractiveness and scenic amenities. Because of these attributes and the desire of residents for access to these water resources, the relationship between man and his environment becomes extremely important. Water pollution is a major concern which jeopardizes the residential and recreational setting.



Map 5
Huron River Regional Drainage Basin

Hamburg Township,
Livingston County, Michigan

BASE MAP SOURCE: SEMCOG, 1994

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In 1977 the Southeast Michigan Council of Governments conducted an extensive survey of water quality conditions of inland lakes. Nine Hamburg Township lakes were sampled and, of these lakes, Rush, Winans and Bass Lakes were found to have relatively good water quality. Zukey, Bishop and Baseline were considered moderate to poor while Ore and Strawberry Lakes were considered very poor.

An intensive biological survey of the Huron River was conducted by the Michigan Department of Environmental Quality in the summer of 1977. The purpose of the study was to characterize water quality conditions by analyzing the biological communities present. Findings of the study indicated that water quality was good between Kent and Strawberry Lakes and excellent downstream of Baseline Lake.

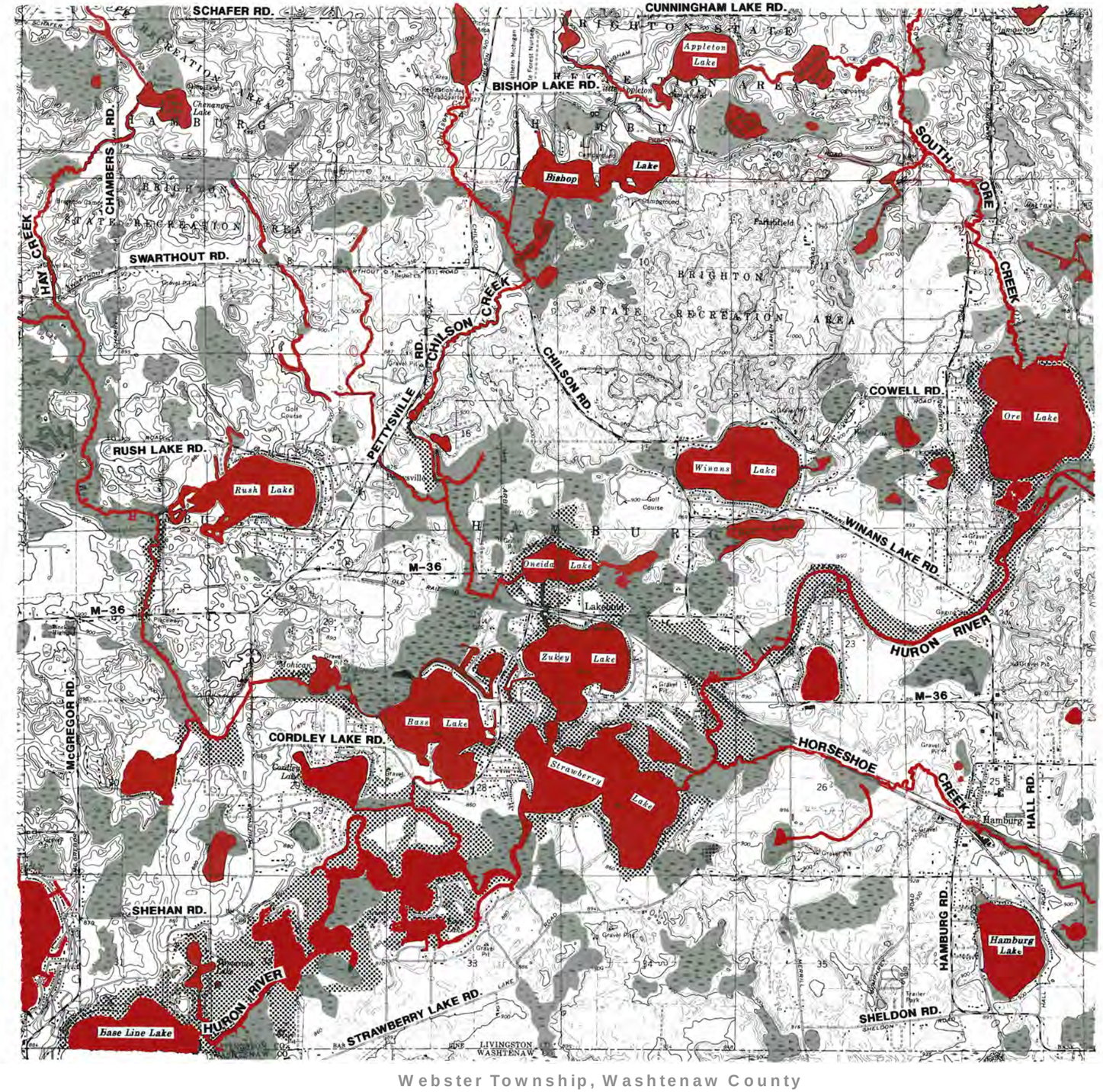
The Huron River area in Hamburg Township has been designated as a "country-scenic" river under the Michigan Natural River Act 1970. The adoption of a Natural River District by the Township in 1978 provides for the management of the river corridor which will help protect water quality and aesthetic appeal in the future. Further, proper land management can improve the current water quality conditions of Hamburg Township. Sources of pollution can be controlled through drainage and runoff controls, septic field corrections, proper treatment of sanitary wastes, land use planning, limitation of fertilizer applications, and action by lake associations or residents.

In addition to the Huron River, there are many streams and creeks that contribute to the river, as well as interconnect the many lakes. Map 5 illustrates Hamburg Township's surface hydrology. There are three major streams in the Township that flow from the north down to the Huron River. These major creeks are the Hay, Chilson, South Ore and Horseshoe Creeks. Associated with the creeks is a corridor of adjacent wetlands. The creeks and wetlands are important for surface drainage, groundwater recharge and wildlife habitat. Alteration of the creeks and wetlands can contribute to flooding, poor water quality, insufficient water supply and loss of valuable wildlife habitat. Protecting the quality of the many lakes and streams of the Township, while providing the opportunity for the community to grow, will require land use planning and engineering that considers key components of these water features.

Wetlands: Wetlands play a very important part in the hydrological and ecological systems. In addition to providing fish and wildlife habitat, wetlands also maintain and stabilize groundwater supplies, reduce the dangers of flooding, and improve water quality.

Any wetlands which are greater than five acres in size are regulated by the Michigan Department of Environmental Quality (MDEQ) through the Goemaere-Anderson Wetland Protection Act, Public Act 203, as amended. Any activity which requires that these regulated wetlands be filled or drained requires a permit from the MDEQ. Permits will generally not be granted unless the issuance is in the public interest and necessary to realize the benefits derived from the activity. If a wetland fill permit is granted, then mitigation should be required such as creating new wetlands within the same drainage way or enhancement of existing wetlands. In addition to this, Hamburg Township Zoning Ordinance contains wetland standards that provide local reinforcement of protection of State regulated wetlands.

Genoa Township



Putnam Township

Green Oak Township

Webster Township, Washtenaw County

Map 6
Existing Surface Hydrologic Conditions

Hamburg Township,
Livingston County, Michigan

LAKES

RIVERS AND STREAMS

MAJOR WETLANDS

100 YEAR FLOODPLAIN

Note: This map illustrates the general location of major wetlands, floodplains, and drainaageways and is intended to serve as general guide for community-wide planning. This map does not create any legally enforceable presumptions regarding whether property that is or is not included on this map is or is not in fact a regulated wetland or floodplain. There may be wetland or floodplain areas not shown on this map that are subject to regulation. This map shall not be considered a substitute for on-site field inspection. The applicant for a use approval is responsible for identifying boundaries of protected wetlands and drainageways located on the project site. Field investigations to delineaate the precise boundaries of wetlands on a site are the responsibility of the property owner. Please consult the Federal Emergency Management Agency, Flood Insurance Rate Map for actual floodplain elevations.

BASE MAP SOURCES: United States Geological Service, 1974
WETLANDS SOURCES: Michigan Resource Information Data, 19990
Livingston County Planning Department, 1995
FLOODPLAIN SOURCE: Federal Emergency Management Agency,
Flood Insurance Rate Map, 1986

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Major wetland complexes associated with the lakes, streams and floodplains are found throughout Hamburg Township. See Map 5. The largest wetlands are located adjacent to the Huron River and chain of lakes. The areas north of Bass Lake and near Chilson Creek comprise some of the larger wetlands within the Township. Other areas are found along Hay Creek, South Ore Creek, and the numerous kettle depressions scattered throughout the Township.

There are three types of wetlands predominate within the boundaries of Hamburg Township: (1) emergent wetlands with rooted cattails, bulrushes, and sedge grasses; (2) Scrub/shrub wetlands; and (3) forested wetlands with an overstory of trees and an understory of shrubs. As water levels rise and fall from year to year, some ecological succession may be occurring as the wetlands shift from emergent marsh to forested wetlands. All types of wetlands are interrelated with each other, providing numerous benefits to the community as a whole.

These wetlands are transitional areas between the aquatic ecosystems and the surrounding upland areas. They are low areas which are intermittently covered with shallow water and underlined by saturated soils. Vegetation which is adapted to wet soil conditions, fluctuation in water levels and periodic flooding can be found in wetlands. Wetlands are interlinked with the hydrologic system and because of this, these wetland systems are vital to the environmental quality of Hamburg Township.

Future development in areas surrounding these wetlands could significantly impact wetland resources. Therefore, developers and community leaders should evaluate viable alternatives to avoid the impact. This is best done by initially considering wetland resources as constraints to development. The relative weight of these constraints must also account for other environmental and socio-economic constraints. Minimization of impacts to these resources should also take into account the cost of avoidance and the property rights of the individual. If impact is unavoidable, then mitigation should include an analysis of retaining or enhancing the wetland values to be lost.

Wetlands serve a variety of important functions which not only benefit the natural environment, but also the community. Some of the primary values which wetlands contribute are as follows:

- Wetlands serve to mitigate flooding by detaining surface runoff.
- Wetlands control soil erosion and sedimentation loading in rivers and lakes.
- Wetlands are often interlinked with groundwater.
- Wetlands improve water quality which is degradated by such things as:
    - nutrients and chemicals from fertilizers and pesticides used in agriculture and landscaping/lawn care;
    - polluted urban run off from automobile /transportation/parking facilities, industrial and other commercial activities;
    - treated effluent from waste water treatment facilities;
    - erosion and sedimentation resulting from agricultural and construction activities.
- Wetlands are highly productive ecosystems in terms of wildlife habitat and vegetation.
- Wetlands also serve a variety of aesthetic and recreational functions.

Wetland areas are also very valuable as natural buffers between residential and commercial land uses. They also contribute significantly to the aesthetic character of the community. Many wetlands are located in low areas adjacent to the area's many lakes and rivers. Since these wetlands are undevelopable, the open areas should remain natural. These open areas will help maintain picturesque views of the lakes. Wetland regulation has prevented recent development of many major wetland complexes within the Township. By incorporating wetlands as part of the future development of the community, they will continue to maintain open and green space as well as contribute to a more rural setting.

Floodplains: A flood plain is the land area adjacent to a watercourse that is subject to flooding. The designation of flood plains and the restriction of their development is a measure designed to protect life, health and property. Federal, state and local laws regulate encroachment, dredging and filling within flood plain areas. Flood plain areas within the Township are shown on Map 5.

Floodplains associated with the Huron River and the drainage courses which cross Hamburg Township are vital to the ecosystem of these low lying areas. Periodic flooding of these drainage ways is critical to the types of vegetation and animal species which live here. Floodplains also contain water during periods of high stream levels. Any alteration to the physical size of the floodplain will disrupt the drainage flow during high water periods and potentially cause increased flooding elsewhere.

Natural floodplains perform several important hydrological, geological, ecological, and environmental functions:

Important hydrologic functions include:

- flood conveyance
- storage of floodwater
- reduction of peak flow through storage and friction
- groundwater recharge

Important geologic functions include:

- storage of sediment carried along the main stream
- slowing the velocity of floodwater there by reducing erosion of the channel and floodplain
- storage of sediments from overland erosion

Important ecologic functions include:

- support of riparian vegetation
- support of wildlife habitat
- support of environmental corridors which foster
- movement of animal and plant species
- support of habitat for migratory birds

Important environmental functions performed by floodplains are:

- filtration of storm water through vegetation to remove sediment
- absorption of excess nutrients from water into soil and plants
- transportation and deposition of nutrients, and plant materials
- biological treatment of other pollutants

Woodlands

A significant portion of the total land area of the Township is wooded. Much of this area is adjacent to the inland lakes or wetlands. Water tolerant species such as ash, silver maple, cottonwood, tamarack, willow, and sycamore are typically found. Where natural vegetation meets the water's edge, areas of unique scenic resources and wildlife habitat are found. Future development should be planned in a manner protecting unique woodlands.

Hamburg Township trees and woodlands substantially contribute to the economic and psychological well-being of Township residents. The abundant woodlands and trees help create the peaceful, rural atmosphere that makes Hamburg Township a very special place to live. Trees provide a visual barrier between individual properties and neighboring properties, an essential factor for preserving the rural atmosphere and property values.

Woodlands provide the following community benefits:

- Influence on micro-climate: Woodlands play an important role in moderating ground-level temperatures. Tree canopies buffer the ground surface from the sun's heat and wind. Temperature extremes during winter months can also be moderated with the help of trees.
- Reduction in air pollution: Woodlands absorb carbon dioxide and return oxygen to the air. Tree leaves filter pollutants from the air, removing ozone, chlorine, hydrogen fluoride, sulfur dioxide, and other pollutants. Large and dense stands of trees serve as a noise buffer as well.
- Reduction in soil erosion: Woodlands and other vegetation stabilize soils and help prevent soil erosion. The vegetation absorbs the energy of falling rain, and the web of roots of all types help hold soil particles in place. Tree leaves reduce the impact of raindrops on the soil surface and give soil a chance to absorb water. Fallen leaves minimize the loss of soil moisture, help prevent erosion, and enrich the soil to support later plant growth. Wooded wetlands provide the additional benefit of trapping and holding stormwater runoff. Dense vegetation can help slow flood surges and flows.
- Wildlife habitat: Woodlands provide essential shelter and food for deer, raccoon, rabbits, pheasants, and other birds and animals. The opportunity to observe wildlife in a natural setting has educational benefits for Township residents.

One of the valuable resources which contribute to the Townships natural character is the woodlands. There is a significant amount of mature vegetation along many of the road corridors that pass through the Township. Woodlands located near the roadway contribute to a natural/rural atmosphere in a number of ways. The impact of vegetation on the motorist will be greater because of the close proximity to the roadway. A greater mass of vegetation will be within the forward view of the motorist. Other features such as buildings will have a less dominant impact on the streetscape because they fall behind the vegetative foreground. Taller trees will provide a sense of enclosure, providing a very define space bounded by vegetation. There is also a significant amount of vegetation along most lakes and streams throughout the area.

Fish and Wildlife

The continued existence of fish and wildlife depends upon the maintenance of adequate habitat. While some species can adopt to the pressures of urbanization, others cannot live in close proximity to humans. Fish and wildlife habitat are areas which provide food, cover, and corridors for movement. For example, the wetlands in Hamburg Township are essential as habitat and as a food source for the abundant fishery of the Huron River and the various lakes of the Township. As wetland vegetation dies back each season, it breaks down into particles called detritus which is eaten by insects as well as birds and small mammals. Insects, in turn, are eaten by the fish. The shallow, sheltered wetlands connected with the Huron River and the various lakes of the Township also provide protected spawning and nursery areas for fish.

It is important to provide areas of sufficient size to be useful to wildlife through either protection of existing habitat or creating new habitat. Reasonably continuous corridors must be provided for adequate movement of wildlife and plant seeds between isolated areas. Development utilizing the Open Space Community option should preserve or enhance fish and wildlife habitat.

The inland lakes are especially good for fishing. Bass, pike, and bluegill are the primary species, while an occasional walleye is caught in the Huron River.

Wetlands adjacent to lakes are used as spawning areas for bass and pike. Populations of Canadian Geese, ducks, songbirds, muskrat, mink, and raccoon are also dependent upon these wetlands. Fox, squirrel, woodchuck, rabbit and deer are the predominant mammals and are actively hunted within State lands in the Brighton State Recreation Area and other private lands.

Natural Features

The Michigan Natural Features Inventory is maintained by the Michigan Department of Natural Resources as a service to citizens and local officials. Plants and animals which are (or are potentially) threatened or endangered are listed on the inventories. The inventory is not a definitive statement about the presence, absence or condition of environmental features, since many of the sites listed have not been completely surveyed. Unfortunately, some features present in the past many have already been destroyed by human factors and development.

Plant and animal species that are endangered, threatened or of special concern in Hamburg Township lands and waters are noted on the following table by section number. If developments are proposed on or near these areas the presence and importance of the plant or animal should be reviewed. For extremely rare or endangered species, a permit may be needed from the Michigan Department of Natural Resources.

Table 10: Michigan Natural Features Inventory

Section	Scientific Name	Common name	State Status	Federal Status
2	Sistrurus catenatus catenatus	Massasaauga	Sp. Concern	Concern
11	Celtis Tenuifolia	Dwarf hackberry	Sp. Concern	Concern
13	Lampsilis fasciola	Wavy-rayed lamp-mussel	Threatened	-
	Sistrurus catenatus	Massasauga	Sp. Concern	Concern
20	Eleocharis equisetoides	Horsetail spike-rush	Sp. Concern	-
22	Justicia americana	Water-willow	Threatened	-
24	Ammocrypta pellucida	Eastern sand darter	Threatened	Concern
25	Muhlenbergia richardsonis	Mat muhly	Threatened	-
	Sporobolus heterolepis	Prairie dropseed	Threatened	-
26	Clemmys guttata	Spotted turtle	Sp. Concern	-
28	Acris crepitans blanchardi	Blanchard's cricket frog	Sp. Concern	-
	Ammocrypta pellucida	Eastern sand darter	Threatened	-
	Draba reptans	Creeping whitlow-grass	Threatened	-
	Lampsilis fasciola	Wavy-rayed lamp-mussel	Threatened	-
	Sistrurus catenatus catenatus	Massasauga	Sp. Concern	-
31	Clemmys guttata	Spotted turtle	Sp. Concern	-
	Dysnomia triquetra	Snuffbox	Endangered	Concern
	Sistrurus catenatus catenatus	Massasauga	Sp. Concern	Concern
32	Sistrurus catenatus catenatus	Massasauga	Sp. Concern	Concern
33	Ammocrypta pellecida	Eastern sand darter	Threatened	concern

Source: Michigan Natural Features Inventory, Michigan Department of Natural Resources

It is important to note that threatened and endangered species may have special value when located in a protected area or woodland. It may be the presence of woodlands which has protected the species and provided habitat.

Scenic Features

The lakes, topography, vegetation and cultural resources are components in the overall scenic attractiveness of the Township. Scenic vistas are places which afford expansive views of Township visual resources. These are located on top of hills and high elevations (north of Winans Lake) or along roadways (M-36 and other local roads). Roadways are important visual corridors because they unfold a rapid sequence of vistas. Lakes, trees, fields, homes, commercial enterprises and signs are common sites which are presented to the roadside viewer. Like other rural/urban areas the organization of the vistas is based upon the roadway. Homes, retail centers and other activities are located off these roads and too often the viewer is presented with a multitude of messages, signs, and symbols which are often associated with a strip development. Too many signs and establishments lacking a sense of organization and purposeful design can become an offensive strip development. It is important that future planning efforts recognize the overall image or impression presented along roadways and avoid potentially offensive strip developments, particularly M-36. There are a number of areas of the Township which have views characteristic of a rural/open space community. These are topographically high or open agricultural areas. These areas provide a wide panoramic view of the surrounding hills and are characteristic of an open, rural agricultural area overlooking many of the lakes and adjacent hills.

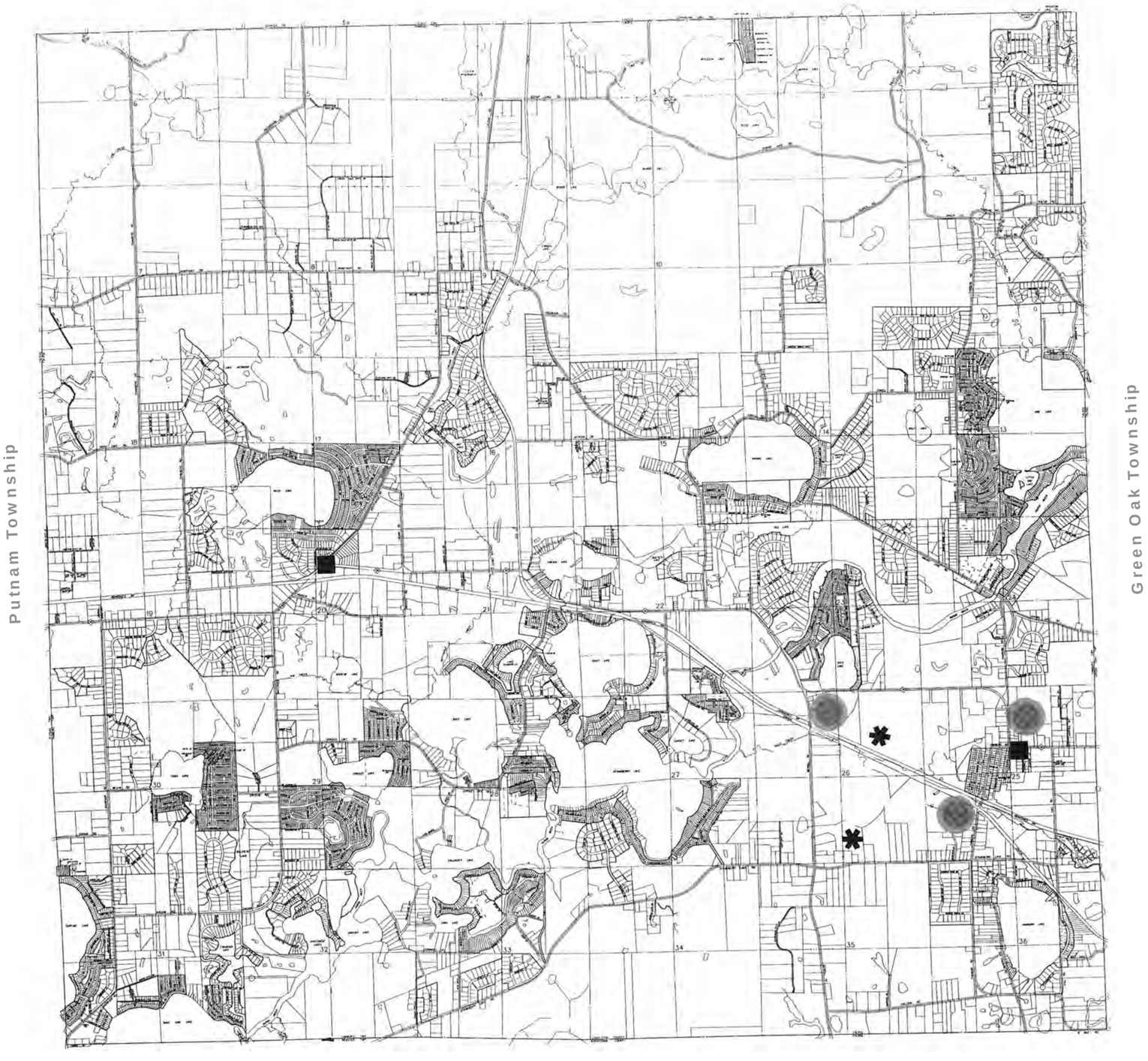
Landmarks are important visual resources. St. Stephen's Church, historical structures, village centers, the Huron River and various lakes are visual landmarks which lend an important character and identity to the Township. The cultural or man built landmarks should be preserved and managed in a sensitive manner. New development should compliment unique landmarks and should not detract from the scenic vistas of Hamburg Township's lakes, hills and vegetation.

Potential Contamination Sites

According to Livingston County Health Department records, there are a few contaminated sites within the Township which pose environmental problems. There are two gas stations in the Township with leaking underground storage tanks (UST's), three possible environmental clean-up priority sites located around the Hamburg Village area, and a closed municipal land fill northeast of the Township Hall. The general locations of these sites is indicated on Map 6.

Act 307 Sites: Michigan Public Act 307 provides for identification, risk assessment, evaluation and cleanup of sites of environmental contamination in the State. Sites are identified through information from concerned citizens, environmental groups, industry, local health departments, MDEQ staff, and others. From this process a priority list was, and will continually be, updated. This list is used, in part, to develop funding recommendations to undertake response activities utilizing state funds when the parties responsible for the contamination are unwilling or unable. The following sites have been identified in Hamburg Township:

- There is one Act 307 site along the M-36 corridor presently undergoing clean-up. The Masco Tech (previously R & B Manufacturing) on the east side of M-36 between North Hamburg Road and South Hamburg Road intersections is presently undergoing ground water clean-up. The site will require continual ground water pump and treatment for a number of years before it is closed-out.



Map 7
Potential Environmentally Impacted Sites

Hamburg Township,
Livingston County, Michigan

SITES OF ENVIRONMENTAL CONTAMINATION – ACT 307

LEAING UNDERGROUND STORAGE TANKS

CLOSED LAND FILLS

BASE MAP SOURCE: Holland Engineering, 1995
IMPACTED SITES SOURCE: Livingston County Health Department, 1993

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- Another Act 307 site is behind a small commercial strip center on the south side of M-36, east of Merrill Road. Perchloroethylene was detected at this site migrating southward towards the lowlands adjacent to the Lakelands Trail. Detailed investigation of the extent of contamination was accomplished and a baseline environmental assessment has been completed for this site.
- Southwest of the Hamburg Village area, is the former location of Grossman Ideal Steal. This Act 307 site is suspected to contain PCB, PCE, Arsenic, Chromium, Nickel and TCE.

Landfill: There is a closed municipal landfill located south of M-36 approximately mid-point between North Hamburg Road and Merrill Road. A second closed landfill is identified on the north side of Strawberry Lake Road, south of the Township Hall and parks. Any development in this area should include an assessment of the safety of developing this site.

Leaking Underground Storage Tanks: These tanks are widely used by industries, farmers, and even homeowners. These steel tanks can store a variety of fluids such as petroleum which is the most common, acids, and chemical wastes. Underground storage tanks typically leak as a result of corrosion in the steel. Once the fluid leaks, it can impact not only the soil but also contaminate the groundwater. Prevention is extremely important because it is costly, financially and otherwise, to clean up once the product reaches the ground water.

- Two gas stations at the intersection of M-36 and South Hamburg Roads had leaking UST's. There has been soil and ground water contamination in this area. While there has been some remediation efforts in this area, contamination at this intersection has migrated under the M-36 roadway. Any roadway improvements at the M-36 and South Hamburg Road intersection should be coordinated with the MDEQ Environmental Response Division. Any major construction may also involve some remediation.
- Pettysville Junction Party Store, which is also a gas station located near the intersection of Pettysville Road and M-36, also had leaking UST's. The soil and ground water contamination at this site are in the process of being mitigated.

Natural Resource Management Strategies

The detailed inventory of natural resources is most useful when interpreted to determine the capability of the natural resource base to support development. By guiding future development into the most capable areas, problems associated with large scale grading, flood damage, foundation stability, poor drainage and septic system failures can be avoided.

The resource factors considered included topography, floodplains, wetlands, and soils (foundation stability, drainage, and septic suitability). Criteria illustrated below were established for the various resource factors to determine which land areas were most or least capable of supporting development.

Table 11: Natural Resources Capability Map Process

Areas Least Capable of Supporting Development	Areas Most Capable of Supporting Development
Areas with slope greater than 12%	Areas with slope 12% or less
Areas within 100 year floodplain	Areas outside of 100 year floodplain
Wetland areas	Upland areas
Areas with poor soil stability	Areas with good or fair soil stability
Areas with poor soil drainage	Areas with good or fair soil drainage
Areas with severe septic limitations	Areas with few septic limitations

The final step in the development capability process was the mapping of the individual natural resource capability criteria on transparent overlays. By combining the overlays, a composite development capability map was produced.

The development capability map is illustrated on Map 7. Dark areas are lands least capable of supporting development while remaining Township lands are considered to be most capable of supporting development. As shown on this map, general patterns of land capabilities emerge. For example lands adjacent to the chain of lakes, the Huron River and Hay, Chilson and South Ore Creeks are generally less capable of supporting development. Lands with a less restrictive development capability are scattered throughout the Township. Three major areas of favorable land are located within the Township. The first area is located in the vicinity of Hamburg Village. Another area is located to the southeast of Winans Lake, and a third area lies within the western portion of the Township along M-36. New structures built within these areas will pose few problems for development while projects proposed in areas outlined in the dark areas of the map will require close scrutiny and sensitive site design.

Genoa Township

Putnam Township

Green Oak Township

Webster Township, Washtenaw County

Map 8
Land Capability

Hamburg Township,
Livingston County, Michigan

LAND AREAS MOST CAPABLE OF SUPPORTING DEVELOPMENT

LAND AREAS LEAST CAPABLE OF SUPPORTING DEVELOPMENT

MAP SOURCE: Hamburg Township Master Plan – 1979
Ayres, Lewis, Norris & May, Inc.

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Transportation Evaluation

MASTER PLAN | **HAMBURG TOWNSHIP**

Transportation Conditions

Hamburg Township is characterized by lakes and rolling topography. Many of the natural features make Hamburg Township a desirable place for home buyers that are seeking a rural atmosphere. Hamburg Township has been rapidly growing with new home construction at its highest rate. This residential development has generated increased traffic levels on the communities roadways, which are now at, or above capacity.

While the Township's many natural features enhance the desirable quality of the community, they present limitations for roadways. The rolling topography, sharp curves, and limited sight distances contribute to difficult driving conditions, especially during adverse weather. Complicating these conditions are narrow driving lanes along roadways which are constrained to relatively narrow right-of-ways. Adjacent land uses and numerous road intersections at curves and areas with poor sight distance cause traffic flow restrictions and potential safety hazards.

Traffic is influenced by trip generation, route selection and street capacity. Trip generation varies by land use. Trips will originate from households. The type and amount of traffic originating from a household will vary based upon the demographic makeup such as household size, age of residents, and number of autos owned. Since much of the residents of Hamburg Township work outside of the community, much of the trips generated within the Township are to destinations outside of the Township.

Among the roads in Hamburg Township, M-36 is a State route under the jurisdiction of the Michigan Department of Transportation. Primary and local roads are maintained by the Livingston County Road Commission with the State Motor Vehicle Highway Fund matched by Township funds.

Traffic Conditions in Hamburg

M-36 links the communities of Pinckney, Lakeland, Hamburg and Green Oak Township. There is currently much concern over the safety and general conditions of M-36. The rolling topography, sharp curves, and limited sight distances contribute to difficult driving conditions, especially during adverse weather. Complicating these conditions are driving lanes which are 11 feet instead of 12 feet wide with gravel shoulders along most of the road. Adjacent land uses and numerous primary road intersections cause traffic flow restrictions and potential safety hazards.

Many of the same concerns exist for county roads. Chilson Road and Winans Lake Road are the busiest county roads in the Township. Other roads with heavy use are Hamburg, McGregor and Pettysville Roads. Many of these roads have significant limitations due to sharp curves and poor sight distance. Hamburg Road is particularly inadequate because of high traffic volumes, adjacent land uses, sharp curves, poor sight distances and irregular intersections.

Bishop Lake Road is the only county primary gravel road in Hamburg Township and provides access to the Brighton State Recreation Area. Traffic volumes are particularly high during summer weekends and holidays.

Local subdivision roads built in the 1920's and 1930's were not subject to County approval. As a consequence, many of these roads serving lake frontages are very narrow and provide little right-of-way for improvements or maintenance. Some roads have segments with only one gravel lane making it difficult if not impossible for two vehicles to pass. There are a number of subdivisions within the Township that were platted without road construction (commonly regarded to as Apaper plats@). There are numerous privately owned lots of record that do not have improved road frontage. As development of the Township continues and un-subdivided parcels become more scarce, demand for developing these old lots of record will become greater. Dealing with development in this situation is difficult because these lots are often developed on a lot by lot basis and what little road improvements that are constructed, are done so on a Apiece-meal@ basis. While new public roads are subject to Road Commission approval and design standards, the Township should work with the County Road Commission to develop policies for dealing with development in these Apaper plats@ with un-improved roads.

There are two major bridges in Hamburg Township, both spanning the Huron River. The M-36 bridge was recently widened to 40 feet to carry two 12 foot lanes of traffic with eight foot shoulders. The Winans Lake Road bridge was replaced in 1963 and has an expected life of another 60 years.

Future traffic patterns within the road network will be closely related to land use. Because of this it is vitally important that road development be coordinated with the overall plan for the Township. The most critical corridor is along M-36. Careful consideration of land use planning, zoning and site development along this corridor will insure a well coordinated traffic system and land use pattern.

Existing Traffic Volumes

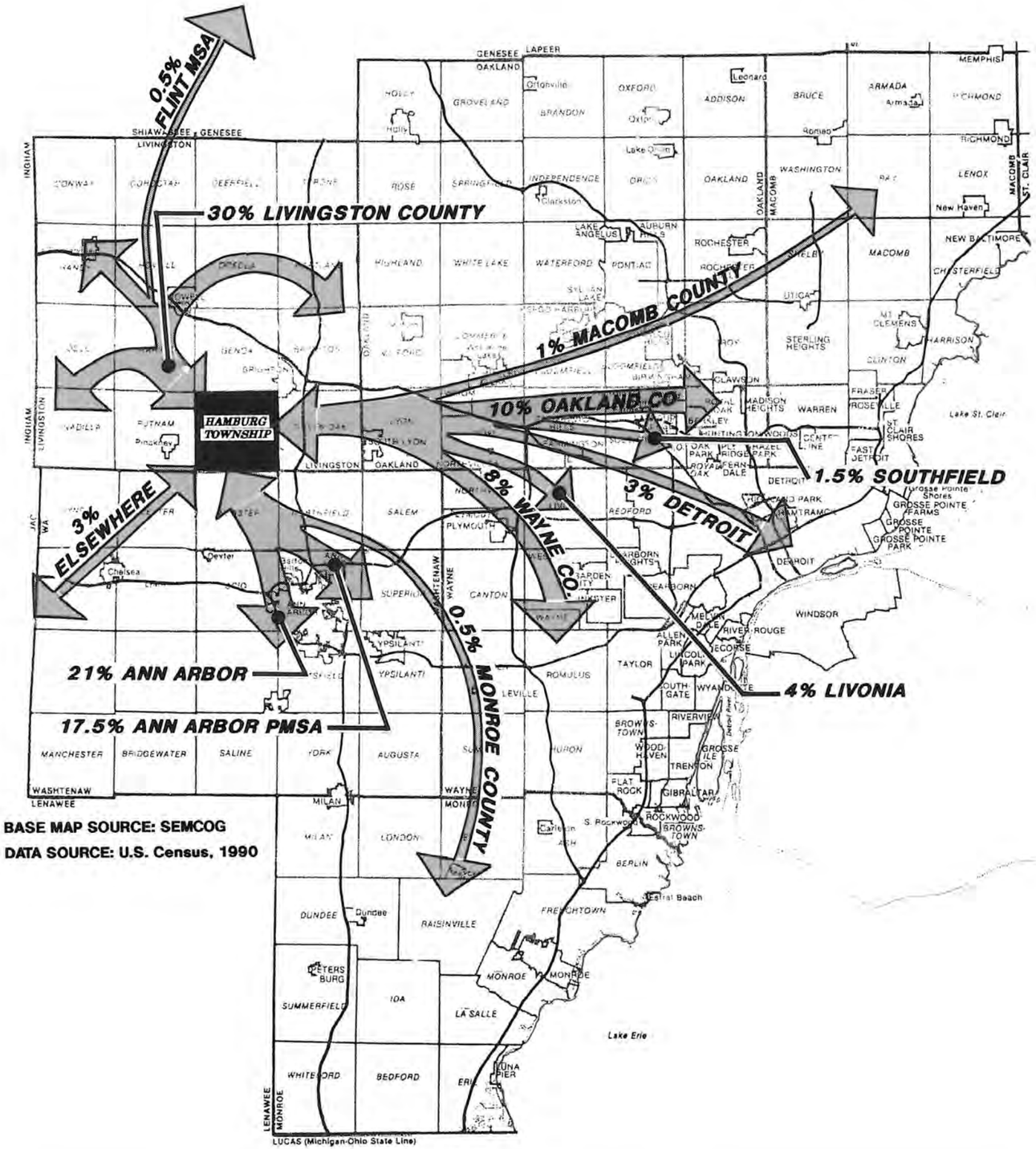
Existing traffic volumes for roadways throughout Hamburg Township vary, depending upon the location of the segment studied or the date the study was conducted. Specific studies of intersections are possible and encouraged, depending upon development trends in the Township. Recent traffic counts for several arterial, collector and local streets throughout Hamburg Township are shown on Map 9.

These traffic counts demonstrate several of the Township's most traversed roadways. It is important to consider existing traffic volumes when considering future development within the Township, plans for roadway upgrading or widening or projection of future capacity.

It is impossible to apply general formulae to each of the Township's many arterial and collector streets to establish a threshold of maximum expected roadway capacity. The Township should work with the Michigan Department of Transportation and the Livingston County Road Commission to evaluate existing conditions and establish an action plan for review of specific traffic management issues. For example, the Township can establish general guidelines as to when an unpaved roadway should be considered for paving; when a paved roadway should be considered for widening; or when other special attention by the Township is warranted.

Map 9
Hamburg Township Resident's Work Commuting Patterns

Hamburg Township,
Livingston County, Michigan



BASE MAP SOURCE: SEMCOG
DATA SOURCE: U.S. Census, 1990

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McKenna Associates Incorporated

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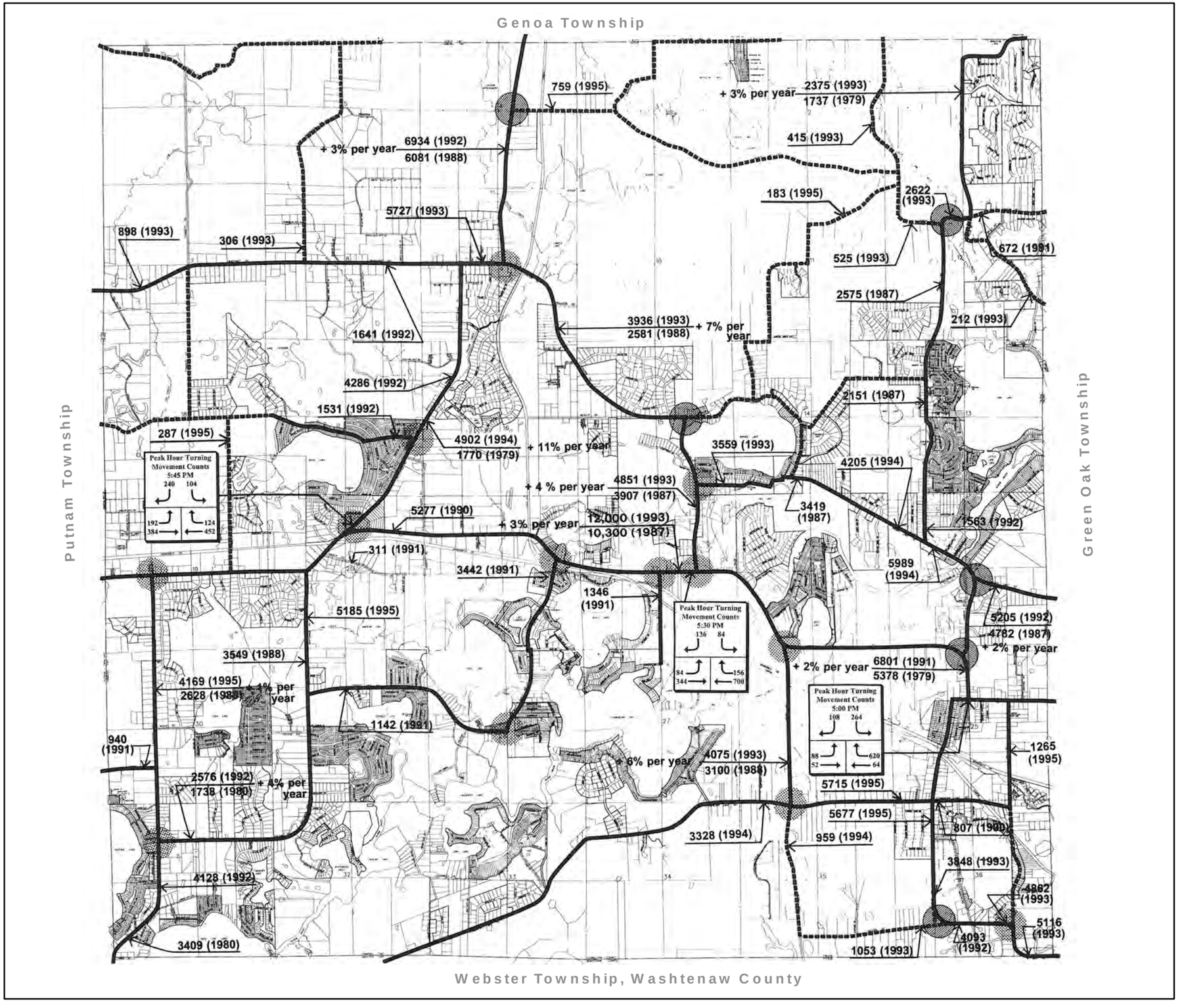

Map 10
Existing Traffic Conditions

Hamburg Township,
Livingston County, Michigan

PAVED ARTERIALS AND COLLECTORS

GRAVEL COLLECTORS

1,234 (1993) 24 HOUR AVERAGE DAILY TRAFFIC (YEAR)

RELATIVELY HIGH ACCIDENT LOCATIONS
ONE TO TWO ACCIDENTS PER MILLION VEHICKES ENTERING INTERSECTION

MORE THAN TWO ACCIDENTS PER MILLION VEHICLES ENTERING INTERSECTION

Sources:
Inventory by McKenna Associates, Inc., May 1995
Peak hour intersection counts taken with 15 minute survey on May 22, 1995
Livingston County Road Commission Traffic Counts
Michigan Department of Transportation Physical Road Accident Data 1989-1993

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Traffic Growth

As identified in the population and housing section, Hamburg Township's population has grown at an average rate of 1.6 percent per year between the years of 1980 and 1990. Since 1990, the annual population growth rate has been estimated to be 3.3 percent per year. A comparison of traffic counts over approximately the same time period has shown traffic levels on major roadways increasing between 1 to 3 percent annually. Traffic level increases have generally been consistent with population growth.

Future Traffic Volumes

Future traffic volumes will be dependant upon the amount, type and intensity of development. The estimated traffic generation by land use type provided in Table 12. Actual volumes in the future will be dependent on a variety of factors:

- Timing of development.
- Specific types of uses developed and their trip generation characteristics.
- Availability and price of gasoline.
- Characteristics of travel - how long the trips are and how frequently people drive.
- Amount of competing retail development.

The process for evaluating future traffic is as follows:

- Inventory existing traffic conditions.
- Project traffic production and attraction for future land uses at a designated time in the future.
- Estimate where the future traffic will travel.
- Distribute the future traffic on the road system.
- Add estimate for future through traffic.
- Identify needed transportation improvements.

▪

TABLE 12 Comparison of Trip Generation Rates

	Trips In Peak Hour	Trips In An Average Weekday
Residential (per unit)		
Single Family	.74	9.55
Apartment	.51	6.47
Condominium	.44	5.86
Mobile Home	.40	4.81
Office (per 1,000 sq. ft. gross floor area)		
General Office Building (10,000 sq. ft.)	3.20	24.60
Medical Office Building	2.69	34.17
Research and Development	1.23	7.70
Commercial (per 1,000 sq. ft. gross floor area)		
Retail, General Merchandise	4.80	Not Available
Small Retail Strip (under 100,000 sq. ft.)	8.44	91.65
Moderate Retail Strip (100,000 sq. ft.)	6.56	70.67
Large Retail Strip (500,000 to 1 million)	3.66	38.65
Quality Sit-down Restaurant	7.66	96.51
Fast Food Restaurant (w/drive through window)	36.53	632.12
Service Station (per pump)	16.30	Not Available
Convenience Store	52.74	737.99
Drive-in Bank	51.23	265.21
Industrial (per 1,000 sq. ft. gross floor area)		
Light Industrial	1.08	6.97
Heavy Industrial	.68	1.50
Industrial Park	.86	6.97
Manufacturing	.75	3.85
Warehousing	.60	4.88

(Note: A trip is a one-way movement, 10 trips ' 5 in, 5 out)

Source: Institute of Transportation Engineers, Trip Generation Manual, 5th Edition, Federal Highway Administration.

SEMCOG Projections

The Southeast Michigan Council of Government's (SEMCOG's) projected 2015 traffic volumes are provided in Table 13. These projections are based upon SEMCOG's regional highway network for southeastern Michigan. This is a region-wide model that evaluates future traffic based upon projected growth. Growth of the various communities within the model is based upon an allocation of the expected region-wide growth.

Table 13: Projected Traffic Volumes SEMCOG Regional Highway Network

Road	2015 Projected Volumes (Vehicles per Day)
Winans Lake Road	6,200
Strawberry Lake Road	6,700
Hamburg Road	7,200
Bishop Lake Road	1,600
Chilson Road	7,200
Pettysville Road	7,200
Whitewood and Shehan Roads	7,200

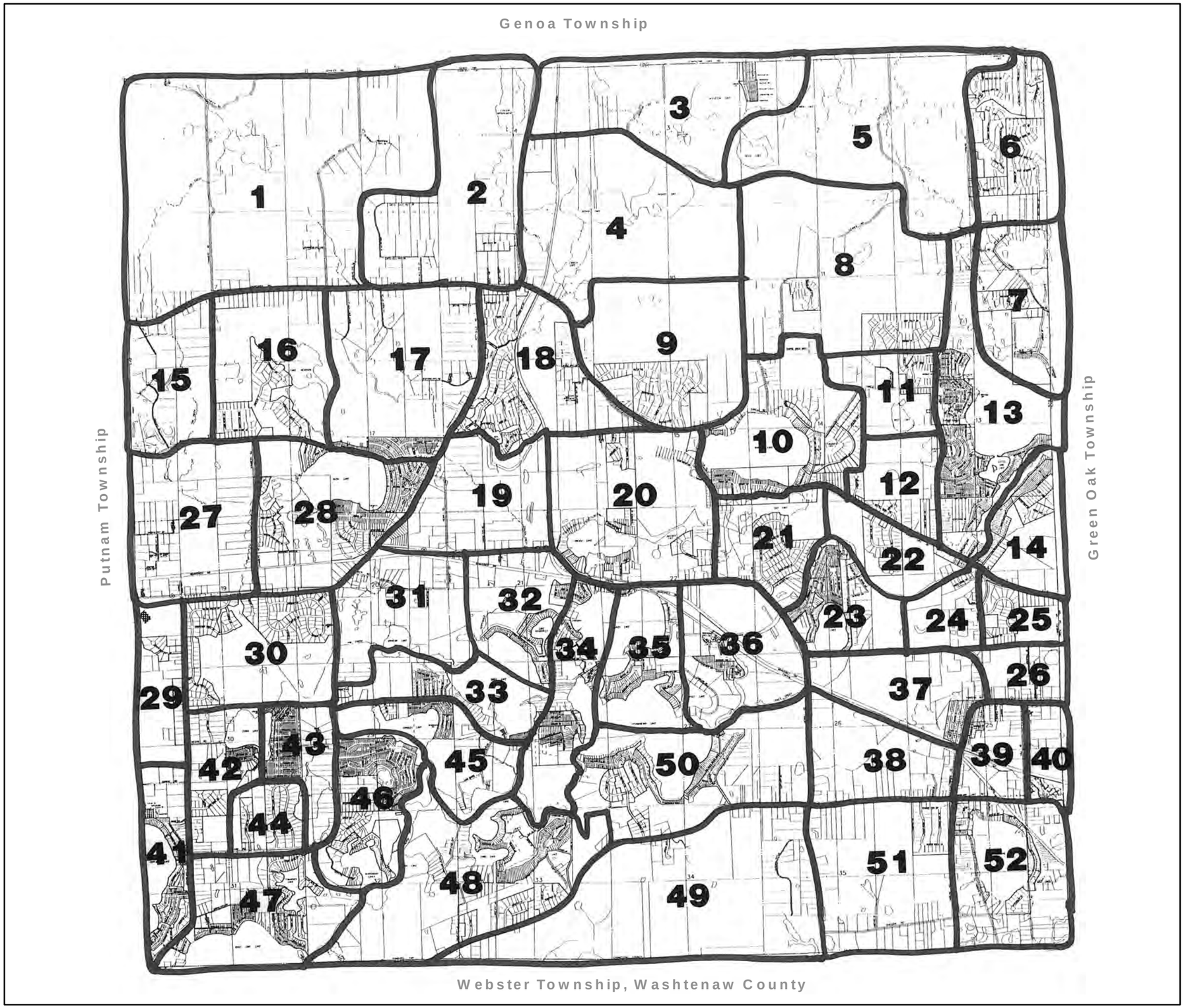
If the SEMCOG projections are accurate or underestimated, volumes will be at roadway capacity by the year 2015. The growth in traffic is expected to continue as development occurs. Good access management, through control over the number and location of driveways and efficient spacing of traffic signals or roundabouts, can increase capacity by up to 50% according to some studies. Though access management will help alleviate congestion, volumes of that magnitude may still lead to significant congestion.

Hamburg Projections

As part of the Master Plan, a computerized transportation model was prepared for Hamburg Township using the QRS-II transportation modeling program. The SEMCOG model is based on projected regional growth, the degree of accuracy is limited at the local level. For the purposes of this Master Plan, local estimates were prepared for Hamburg Township based upon the future land use plan contained in this Master Plan.

The model was programmed with the existing street network using the following procedure:

- The Township was divided into 52 traffic zones, as shown on Map 10. Traffic zones are unique geographical areas that each contain land uses that generate traffic (residences, retail, industry etc.). Number of dwelling units, socio-economic characteristics and retail and non-retail employment were inventoried for each traffic zone.
- Traffic counts provided from the Livingston County Road Commission were used to calibrate the model based upon existing socio-economic characteristics for the various traffic zones.



Map 11
Traffic Zones

Hamburg Township,
Livingston County, Michigan

52 **TRAFFIC ZONE NUMBER**

TRAFFIC ZONE BOUNDARY

MAP ILLUSTRATES TRAFFIC ZONES FOR TOWNSHIP TRANSPORTATION MODEL

BASE MAP SOURCE: Holland Engineering, Inc., 1995

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McKenna Associates Incorporated

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- Once the model was calibrated, projected development for the years 2000 and 2020 were modeled. The following two development scenarios were used to provide an estimation of the projected traffic volumes in 2000 and 2020 at build-out of the future land use plan, Map 11.
- The 2000 projection was based upon the completion of all currently approved developments under construction and all proposed developments as of 1996.
- The 2020 projection was based upon the Master Plan's build-out projected number of households and number of employees were entered for each traffic zone.

Table 14: Projected Traffic Volumes Hamburg Township QRS-II Model

Road	Existing Volumes 1992-1995 (*Vehicles per Day*)	Projected Volumes in 2000 (*Vehicles per Day*)	Build-out Projected Volumes in 2020 (*Vehicles per Day*)
M-36*	12,000	15,200	28,800
Winans Lake Road	5,200	8,100	11,400
Strawberry Lake Road	3,300	4,300	8,300
Hamburg Road	3,600	5,200	7,500
Bishop Lake Road**	800	3,500	5,000
Chilson Road	6,900	8,800	12,300
Pettysville Road	4,300	8,300	10,400
Whitewood Road	5,100	6,100	9,700

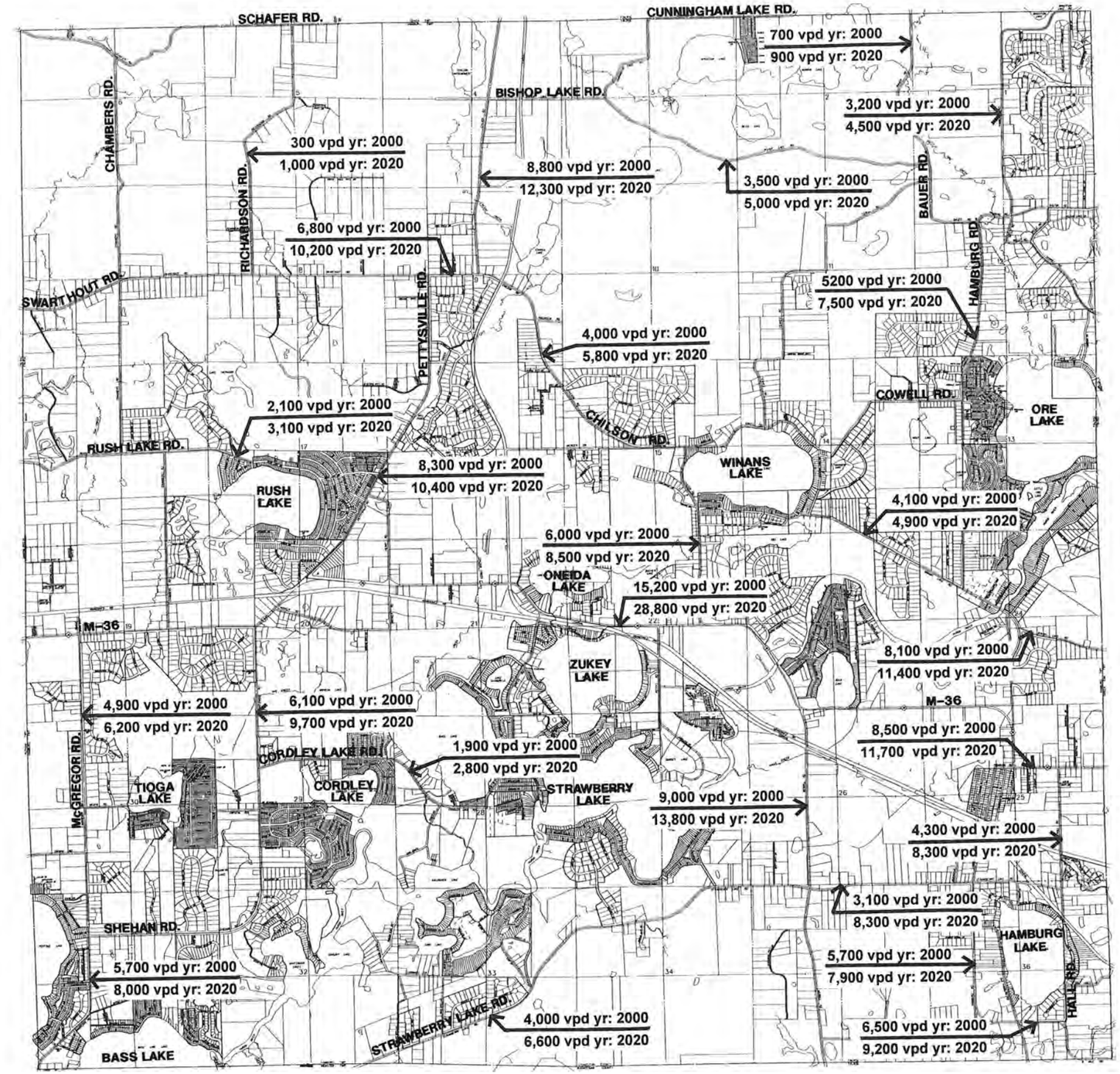
** Projected M-36 volumes include increases in through/background traffic as a function of growth in the Village of Pickney, Putnam, and Unadilla Townships.*

*** Projected Bishop Lake Road volumes based upon assumption road will be paved in 2000.*

It is important to note that the projected traffic volumes are based on many assumptions that may change over time. The projections generally indicate what roads within the Township are anticipated to have large traffic increases as a result of future development. This can be used as a guide to determine where future attention to road improvements may be needed as a result of future traffic generation. The projections also provide insight into the sustainability of the future land use plan.

Now that the model has been set-up, it can be used by the Township as a continual, evolving tool to assess traffic impacts of day-to-day decisions such as site plan, subdivision, Open Space and rezoning approvals. The model should be updated with traffic impact studies from developers and new counts from MDOT and the Livingston County Road Commission. As the community continues to grow, the model can be updated on a continual basis.

Genoa Township



Putnam Township

Green Oak Township

Webster Township, Washtenaw County

Map 12

Projected Build-Out Traffic Volumes

Hamburg Township,
Livingston County, Michigan

PROJECTED DAILY TRAFFIC VOLUMES IN YEAR 2000 BASED UPON COMPLETION OF CURRENTLY APPROVED AND PROPOSED DEVELOPMENTS

PROJECTED DAILY TRAFFIC VOLUMES IN YEAR 2020 BASED UPON BUILD-OUT OF FUTURE LAND USE PLAN

BASE MAP SOURCE: Holland Engineering, Inc., 1995
TRAFFIC PROJECTIONS: Hamburg Township QRSII Traffic Model, McKenna Associates, Inc.

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McKenna Associates Incorporated

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Capacity of the Roadway System

The anticipated level of traffic under the future land use plan is then evaluated against the capacity of the roadway system. Roadway capacity is defined as the maximum rate of flow vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic and control conditions; usually expressed as vehicles per hour. The capacity of an entire roadway system is expressed as the sum of each component roadway.

Determination of roadway capacity is dependent on a number of factors. Generally, a two lane paved roadway will have a 24 hour capacity of 8,000 to 10,000 vehicle trips for Level of Service A (unrestricted flow). This will be influenced by a number of factors that will define individual roadway capacity. These include:

- Pavement condition and material;
- Roadway width and number of lanes;
- Topography (rolling or flat);
- Design setting (winding rural or unswerving urban);
- Location and frequency of curb cuts;
- Speed limits and other traffic control devices;
- Sight distance limitations; and
- Intersection design, turning lanes and traffic control devices.

Accident Crash Data

Auto accidents occur more frequently on the major roads and intersections of the Township. Locations of relatively high accident locations are shown on Map 9, based upon a combination of Michigan Department of Transportation Physical Road Accident Date 1989-1993 and Livingston Road Commission Intersection Accident Rates 1991-1995. The entire length of M-36 is subject to more frequent accidents due to the high speeds, traffic levels and design inadequacies. Other relatively high frequency accident areas, in comparison to other areas of the Township include:

Hamburg Road at the following intersections:

- Bauer Road
- Winans Lake Road
- M-36
- Sheldon Road
- Hall Road

Chilson Road at the following intersections:

- Bishop Lake Road
- Swarthout Road
- Cowell Road
- M-36

McGregor Road at the following intersections:

- M-36
- Shehan Road

According to the Livingston County Road Commission, intersection operation and design issues (sight distance limitations, too many driveways, etc.) are a major consideration in determining road safety conditions. The motorist on a roadway approaching an at-grade intersection with another roadway (including driveways) should have an unobstructed view of the entire intersection and sufficient distance to the intersecting roadway to permit control of a vehicle, thus avoiding accidents. At a minimum, the driver should be able to see the headlights of an approaching vehicle.

Unobstructed sight distances should be provided on all approaches at each intersection. After a vehicle has stopped at an intersection, a driver should have sufficient sight distance to make a safe departure through an intersection area. The intersection design should provide adequate sight distance for all of the various vehicular maneuvers required upon departure from a stopped position.

Other Modes of Transportation

Rail

Hamburg Township has only one active railroad line. This line is owned by the State of Michigan and operated by TSBY Rail Road. The rail line is predominantly for freight transit. According to the Michigan Department of Transportation, the rail road is utilized by approximately 2 trains a day, five to six days a week. The tracks merge with what was once the old GTW and Ann Arbor Rail Road lines which have recently been abandoned and converted for use as the Lakelands Trail.

This active rail line bisects the Township at its center from the north and proceeds easterly, from the center, through the Old Hamburg Village, and finally, exits the Township from Section 30, into Green Oak Township.

Non-Motorized

The major non-motorized route through the Township is the Lakelands Trail. This trail was constructed within an abandoned rail road right-of-way. It begins in the center of the Old Hamburg Village area and continues west, along or within a 2 mile of M-36 to the west Township line and onwards to the Village of Pickney to the west. The Lakelands Trail travels through some of the more developed portions of the Township and runs adjacent to the Pickney Middle School and High School at the western edge of the Township. The Lakelands Trail provides a valuable non-motorized route through the Township.

Development within the area should be designed to provide pedestrian links with this trail.
There are currently some sidewalks on Hamburg Road within the Old Hamburg Village area. These sidewalks are older and narrow paths. Streetscape improvements within the Old Hamburg Village area should improve these facilities to current standards and provide linkages to the Lakelands Trail.

A number of recent developments within the Township has utilized either a Planned Unit Development or an Open Space Community option for creating clustered housing surrounded by natural open space. Most of these types of development have included trail networks. Efforts should be made to create linkages between these Open Space Communities to create an integrated community network.

Airports

There are no airfields in Hamburg Township. The nearest airport to Hamburg Township is the Livingston County Airport, northwest of the City of Howell. Detroit Metropolitan Airport is in the City of Romulus, approximately 25 miles southeast of Hamburg Township. Willow Run Airport is in Van Buren Township, approximately 18 miles southeast of Hamburg Township. Willow Run Airport is primarily a freight airport.

Future Land Use

MASTER PLAN | **HAMBURG TOWNSHIP**

Future Land Use Plan

The Land Use Plan serves to translate Community Goals into a narrative and graphic illustration. It is based largely upon existing land use patterns, natural resource capability and adequacy of community facilities and services such as roads, public sanitary sewer, schools, police and fire protection. The Land Use Plan Map is not intended to serve as a Zoning Map nor dictate the use of individual parcels of property. Rather, it is to be used as a generalized guide to the location of growth and development.

Location Standards

The following list of criteria was used in developing the Future Land Use Plan. Each development area shown on the Future Land Use Plan was evaluated based upon the criteria in light of the stated community goals.

Existing Land Use Patterns

- Amount/density of existing development
- Average size of parcels
- Existing land uses
- Existing zoning designation
- Surrounding land uses
- Proximity to community centers

Projected Demographics

Regional Market Factors

Transportation Network and Road Conditions

- Amount of roads serving the area
- Pavement conditions
- Topography and sight distance along roads

Availability of Sewer

- Presently served
- Future service area

Natural Resources Capability for Development

- Presence of wetlands
- 100 year floodplain
- Severity of topography/slope
- Suitability of soils; stability, drainage & septic limitations

Woodlands

Wildlife Habitat

Location Along Waterway/Greenway Corridors

Future Land Use Categories

The land uses and residential densities that are indicated are to serve as a guide to overall densities within the various areas provided. The following is a description of the land use categories found on the Future Land Use Map (*Map 13*).

Rural Low Density Single Family Residential
(one dwelling unit per two acres)

Rural Low Density Residential land use is planned for land areas within the southern two-thirds of the Township that are least capable of supporting development. This designation also applies to transitional areas from the recreational lands to the Medium Density Single Family Residential in the northern third of the Township. Much of this area contains significant natural features such as wetlands and floodplains.

Within the Rural Low Density Residential area, single family residences should be developed at one dwelling unit per two acres. The overall density of this area should be kept relatively low. The provision of low density rural residential areas will lead toward the preservation of open space and the rural atmosphere of Hamburg Township. Developments in this district are encouraged to take advantage of the Township's open space provisions.

Medium Density Single Family Residential
(one dwelling unit per acre)

Medium Density Residential is intended for areas that are characteristic of moderate density residential and undeveloped land areas which are capable of supporting development at moderate densities. This designation applies to much of the land surrounding the lakes and in the center of the Township concentrated along M-36. Medium density residential provides for single-family residences at a density of one dwelling unit per acre. Developments in this district are encouraged to take advantage of the Township's open space provisions.

High Density Single Family Residential
(four dwelling units per acre)

High Density Single Family Residential is intended for areas that are characteristic of higher density single family residential, capable of supporting development at higher densities, and located in close proximity to community facilities, service, transportation routes, and commercial areas. This designation applies to the areas around Rush Lake, Oneida Lake, Zukey Lake, Ore Lake, and Hamburg Lake, as well as in the Village Center. High Density Single Family Residential provides for single family residences at four dwelling units per acre.

Multiple Family Residential

Multiple Family Residential is specifically identified for areas capable of supporting development at high densities, and located in close proximity to community facilities, service, transportation routes, and commercial areas. It is intended that these areas will develop as multiple family or mobile home park residential with public water and sanitary sewer. Densities will vary depending upon site conditions, but is planned to be a net of four dwelling units per acre.

Neighborhood Commercial

Neighborhood Commercial includes all land and buildings where products, goods or services are provided to service the residents of the immediate neighborhood areas. These uses are smaller, low traffic generating commercial services. This land use designation is for the maintenance of the existing commercial clusters located along M-36.

Neighborhood commercial includes two areas that are located on the chain-of-lakes. These waterfront commercial areas are intended to develop for low intensity uses that serve the immediate neighborhood and boaters. Uses would include restaurants, bait shops or small neighborhood grocery stores.

General Commercial

General Commercial includes all land and buildings where products, goods or services are provided to service a larger community area. These uses will be larger uses and will generate higher traffic volumes. This land use designation will be used for the maintenance and some expansion of the existing commercial clusters located along M-36. Strip commercial development along M-36 beyond these community nodes should not be allowed.

Industrial

Industrial areas are contained to the larger existing industrial areas. These areas are relatively isolated from residential areas and can be provided with existing and planned community facilities and services.

Public/Quasi-Public

The Public/Quasi-Public includes all lands and buildings devoted to governmental facilities, schools, parks and cemeteries.

Public and Private Recreational Facilities (40 acre lot size)

Public and Private Recreational land provides an exclusive area for specified government, civic and private recreational facilities. This will assist in protecting the Brighton State Recreation Area and private recreational facilities from intrusion by more intense suburban development that would otherwise detract from the natural amenities and resources of this area. These types of land uses will also limit the need for extensive public services such as public water, sanitary sewer, and additional schools. This area of the Township is largely in a natural state and contains large areas of woodlands, wetland and wildlife habitat.

Natural River District 1

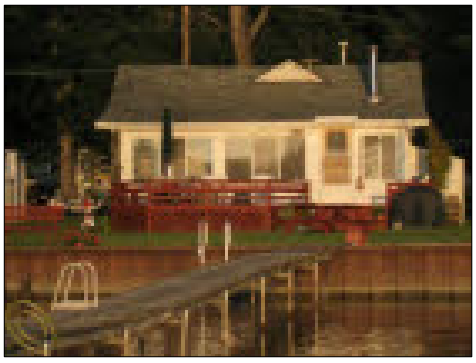
The Natural River District 1 is located within the Huron Natural River District, as established by Huron River Management Plan adopted by the Natural Resources Commission. All land within 400 feet of the shoreline of the Huron River is included in this designation.

Natural River District 2

The Natural River District 2 is located along the Huron River in the Village Center a short way to the east of the Village Center along the river. This designation is intended for residential uses as long as public access is provided along the Huron River. A minimum 200-foot setback for residential uses should be maintained with public access areas allowed in the setback provided no natural features are disturbed. The 200-foot setback may be modified through one of the Township's flexible zoning provisions based on the topography, viewshed, and environmental sensitivity in order to achieve the intent of this land use.

Waterfront Residential

The Waterfront Residential is located along the major lakes within the Township and intended to regulate the small waterfront parcels, typically less than one acre. These parcels should maintain their existing character and setbacks from the lakes.



Village Center

The Village Center Future Land Use categories are described in detail in the Hamburg Township Village Center Master Plan.

Planning Strategies

The allocation of proposed land use for the Township as a whole is depicted by category in Table 15. The amount of land devoted to residential land use will determine future population. According the 2000 Census there are 7,086 households in the Township and 20,627 residents. Based on the future land use plan there could be an additional 5,800 residential units developed, more if the Township's open space incentives are utilized. This equates to an additional 15,600 residents assuming 2.88 persons per household, for a total future population of 36,227. This amount can more than accommodate the future population of the Township which is projected by SEMCOG to be 36,331 persons in the year 2030. Assuming the Brighton Recreation Area remains state land and is left undeveloped, there is still substantial area within the Township to accommodate projected growth.

Table 15: Proposed Future Land Use

Land Use	Total Acreage
Single Family Residential	
Rural Low Density Residential	5,809
Medium Density	7,349
High Density	929
Subtotal	14,087
Multiple Family Residential	83
Neighborhood Commercial	24
General Commercial	39
Industrial	0 (land In village)
Public/Quasi-Public	265
Public and Private Recreational	3,980
Natural River District 1	383
Waterfront Residential	494
Hamburg Village 1	1,165
Lake	2,520
Total	23,040

Footnote:

1. Hamburg Village uses include a mixture of commercial, apartment, townhouse and single family residential.

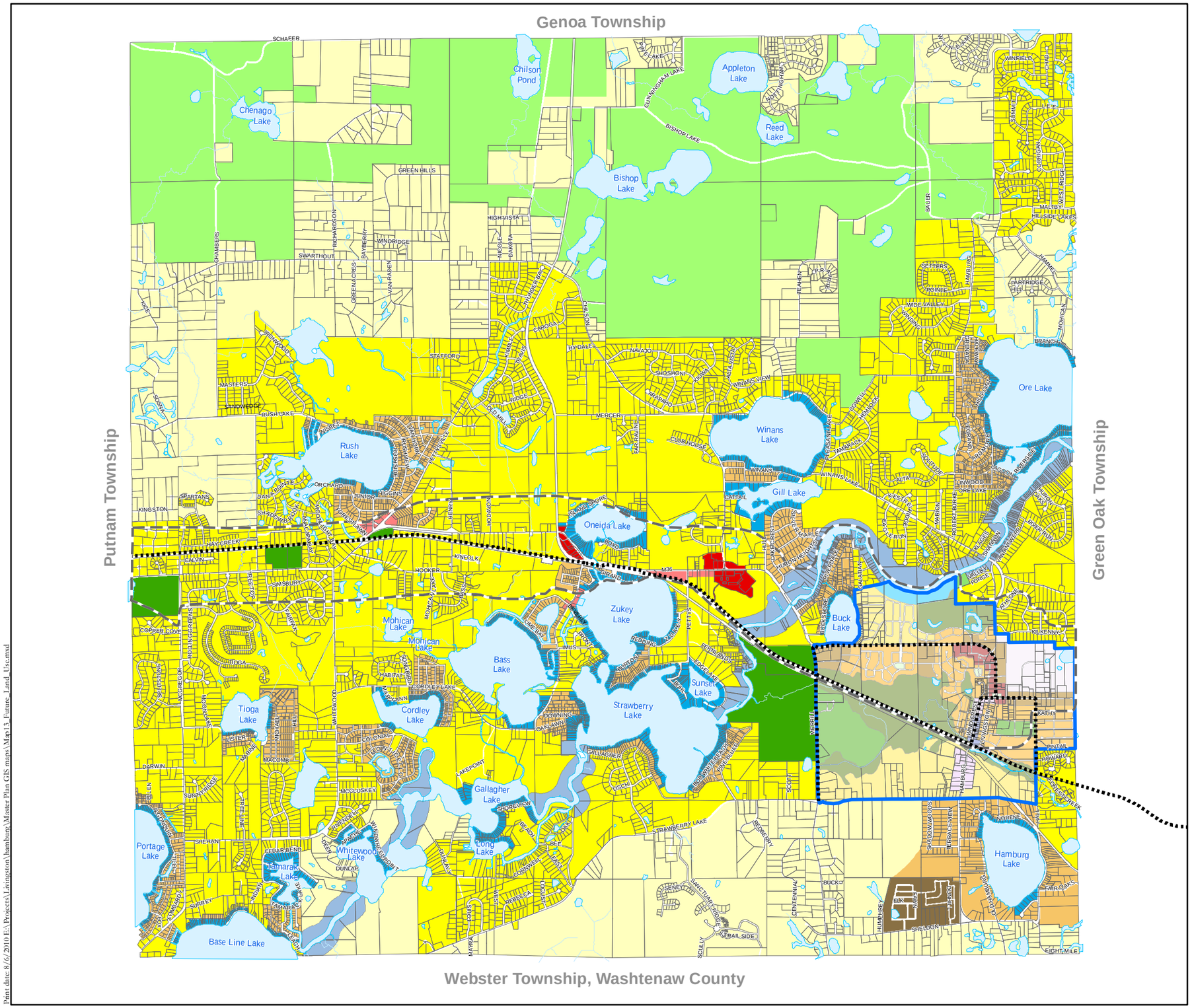
Table 16 illustrates the proposed future land use and the corresponding zoning district. This, in combination with the future land use map, should be used as a primary guide to making decisions on rezonings. There are other conditions that need to be taken into consideration when making a decision on the appropriate timing of a rezoning, such as current availability of public infrastructure. Table 16, in conjunction with the Land Use Plan, should be used as a growth management tool.

Table 16: Land Use Classifications and Applicable Zoning Designations

Land Use	Proposed Density	Applicable Zoning District(s)	Actual Density
Rural Low Density Single Family Residential	1 unit/2 acres	RAA – Low Density Rural Residential	1 unit/2 acres (87,120 sq. ft.)
Medium Density Single Family Residential	1 unit/acre	RA – Medium Density Residential	1 unit/acre (43,560 sq. ft.)
High Density Single Family Residential	4 units/acre	RB – High Density Residential	1 unit/10,000 sq. ft.
Multiple Family Residential	4 units/acre	RC – Multiple Family Residential MHP – Mobile Home Park Residential	Varies depending on size of development
Neighborhood Commercial	NA	NS – Neighborhood Service	NA
General Commercial	NA	CS – Community Service	NA
Industrial	NA	LI – Light Industrial GI – General Industrial	NA
Public and Private Recreational	1 unit/40 acres	PPRF – Proposed Public and Private Recreational facilities	1 unit/40 acres (1,742,400 sq. ft.)
Natural River 1	1 unit/acre	NR – Natural River Residential	1 unit/acre (43,560 sq. ft.)
Natural River 2	1 unit/acre	Proposed NR-2 – Natural River Residential 2	1 unit/acre(43,560 sq. ft.)
Waterfront Residential	1 unit/acre	WFR – Waterfront Residential	1 unit/acre (43,560 sq. ft.)
Hamburg Village	*See Hamburg Township Village Center Master Plan	Proposed VG – Village Gateway VC – Village Core VH – Village Historic VT – Village Transition VR-2 – Village Residential 2 VR-10 – Village Residential 10	Varies depending on land use type

Map 13
Future Land Use

Hamburg Township, Livingston County, Michigan



0 2,000 4,000 Feet

McKenna Associates Incorporated

Source: Hamburg Township, 2004

8/06/10

- Rural Low Density Single Family Residential (2 Acres Per Unit)
- Medium Density Single Family Residential (1 Acre Per Unit)
- High Density Single Family Residential (1/4 Acre Per Unit)
- Multiple Family Residential
- Neighborhood Commercial
- General Commercial
- Industrial
- Public/Quasi-Public
- Public and Private Recreational Facilities
- Natural River District 1
- Natural River District 2
- Waterfront Residential
- Lake
- M-36 Corridor Plan (See M-36 Corridor Plan)
- Trail
- Village Boundary (See Village Center Plan)
- Village Residential-2
- Village Residential-10
- Village Core District
- Village Gateway District
- Village Historic District
- Village Transition
- Conservation District
- Public
- Parkland
- Industrial

Print date: 8/6/2010 E:\Projects\Livingston\hamburg\Master Plan GIS maps\Map13_Future_Land_Use.mxd

Table 17 illustrates residential land use and the subsequent population by Planning Area, as shown on Map 13. The residential land use acreage and densities represent the upper limit, which should be permitted within each Planning Area.

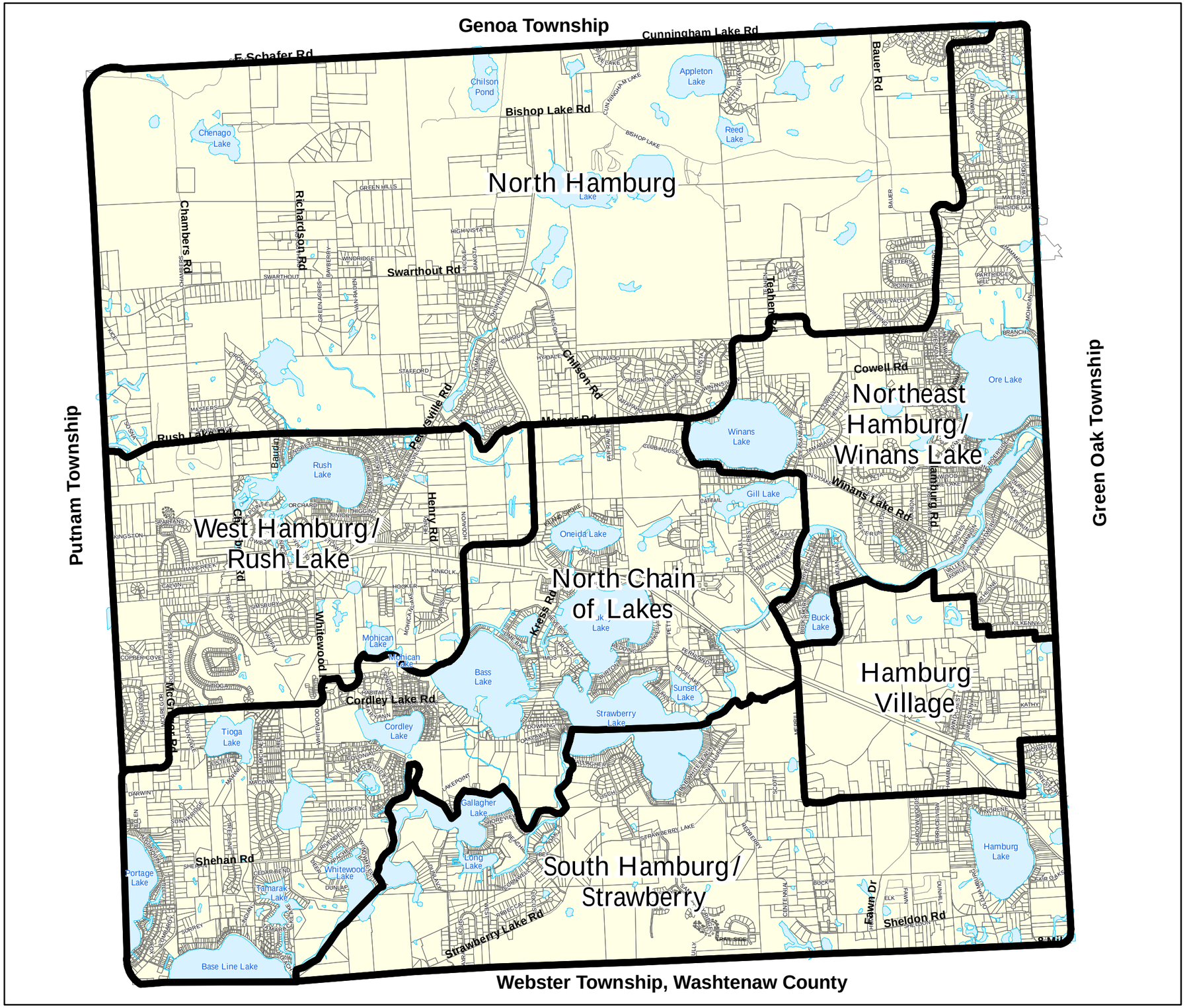
Table 17: Proposed Residential Land Use by Planning Area

Planning Area	Existing Dwelling Units[1]	Existing Undeveloped Lots[2]	Potential Land Subdivision[3]	Build-out Total Single Family Lots[4]	Potential Multiple Family Units[5]	Build-out Total Dwelling Units[6]	Build-out Total Population[7]
Hamburg Village	217	30	369	900	647	1,547	4,455
South Hamburg/ Strawberry	1,064	25	561	1,534	309	1,843	4,902
North Chain of Lakes	2,451	89	453	2,895	0	2,895	7,700
Rush Lake	1,455	36	707	1,553	0	1,553	4,131
North Hamburg	1,975	77	654	1,506	97	1,603	4,264
Northeast Hamburg/ Winans	1,305	25	338	1,917	0	1,917	5,099
TOTAL	8,467	282	3,082	10,305	1,053	11,358	30,211

1. Footnotes:
2. Based upon 1993 aerial photographs and 1995 survey.
3. Based upon 1994 parcel map.
    a. Based upon development of un-subdivided land at the following densities:
    b. Country Estate Residential: 1 unit/5 acres
    c. Low Density Residential and Reserve: 1 unit/2 acres
    d. Medium Density: 1 unit/acre
    e. High Density: 2 units/acre
    f. Wetland areas were discounted to 25% for calculation towards density.
4. The total of existing single family dwelling units, existing undeveloped lots and potential land subdivision.
5. Based upon development of un-subdivided land Multiple Family areas with an average of 4 units/acre.
6. The total of build-out total single family lots and potential multiple family units.
7. Based upon build-out total dwelling units x SEMCOG's projected 2.88 persons per unit in 2020.

Map 14
Planning Areas Map

Hamburg Township,
Livingston County, Michigan



McKenna Associates Incorporated

Source: Hamburg Township, 2004

8/03/10

The Land Use Plan allows for the concentration of development in areas with a capable resource base and adequate community facilities and the reduction of densities in areas not capable of supporting development. To preserve the rural character of the Township and reduce the cost of providing services, the Plan promotes very low residential densities in currently undeveloped areas in the northern, southern and western portions of the Township. A vigilant policy of concentrating growth in the appropriate areas will lead toward easing developmental pressures in areas which are not capable of supporting development or should be preserved for very low density development. A majority of the areas along the lakes and waterways have been designated either Natural River District 1, Natural River District 2, or Waterfront Residential with areas of High Density Single Family Residential serving as a transition to lower density residential areas. These designations account for the unique circumstances and parcel found in the waterfront areas within the Township. More specific planning strategies are discussed by Planning Area in the remainder of this section.

Hamburg Village Area

The Hamburg Village Area has historically been a center of governmental, social and commercial activity. It is the area of closest proximity to U.S. 23 and the metropolitan Detroit area. Further, the Village has a large proportion of land capable of supporting development. The Land Use Plan calls for the continuation and enhancement of Hamburg Village Area as the primary center of community activity, but the overall emphasis is on a wider variety of land uses, not only traditional commercial uses in the Village. A concentration of medium and high density residential, multiple family residential, commercial and industrial land use in this area will be more easily served in the future by schools, police and fire protection, utilities, and other community services. New development shall follow similar design principals (commonly referred to as "traditional neighborhood" design). Another component of traditional design is the concept of a "transit-oriented development." The Village Center is slated for a potential commuter train station which would further positively enhance the area. The Hamburg Village Center Master Plan details the land use, transportation and urban design framework for continued development of the village.

Although residential development is concentrated in the Village area, it is important that some areas be maintained in low density residential. Existing industrial areas will probably not expand beyond the areas currently planned and zoned for industrial. Existing commercial areas are maintained but the extension of strip commercial development along M-36 is strongly discouraged. The commercial area along M-36 could be greatly improved by the construction an internal road network including Village Center Drive. The advantages of an internal road network would be to: (1) open the interior of the area for commercial development; (2) enhance the area as a center for community commercial activity; (3) reduce congestion along M-36 by eliminating the multitude of curb cuts; and, (4) allow for the landscaping and beautification of M-36 commercial frontage.

South Hamburg Area

The majority of this area is characterized as lower density rural residential. The western two-thirds of the area south of Strawberry Lake Road is Zoned Low Density Rural Residential. There are areas north of Strawberry Lake Road that are undeveloped, including large areas of wetlands and floodplains on the south side of the Huron River. To maintain open space and rural character, areas north and west of Strawberry Lake Road should be largely be developed at Rural Low Density Single Family Residential.

There is an existing Mobile Home Park area at the intersection of Hamburg and Sheldon Roads. Existing densities are medium to high around Hamburg Lake. These areas south of the Hamburg Village are planned for Medium Density Residential and Multiple Family.

North Chain of Lakes Area

The North Chain of Lakes Area will continue largely as residential areas very closely tied to lake waterfronts. To minimize pressures on the lakes, waterfront designations have been assigned to all of the lakes and waterways in the area. These areas have been designated either Natural River District 1 or Waterfront Residential with areas of High Density Single Family Residential serving as a transition to lower density residential areas. This is especially critical in close proximity to the streams, lakes and the Huron River where development can have a significantly detrimental impact on the Township's water resources.

Larger parcels within this area have been designated Rural Low Density Single Family Residential, but a majority of the area outside the waterfront parcels have been designated Medium Density Single Family Residential. In areas with medium densities that are not capable of supporting such development, overall densities can be reduced through maintaining vacant areas or requiring that they be developed at lower densities.

The existing commercial area along M-36 at Lakeland is retained at its current size. To strengthen this existing commercial node, redevelopment of existing commercial sites is encouraged. The commercial area at Chilson Road and M-36 is shown to be expanded. The extension of strip commercial development is strongly discouraged.

Rush Lake/West Hamburg Area

Concentrations of medium density residential, commercial and public land uses will enhance the Rush Lake Area as a secondary center of community activity. The proximity to schools and the Village of Pinckney coupled with a capable resource base makes the area at M-36 and Pettysville Road attractive for more intensive residential development. Expanded commercial activity should be provided near Pettysville Road and M-36 to serve the additional population.

North Hamburg

A significant portion of the land within the north Hamburg Area is part of the Brighton State Recreation Area. Private lands are generally vacant, private campsites or large lot rural estate residential. There are few roads serving this portion of the Township; a majority of which are gravel. There is no existing or planned sanitary sewer service for this area. This area of the Township is largely in a natural state and contains large areas of woodlands, wetland and wildlife habitat. The lack of accessibility to community facilities and services make the area inappropriate for any higher density development now and well into the future.

This area is planned for a combination of Public and Private Recreation Facilities in areas that are part of the Brighton State Recreation Area and Rural Low Density Single Family in surrounding lands that are either vacant or developed as large rural estate sized lots. Areas that are more developed are planned for Rural Low Density Single Family Residential and Low Density Single Family Residential to serve as transition from the rural to the more developed areas of the Township.

Northeast Hamburg/ Winans Lake Area

The eastern area of the Township along Winans and Hamburg Roads between the Hamburg Village area and the City of Brighton are planned for a mixture of residential densities. Medium density residential development is contained to existing developed areas around Ore and Buck Lakes.

The area north of Ore Lake contains the Ore Creek and large wetland areas that contribute to Ore Lake and the Huron River. To protect this fragile area, it is planned for Rural Low Density Single Family Residential. The remaining areas are planned for Medium Density Single Family Residential with the exception of the waterfront areas which have been designated with Natural River District 1 or Waterfront Residential with transition areas of High Density Single Family Residential.

Commercial Base Analysis

Existing Commercial Facilities

The existing commercial nodes along M-36 offer a limited range of goods and services. The most predominant commercial use in Hamburg Township is convenience goods which are consumed or used on a daily basis, such as groceries, drugs, and hardware items. Service-type businesses including beauty and barber shops, real estate offices, insurance offices and other businesses which provide a service rather than sell a product are also predominant.

Only a few of the retail businesses market comparison goods. Comparison goods are purchased less frequently and usually only after people have compared prices and quality of competing stores. Township residents generally travel to surrounding communities such as Brighton or Howell for these comparison goods. If they desire a broad selection of goods or a variety of stores, residents will travel to regional shopping centers in Washtenaw or Oakland Counties. Certain specialized services, such as the services of a stockbroker or medical specialist, are generally acquired outside of the Township.

Projection of Commercial Development Potential

A projection of commercial development potential for Hamburg Township was made for the purpose of determining the amount of land to plan for commercial use. The results of these projections are indicated in Table 18. The process is described as follows:

Determination of Trade Area

The first step in projecting the potential for future commercial development involves determination of the trade area from which customers are most likely to be drawn to Hamburg businesses. Distance is normally the most important determinant of trade area, since most people will generally travel to the nearest businesses that serve their needs. Other factors that affect trade area include travel times, quality, service, variety of merchandise, accessibility, and socioeconomic differences between communities. The trade for convenience goods is generally limited to the residential areas immediately surrounding the business district. People generally will not travel great distances for groceries, drugs, and other convenience goods that they purchase frequently. In a low-density residential community, such as Hamburg Township, the trade area for convenience goods may encompass three or four miles. For the purpose of the master plan's projection, the entire Township was used. Because residents in the

northern portion of the Township will likely be drawn towards Brighton and residents in the western portion of the Township will likely be drawn towards Pickney/Putnam for convenience goods, this will provide a generous estimation of Hamburg Township's commercial market.

Trade Area Income

Trade area income is calculated using projections of change in the population and income data. According to SEMCOG, there were 24,301 persons in Hamburg Township in October 2007. According to SEMCOG projections, the population will increase to 36,331 by the year 2030. According to the Census, the per capita income of Hamburg Township was $30,283 in 1999. Assuming per capita income remains constant in terms of 2007 dollars, the estimated total household income will be $1,379794,704 in 2030.

Expenditure

The expenditure of income on convenience goods is calculated based upon the trade area income multiplied by the percent of income spent on convenience goods. These are based upon state and national averages for household income expenditures, as determined by the U.S. Census Bureau for each metropolitan area.

Local Sales Capture

Based on the range of goods and services marketed by businesses along the M-36 commercial corridor, it is evident that residents make only a portion of their purchases in Hamburg Township. Residents of the trade area may take their business outside of the Township for a number of reasons, including convenience, accessibility, price, quality, or variety of selection. The "capture rate" indicates the portion of total trade area sales actually captured by Hamburg businesses.

The capture rate for convenience goods businesses is usually close to 100 percent in neighborhoods near the businesses, but the rate declines sharply at a driving distance of only 10 to 15 minutes from the businesses. Average capture rates are utilized in Table 18. It is likely that the capture rate for convenience businesses may be less because so many people travel outside of the Township to work, thereby patronizing convenience businesses outside of the Township.

Retail Floor Area Requirements

Retail floor area requirements are estimated based upon the total captured expenditure and sales per square foot. Sales per square foot figures are provided by the Urban Land Institute's annual publication Dollars and Cents of Shopping Centers.

Land Area Requirements for Commercial Development

A general standard for shopping centers is that the total site area should be about four times the gross building floor area. This floor area ratio provides ample room for parking, open space, pedestrian and traffic circulation, and landscaping. Based on this ratio, the total land area needs for retail can be estimated.

A comparison of the zoning and existing land use maps reveals that the land area zoned for commercial use exceeds the amount actually devoted to such uses. Many parcels zoned for commercial use are currently under utilized. Some excess of commercial-zoned land is needed to provide adequate area for

development to meet future retail and office needs of the population. The future land use plan provides for continued commercial development within the existing commercial nodes along M-36.

Future Commercial Land Use

In summary, the commercial base analysis reveals that continued commercial development, primarily convenience commercial, can be expected to meet the needs of the Township's growing population. The analysis indicates that insufficient market support for most comparison goods businesses exists within. Consequently, it appears that the potential for large scale commercial development is limited. It is likely that any new construction of commercial facilities will be no larger than a neighborhood shopping center, which has a typical gross leasable area of about 50,000 square feet. Such facilities can be accommodated with some expansion of the existing nodes of commercial along M-36. Also, based on the retail analysis of the Village Center Master Plan, approximately half of the commercial development can be supported in the Village area.

The share of the comparison goods market captured by Township businesses is not likely to increase substantially in the future. Generally, a minimum trade area population of 40,000 or direct access onto a major highway is needed to provide adequate market support for a community shopping center containing comparison goods stores. The SEMCOG population projections and the future land use build out analysis indicators support this, and residents will likely continue to travel to regional shopping centers in Brighton and other nearby communities.

Table 18: Current 2007 and Projected 2030 Convenience Commercial Land Area Requirement

2007							
	Expenditure as % of 2007 Gross Income	2007 Expenditure	Capture Rate	2007 Total Capture Expenditure	Median Sales/Sq. Ft.	Total Sq.Ft. Demanded in 2007	Total Acres in 2007
Food at home/liquor/ housekeeping/tobacco	9.90%	$91,367,434	85 %	$77,662,319	390.25	199,007	18.27
						89,803	8.25
						21,823	2.00
						46,586	4.28
						25,140	2.31
						51,318	4.71
						921	0.08
						434,596	39.91
2030							
	Expenditure as % of 2030 Gross Income	2030 Expenditure	Capture Rate	2030 Total Capture Expenditure	Median Sales/Sq. Ft.	Total Sq.Ft. Demanded in 2030	Total Acres in 2030
Food at home/liquor/ housekeeping/tobacco	9.90%	$136,599,676	85 %	$161,109,724	390.25	297,527	27.32
		$72,025,284		$36,012,642	268.23	134,260	12.33
		$64,022,474		$6,402,247	196.23	32,626	3.00
		$264,920,583		$52,984,117	760.74	69,648	6.40
		$69,127,715		$3,456,386	91.96	37,586	3.45
		$17,799,352		$11,569,579	151.77	76,231	7.00
		$4,277,364		$213,868	155.38	1,376	013
		$628,722,447		$226,748,563		649,254	59.62

Footnotes:

[1] 2007 Estimated Population – 24,301; 2030 Projection Population – 36,331

[2] Per Capita Income – $37,978

[3] 2007Gross Income – $922,903,378; 2030 Gross Income – $1,379,794,704

Non-conforming Lots of Record

There are a number of older subdivisions with the Township that pre-date current zoning and subdivision standards. These are generally located along the Chain of Lakes and were originally developed for lake-front cottages. The lots within these subdivisions do not conform to current minimum lot size standards, but are "grand-fathered" by the Zoning Ordinance as nonconforming lots of record. The Zoning Ordinance provides that a nonconforming lot of record may be developed without obtaining a variance from the Township Zoning Board of Appeals provided the structure meets all setback requirements. It should be noted that the proposed zoning designations shown in Table 16 account for the reduced lot size along the lakes and within the Village.

Those nonconforming lots that have been developed were often originally occupied by cottages. Over time, these small cottages were expanded and converted to permanent year-round residences. The structures on these lots often do not conform to current setback requirements. Expansions to these existing structures often require variances from the Zoning Board of Appeals.

In other instances, lots have been combined to form larger lots. The combination of lots provides additional land area for larger residential structures.

While many of these lots have been developed, there are still a significant number of undeveloped nonconforming lots of record. Even if a number of contiguous nonconforming lots are under single ownership, current zoning standards allow them to be developed separately.

Because these areas were platted prior to current subdivision regulations, many of the lots are served by substandard roads. These subdivisions were also platted prior to current wetland and floodplain regulations, so a significant portion of these waterfront lots are located within floodplains and wetlands. Because these older subdivisions are located around lakes and the Huron River, the soil conditions of many of these lots is unsuitable for onsite septic drain fields.

Development of many of these vacant nonconforming lots will have an impact on wetlands and floodplains. The population density that would result from each of these small lots being developed as an individual dwelling may overburden the local roads, utilities, schools, parks, police, fire protection and other public services. Where vacant nonconforming lots are served by substandard roads, there will be problems associated with accessing lots.

The Township should adopt policies to address the problems associated with development of these nonconforming lots of record, particularly development of the vacant nonconforming lots of record.

- Zoning standards should be updated to reflect the existing conditions and desired character of the lakefront and Village lots.
- Zoning standards should require where two or more contiguous nonconforming lots are under single ownership, that the lands involved shall be considered to be an individual lot for the purposes of meeting minimum lot area requirements of the Zoning Ordinance; hence requiring combination of multiple lots.

- It should be required where development of vacant lots are proposed, that the lots must first be served by a road that meets minimum public or private road standards.
- The Township should continue the policy of providing public sewer service to these nonconforming lots located near lakes.

Implementation Recommendations

1. The Land Use Plan reflects long-term desired growth patters, densities and land uses. One of the principle means of implementing the Land Use Plan is through the Township Zoning Ordinance. Future rezoning requests and special use permits should be reviewed for agreement with the basic proposal of this Plan. Table 16 illustrates the relationship between current zoning districts and the land use classifications proposed by the Land Use Plan.
2. The following areas of the Township Zoning Ordinance should be reviewed and revised:
   a. Permitted and special uses in each Zoning District should be reviewed for compatibility with current conditions in the Township and the Land Use Plan. Since the adoption of the ordinance in 1968, certain uses may no longer be appropriate for the district in which they are located.
   b. Administrative rules, procedures and standards should be updated to conform to revisions in the Michigan Zoning Enabling Act, and changed conditions in the Township.
3. To avoid costly drainage improvements in the future, and promote uniform requirements, the Township may wish to consider adopting standard for storm drainage improvements to be applied to new subdivision plats and site plans. The standards would be designed to regulate the amount of storm runoff permitted to leave a development site so that existing drainage systems are not overburdened.
4. Although much public debate has been devoted to floodplain zoning, a great deal of misunderstanding exists. As was experienced with the adoption of a Natural River Residential District, reasonable regulation can be developed which promotes the public interest while protecting private rights. The recent completion of detailed floodplain mapping provides accurate information to Hamburg citizens. The Floodplain Citizens Committee should now proceed with developing floodplain zoning regulations.
5. The maintenance and, in some cases, improvement of water quality within the Township will be largely influenced by the efforts of Township residents. Although numerous lake associations exist, there is a need for these groups to pool their efforts to achieve a common goal. It is recommended that an Inter-Lakes Associate be formed composed of representatives of each lake to discuss and solve common problems.
6. Improvements along M-36 near Hamburg Village will only be achieved through the cooperation of the businesses located there. An M-36 Business District Committee should be established composed of Planning Commission representatives, business people, and other interested citizens to explore methods to improve traffic circulation and safety, visual appearance and economic utility of the M-36 business strip.

7. It is well established scientific fact that when the impervious surface within a watershed exceeds a certain level, degradation of water bodies within that watershed will occur. As Hamburg Township is located entirely within the Huron River Watershed and since the water bodies within the Township are vital to preserving the character of the Township, the following recommendations are made:

    a. The Township devise a fair and equitable regulatory scheme to limit the amount of effective impervious surface at a level that will not degrade waterbodies within the Township, and

    b. The Township work with other municipalities and governmental bodies to develop a watershed-wide plan to limit the effective impervious surface levels within the watershed in order to preserve water quality.

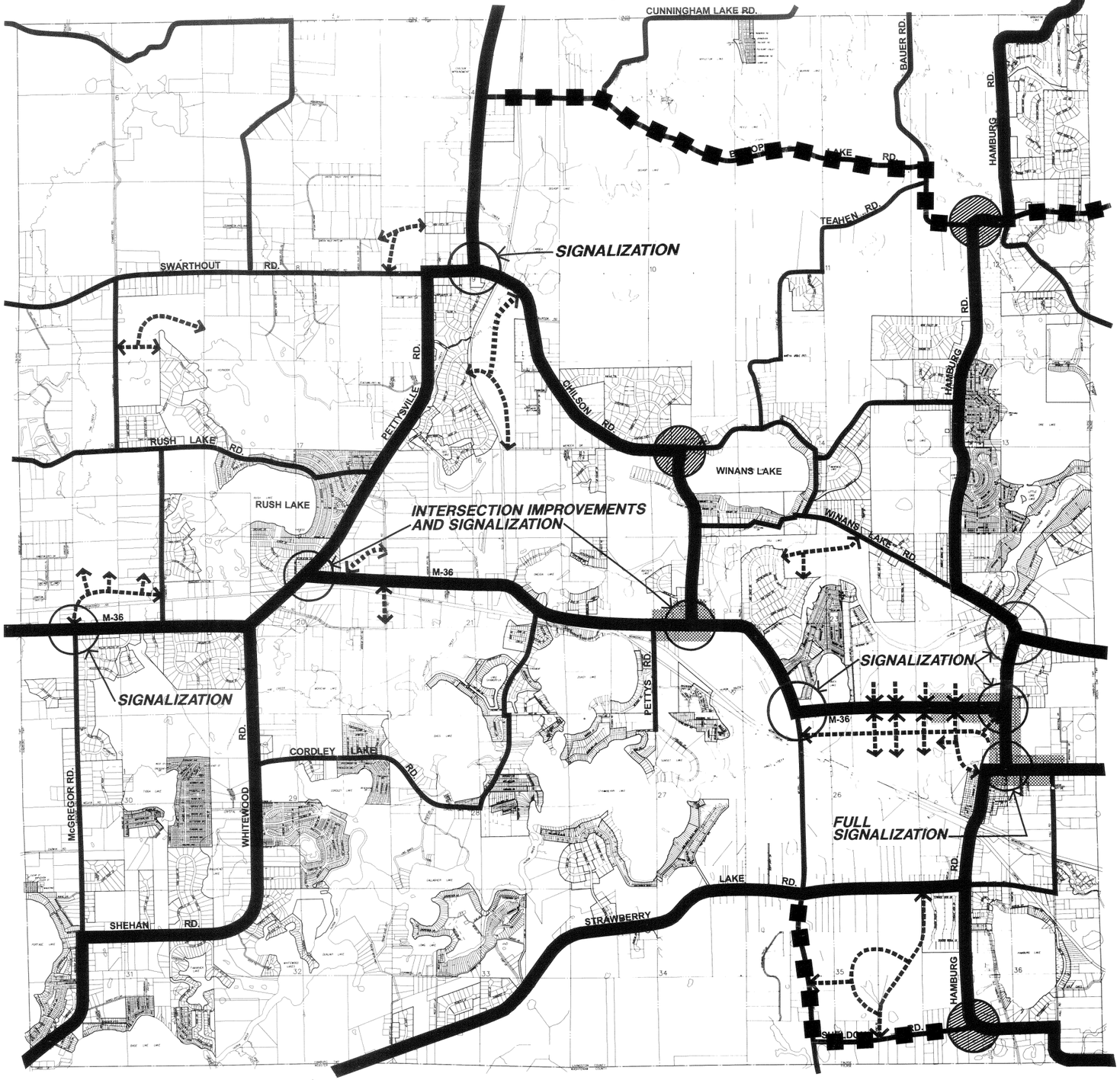
Transportation System

MASTER PLAN | **HAMBURG TOWNSHIP**

Map 15

Transportation Improvement & Functional Classification

Hamburg Township,
Livingston County, Michigan



- ARTERIAL ROAD
- COLLECTOR ROAD
- LOCAL ROAD
- FUTURE ROAD/CONNECTIONS
- ROAD WIDENING
- INTERSECTION SIGNALIZATION AND IMPROVEMENTS
- NTERSECTION IMPROVEMENTS
- ROAD PAVING

BASE MAP SOURCE: Holland Engineering, 1995
DATA SOURCE: McKenna Associates, Inc., 1995

0 2,000 4,000 Feet

McKenna ASSOCIATES INCORPORATED

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Roadway Functional Classification

Function efficiency and safety of roadway movement in Hamburg Township can be furthered through the establishment of a classification of roads and planning and designing these facilities for their specific purpose, See Map 14. A functional system or hierarchy of roads provides for movement of traffic as well as access to specific sites. This hierarchy will range from M-36, which primarily serves for movement to local subdivision streets which serve to access individual homes.

The functional classification system has a four element hierarchy in Hamburg Township:

- Major Arterial (M-36)
- Arterial
- Collector
- Local

This system defines the roles of each street, in terms of operational requirements; which is in turn translated into planning, management and physical design features.

Major Arterial: The M-36 Corridor is the major roadway through Hamburg Township. The limited crossings of the Huron River and the natural features have led to a road system that funnels virtually all longer distance travel to M-36. It is the only east-west arterial in the community.

The highway serves as the principal route between the residential population of Hamburg Township and major activity centers throughout the region. The highway has changed from a rural low volume road to a connector with increasing traffic between new residential development and employment centers outside of the Township.

Because of the highway's vital function towards moving traffic through the Township and to destinations outside of the community, access needs to be managed to maintain the roadway's movement function. This involves limiting the locations of access points to areas where intersection movements can be best accommodated with minimal impact to traffic movement.

Because of the amount of traffic on M-36, the more intensive commercial uses have developed along this corridor. High traffic generating uses locate along M-36 because it is the most accessible area of the community. This roadway will continue to serve managed access to high traffic generating uses.

Arterial: There are a number of north-south roadways which move traffic throughout the Township and provide connections with other adjacent communities. These roadways also provide access from other areas of Hamburg Township to M-36.
These roadways serve for longer trips within the Hamburg Township and adjacent communities. Like M-36, the primary function of these roads is to move traffic. Because of this, access to these roads must be managed in order to maintain safe and effective movement.

Collector: The collectors serve to assemble traffic from local subdivision streets of residential neighborhoods and deliver it to the arterial. Collectors will also serve to provide access to abutting properties. Many individual subdivisions will contain one or more collector street which funnels traffic from the local streets and connects with adjacent neighborhoods.

Local Streets: Local streets serve primarily to provide access to property and homes. These roadways are generally short and discontinuous, and generally only provide connection to one or two collector streets.

Table 19: Roadway Functional Classifications

	North-South	East-West
Arterial	Hamburg Road	M-36
	Chilson Road	Strawberry Lake Road
	Pettysville/Whitewood/ McGregor Rds.	Winans Lake Road
Collector	Hall Road	Cunningham Lake Road*
	Teahen Road*	Bishop Lake/Bauer Road*
	Merrill Road*	Swarthout Road*
	Pleasant Road	Rush Lake Road*
	Pettys Road	Cordely Lake Road
	Kress Road	Winans Lake Road
	Chambers Road*	Sheldon Road*
	Richardson Road*	
	McGregor Road	

** Portion of roadway gravel*

Constraints

Several natural and fiscal constraints impact the development and efficiency of Hamburg's public roadway network. In a featureless environment, where no financial hindrances to development is present, the roadway system will most likely resemble a grid system, much like that which has developed in many Midwestern communities. Hamburg, however, is not a featureless environment, nor does it benefit from infinite resources. As such, the following considerations must be examined to most effectively plan, prioritize and program the Township's transportation system:

- Water bodies;
- River crossings;
- Wetlands;
- Topography;
- Rights-of-way;
- Financing availability; and
- Cost effectiveness of proposed improvements.

Recommendations

There are a number of improvements that will need to be made to the road network in Hamburg Township, see Map 14. As the Township continues to develop, traffic levels will increase creating capacity deficiencies. Maintaining the capacity of the transportation network should be done through a comprehensive approach. Limited road widening can be made; primarily in the form of additional lanes at the major intersections and commercial segments of M-36. Intersection improvements and signalization can be made at congested intersections or intersections with relatively high accident rates. Transportation management practices, such as access management, can be used to maintain the efficiency of the transportation network.

Road Widening

In order to preserve the rural character of Hamburg Township, any future road widening should balance traffic needs with consideration of natural features. Road improvements should not be designed to address only peak hour traffic conditions alone, but should be sensitive to the 24 hour impacts of traffic in terms of the environment, community character and traffic conditions. Excessive road widening would lead to increased traffic speeds and a more suburbanized appearance. Periodic congestion may be preferred over excessive widening for through traffic.

Road widening should be made at select locations along M-36. This would primarily be done at major intersections and along the commercial segments of the corridor. The study that was conducted on M-36 recommended a third lane for left turns be added in the commercial area at Chilson Road and through the Hamburg Village area. An additional lane would accommodate left turns, increase capacity and reduce potential for rear-end crashes. These improvements would include one 10 to 12 foot wide lane in each direction and a 10 to 12 foot wide left turn lane.

The Township should also request acceleration and deceleration lanes along major roads for all developments which require site plan review and passing lanes for projects that will generate moderate to high left turn volumes or where there are sight distance limitations.

Throughout most of the Township, roads are expected to remain two lanes. The narrower roads which wind through the hills and lakes of the community add to the natural rural character of Hamburg Township. Because road widening is not planned, improvements will need to be made at intersections to improve efficiency.

Road Paving

M-36 is the principal east-west roadway in the Township. Many of the north south roadways funnel traffic onto M-36. This corridor has also historically been, and will continue to be the area of most intensive land uses and highest traffic volumes.

In order to maintain the function of this road, the Township road network needs to be supplemented through enhancing other east-west connections and reducing the dependency of M-36. The plan recommends paving of a number of east-west gravel roads.

Bishop Lake, Bauer and Maltby Roads are proposed to be paved, in combination with intersection improvements at Bauer/Maltby and Hamburg Roads. This will provide a continuous connection from

Chilson Road eastward to Green Oak Township and US 23. These improvements are currently planned by the Livingston County Road Commission.

Merrill and Sheldon Roads in the southeast corner of the Township are proposed by this plan to be paved. These road improvements are intended to serve the higher density development in this area of the Township and supplement movement of traffic around the Hamburg Village area.

Intersection Improvements

Selected intersection improvements should be made at locations which have experienced higher crash rates than other intersections. Improvements can include turn lanes, sight distance improvements, pavement improvements, signalization or other form of traffic control such as roundabouts. Locations suggested for intersection improvements are as follows:

- M-36 and Hamburg Road
- M-36 and Chilson Road
- M-36 and Pettysville Road
- M-36 and McGregor Road
- Chilson Road and Cowell
- Hamburg Road at Bauer Road, Winans Lake Road and Sheldon Road

Traffic signals should be requested along M-36 to provide gaps in the flow of traffic at peak travel times. Traffic signals may be necessary along M-36 at intersections designated as more intense commercial nodes. The Township should work with the Michigan Department of Transportation to locate these signals as they become warranted.

As an alternative to signalization, the Township should consider other forms of traffic control devises such as roundabouts. The Michigan Department of Transportation considers these traffic control devises as possible alternatives to signalization, in appropriate situates.

While roundabouts are similar to traffic circles, the modern roundabout is designed to allow traffic to flow freely around the circle, with entering vehicles yielding to vehicles already in the circle. Roundabouts are seen as a means to increase roadway capacity while minimizing the need to add lanes. Also, eliminating the need for signalization at roundabouts will help to preserve the rural character of Hamburg Township.

Traffic lights are also suggested at the intersection of Winans Lake Road and Hamburg Road and at the intersection of Chilson Road and Swarthout Road.

- Winans Lake Road is a principal route from the Township to US 23. As the population of the Township increases, particularly in the village area, the importance of this entrance to the community will continue to grow.
- Chilson Road is the principal link between Hamburg Township and Genoa Township and the City of Howell to the north. The intersection of Chilson Road and Swarthout Road splits trips generated from eastern Hamburg Township from those generated from western Hamburg

Township via Pettysville Road. The roadway currently carries a relatively high level of traffic. If a new interchange with I-96 is constructed to the north in Genoa Township, the importance of Chilson Road will increase, particularly for accessing the western portion of Hamburg Township.

Access Management

Typically the approach to addressing high traffic volume is to widen a road to 3, 4 or 5 lanes. However, widening can disrupt the rural atmosphere of an area. Maintaining safety and smooth traffic flow without costly, premature or even unnecessary widening is a goal of this Plan. One technique to help preserve capacity and promote safety while delaying or avoiding the need for widening is access management.

As stated above, traffic volumes are increasing, particularly along M-36. The lack of state and local regulation over the number and placement of driveways increases potential for congestion and crashes. Disjointed access systems conflict with the traffic movement function. A continuation of the present pattern of development will hamper the road network's ability to accommodate additional traffic.

The lack of controls over the number and placement of driveways increases potential for traffic congestion and crashes. Poor but heavily used access systems conflict with the traffic movement function of the Township's major roads, particularly along M-36. A continuation of the pattern along M-36 of closely spaced driveways, which serve individual businesses and homes, will hamper the corridor's ability to accommodate additional traffic without severe congestion. Because of sight distance limitations in many areas of the Township, there are limited locations for optimum driveway and intersection placement.

The Township has adopted zoning standards for access management. Access management involves reducing traffic conflicts (i.e. potential for crashes) and preserving through traffic flow using a variety of measures.

Number of Access Points: The number of access points should be limited to one where possible. Along major roads, driveways should be properly spaced from one another and from intersections with other major streets. Driveways should be aligned with those across the street or properly offset following the adopted zoning standards.

Alternative Access: Along major arterials, such as M-36, alternative access should be encouraged, such as shared driveways, rear service drives or frontage roads. Commercial developments and parking lots should be connected through front or rear service drives. Frontage drives, rear service drives, shared driveways, and connected parking lots should be used to minimize the number of driveways, while preserving the property owner's right to reasonable access. Certain turning movements should be limited, especially left turns, where safety hazards may be created or traffic flow may be impeded.

High Traffic Generators: Uses that are high traffic generators should be located on the future land use and zoning maps where they can best be accommodated by the roadway system.

Hamburg Village: The Hamburg Village Subarea Plan contains a proposed circulation and access system. This includes a hierarchical road system that establishes road functions ranging from local access to through arterial. This system defines the roles of each street, in terms of operational requirements; which is in-turn translated into planning, management and physical design features. The location of future access points to M-36 are defined. This road network will reduce the need for direct access to M-36 and help to manage the flow of traffic in this more intensely developed portion of the Township.

New Road Development

There are currently no plans or funding for the Livingston County Road Commission, or the Michigan Department of Transportation to construct new public roads. All new road construction within the Township will be the result of private development.

There are a number of areas in the Township that have un-subdivided parcels. The Township is currently experiencing a rapid rate of development with numerous new subdivisions, condominiums and lot splits. All newly created lots (and condominium units) are required by the Zoning Ordinance to have public road frontage, or frontage on a private road constructed to the standards of the Township Private Road Ordinance.

Development of future roads, whether public or private, needs to be well planned to ensure the establishment of a safe and efficient vehicular circulation system. Special attention needs to be given to the planning and design of roads for the following purposes:

- Protect the substantial public investment in the street system.
- Promote and coordinate effective and energy efficient development.
- Promote the orderly development of, and ongoing access to, land.
- Protect community character and minimize environmental impacts.
- Promote safe and efficient travel within the Township.
- Prevent duplication of roads.
- Ensure reasonable, though not always direct, access to properties.
- Ensure roads remain passable in all weather conditions and are adequate to provide safe, year-round access by fire, police and other public and emergency vehicles.
- Ensure roads are improved to properly handle development impacts.

Map 14 identifies potential locations for future road connections. Requiring connections of local roads is essential to developing a local road network and maintaining the effectiveness of the Township's major roads. Providing road connections between adjacent subdivisions allows for the movement between adjacent neighborhoods without the need to access major roads. It also provides alternative means for residents within the subdivisions to access the major road network at locations that are most efficient for traveling to their destination, shortening trips and thereby minimizing traffic impacts to the major road network. It is important that connections between local streets be designed to discourage use by through traffic that does not have an origin or destination within the local neighborhood.

Public V. Private Roads

The Township currently has standards in the Township Private Road Ordinance for development of local private roads. These standards are applicable to local streets with a primary function to provide access to abutting residential land, and not serve higher volumes of through traffic. The private road standards allow for development of narrower roads with steeper grades and smaller turning radii. These are all intended to minimize the impact of road construction and preserve natural features. The standards required by the County Road Commission for public roads require wider roads with lesser grades and larger turning radii. These standards are considered to be more suitable for roads that will carry higher levels of traffic and serve for through connections.

Within larger developments, particularly those that could potentially have roads that serve as through connectors to arterials, there is a need to have a hierarchy of roads. While local roads can be designed to the applicable private road standards, roads that will carry higher levels of traffic may need to be designed to public road standards, even if they are not publicly dedicated. The Township can adopt standards for when a road will need to be designed to a standard higher than the minimum private road standards, such as:

- There is an indication of a need for the roadway to be dedicated as a public road in the future.
- The road will contribute to the continuity in the public street system at the present time or in the future.
- The road will offer access to adjacent undeveloped parcels that currently do not have road access.
- The expected traffic volumes along the roadway will be relatively high.
- The abutting development is at a relatively higher density or a significant amount of on-street parking is anticipated.

Huron River Bridge

The Huron River runs diagonally across the southern portion of the Township. There are only two bridges crossing the river, M-36 and Winans Lake Road; both of which are in the eastern portion of the Township. Where the river flows out of the southwest corner of the Township, it is a considerable distance into Washtenaw County before there is another crossing. The distance along the Huron River between the M-36 bridge and the North Territorial Road bridge in Washtenaw County is approximately eight miles.

A new crossing of the Huron River in the southwest corner of the Township is proposed as a long term goal. While existing development patterns, environmental considerations and availability of funds will make this difficult to develop, this is intended as a long term consideration. The likely location of this new crossing would be between Shehan/Whitewood Roads and Strawberry Lake Road. The feasibility of an additional crossing will need to undergo detailed examination prior to further consideration.

Traffic Impact Evaluations

One procedure to help ensure that access issues and traffic impacts associated with development are properly evaluated is to require a traffic impact study. The zoning ordinance should be amended to require traffic impact studies be prepared by the developer under certain conditions.

A traffic assessment should be required to evaluate site access points for uses which are expected to generate 50-99 directional trips (one-way into or out of a site) during the peak hour or 500 trips in an average day. Trip generation rates should be based on the most recent edition of Trip Generation published by the Institute of Transportation Engineers.

A more detailed traffic impact statement should be required which evaluates impacts at site access points and nearby intersections or driveways, for uses which would be expected to generate over 100 peak hour directional trips or 750 or more trips on an average day.

The traffic impact study should include the information and procedures recommended in the handbook *"Evaluating Traffic Impact Studies"* prepared by the Michigan Department of Transportation, Southeast Michigan Council of Governments (SEMCOG) and Tri-County Regional Planning Commission.

Traffic impact study should address site access issues, such as the potential to share access or use service drives. The study should analyze options to mitigate traffic impacts, such as changes to access or improvements to the roadway.

Implementation

Current practices and programs for funding maintenance and improvements to Hamburg's roadways allow a range of options. Besides general funds, any of the following implementation mechanisms can effectuate Hamburg Township's transportation planning needs: dedicated millage, special assessments, bond programs, tax increment financing, Intermodal Surface Transportation Efficiency Act funds (ISTEA) and Community Development Block Grant Program (CDBG).

- **Dedicated Millage:** Special millage can be used to generate revenues for a specific purpose. The Township could consider opportunities for special millage to implement recommendations in the Master Plan. For example, several Michigan communities have special land acquisition fund that is supported by a one-quarter mill property tax. A land acquisition fund would be a useful tool to promote right-of-way widening or dedication in Hamburg Township. Other communities have millages to fund road improvements.
- **Special Assessment:** Special assessments are compulsory contributions collected from the owners of property benefited by specific public improvements (paving, drainage improvements, etc.) to defray the costs of such improvements. Special assessments are apportioned according to the assumed benefits to the property affected. Special assessment funding might prove useful to implement roadway paving, streetscape improvements, secondary access drives in districts fronting on arterial streets and to construct new roads, as necessary and appropriate. These programs are particularly helpful for improving and upgrading older local roads.
- **Bond Programs:** Bonds are among the principal sources of financing used by communities to pay for capital improvements. General obligation bonds are issued for specific community projects and are paid off by the general public via property tax revenues. Revenue bonds are issued for construction of projects that generate revenue (i.e. parking structures, etc.). These bonds are retired, or serviced, using income generated by the project.
- **Tax Increment Financing:** Tax increment financing is authorized by the Downtown Development Authority Act and Local Development Finance Authority Act. When a tax increment finance district is established, the stated equalized assessment value of all properties within the district

are recorded. Every year thereafter, the property tax revenue generated by any increase in the total stated equalized value is "captured" by the responsible organization to finance improvements established in the overall development plan. The development plan is a required document illustrating all proposed improvements within the district. Often, revenue bonds are used to finance the improvements and the tax increment revenues are used to repay the bonds. This tool could also prove to be a valuable tool for roadway improvements within the Township.

- **Intermodal Surface Transportation Efficiency Act Funds (ISTEA):** The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) establishes a fund for transportation enhancement activities. Funds from the Surface Transportation Program are set aside for these activities and can include a number of transportation enhancement activities including historic preservation, landscaping and beautification, pedestrian pathways, roadway improvements and other similar projects. Each year funds become available for allocation based on a competitive needs basis. Requests are solicited and screened for application completeness at the local level, screened for project merit at the regional level and finally selected for action at the State level by the Michigan Department of Transportation. This program has is an established resource which the Township should also consider.
- **Community Development Block Grant Programs (CDBG):** The Community Development Block Grant Program provides Federal funds on an annual basis to local governments for a variety of programs that are intended to benefit low and moderate income residents or certain target populations, such as the elderly. These funds can be used for community development activities, such as infrastructure improvements and beautification efforts. The funds should be used in a manner prescribed in localized revitalization strategy plan for a specific area within the Township. As with ISTEA award selection, project requests are screened for application completeness and merit prior to selection for funding.

The Township should also work closely with the Michigan Department of Transportation and the Livingston County Road Commission to ensure that proper road improvements are being installed with developments. This can include additional turn lanes or the dedication of future right-of-way.

Natural Resource Management Strategies

MASTER PLAN | **HAMBURG TOWNSHIP**

Natural Resource Management Strategies

Throughout this document, the importance of the natural resource base has been emphasized. The correlation of land use density to natural resource capability will help promote preservation of natural amenities. However, the Master Plan must address the quality as well as the quantity of land use within the Township. A commitment to protection of Township resources will require the adoption of policies directed toward the following specific resource problems.

The Master Plan must address the quality as well as the quantity of land use within the Township. A commitment to protection of Township resources will require the adoption of policies directed toward the specific resource problem including drainage, floodplains, surface and groundwater quality, and natural topography and vegetation. Resource protection regulations can be incorporated in subdivision, zoning and other special purpose regulations.

Conservation Zoning Districts: The interrelation of the environmental component of the Master Plan with the land use component is most visible with the establishment of land use categories following the constraints and opportunities for development. Within areas identified as having significant and fragile natural resources, lower impact/density development is recommended. This is based upon the natural capability analysis described in the previous section.

This, in combination with other factors such as existing land use patterns and transportation areas with critical natural features, are identified in the future land use map for Low Density Rural Residential. The following Zoning Districts provide for the protection of these fragile natural areas:

- RAA - Single Family Low Density Rural District: This district currently has a minimum lot area requirement of 87,120 square feet or two acres per dwelling unit. This is currently the lowest density zoning district in the Township. This lower density developed with the flexibility offered by the Township's Open Space Community regulations allows for a low impact form of development that can minimize impact on natural features.
- NR - Natural River Residential District: This district has been established along the Huron River and was established based upon standards contained in the Michigan Natural River Act (PA 231 of 1970). This District was established to implement public objectives embodied in the Huron River Natural River Management Plan adopted by the Natural Resources Commission, and endorsed by Hamburg Township. These public objectives seek to preserve and enhance the values of the Huron River area. This district contains standards that protect the Huron River such as: setback requirements for buildings and septic systems, restrictions on land alteration, standards for building design and screening, requirements for maintaining a natural vegetation strip along the river's edge and strong regulations for waterfront structures such as docks.
- New Zoning District: There are certain portions of the Township that are characterized by significant natural features such as extreme topography, large wetland complexes and extensive wildlife habitat. Much of these areas are within the Brighton State Recreation Area in the northern portion of the Township. Many of the privately owned lands surrounding the Recreation Area have been developed at a very low density due to the extreme natural conditions of this area. As the surrounding areas become more urbanized, the Department of Natural Resources may sell portions of the State Recreation Area to purchase land in more remote locations. The Township may consider adopting very low density zoning district that would require a larger lot

size, such as five acres, for this area. This would help ensure that the significant natural features of this area will be protected if this area becomes developed.

Natural Feature Setback Standards: The Township may enact general zoning standards that apply to all zoning districts. This could be in the form of a natural features setback requirement. The Zoning Ordinance could require that natural buffers be maintained along natural features such as waterways and wetlands. To protect the stability of bluffs surrounding these natural features, the setback requirement should be increased as the slope of the land increases. Standards could also be established to require that this setback be maintained in a natural condition.

There is a strong basis for this type of requirement. Development surrounding water features, particularly wetlands, affects the function of the water feature. Development immediately adjacent to a water feature may have the effect of increasing the disturbance to this natural ecosystem and reduce the water feature's ability to perform these functions.

For example, wetlands are dependent upon an interaction between the wetland and the surrounding upland. In terms of hydrology, water enters a wetland from the surrounding upland area in a number of ways: overland flow, through the upper layers of the soil and through groundwater. The upland soil and vegetation surrounding the wetland all affect the amount, the means and the rate at which water enters the wetland following a storm or snow melt. Development of the surrounding upland will alter the relative balance between the overland (surface) flow and infiltration, resulting in a greater peak discharge to the wetland. In other instances, physical improvements such as structures, roads and storm sewer systems can intercept surface flow to the wetlands. These alterations to hydrology can result in much greater fluctuations in water levels between wet and dry seasons. The undisturbed soil between the site improvements and the wetlands acts as a buffer to try to maintain the natural upland/wetland interaction that existed prior to development.

In addition to the hydrologic function, waterways are natural open space corridors which serve as wildlife habitat. Animals move through suburban areas along remaining undeveloped natural corridors, such as the numerous drainage ways that cross the Township. Development immediately adjacent to these natural features has a detrimental impact on wildlife habitat by moving structures and disturbance further into these natural corridors and increase the constriction of development on these habitats. Protection of the area that lines natural features is also important to wildlife because this is the interface between the aquatic and terrestrial (upland) ecosystems system. This interface is important to animals such as land mammals that need water or birds that will perch on trees while hunting for fish.

Streambank & Slope Protection: As pointed out previously in this plan, steep slopes require sensitive site planning prior to development. Above the floodplains and wetlands that line the Huron River and the other drainage ways of the Township there are steep banks or bluffs which separate the lowland and the upland. These will generally have steep slopes and be heavily vegetated. Disruption of the vegetative cover on these bluff areas may cause significant erosion problems and effect stream ecology. Care should be taken to insure that extensive grading is minimized and to insure that natural features such as vegetation, and top soil are protected. This applies not only to bluffs that line waterways, but also other areas of the Township where there is significant topography.

There are a number of means for the Township to protect steeply sloped areas:

- Setback requirements, such as the Natural River District could be established for all waterways. This requirement could be variable based upon the extent of the slope. This standard could be incorporated into the natural features setback described above where the setback is increased as the slope increase.
- The flexibility offered by the Open Space Community regulations can be used to cluster the development away from steep slopes. The Open Space Community regulations could be amended to require that areas with steep slopes be preserved as natural open space.
- Another innovative approach could be to adopt slope-related regulations where the density of development would be reduced on sites that contain steep slopes. Lots that are located in areas with severe topography would have to be larger. While this may add some complexity to conventional development, it may also serve as an incentive for clustered development under the Open Space Community regulations.

Stormwater Management: The increase in development activity will place additional burden on existing natural drainage systems unless preventive measures are adopted. The overtaxing of drainage systems could lead to localized flooding, environmental damage, and costly storm drainage improvements to be borne by taxpayers.

By prompting the preservation of natural drainage ways and providing stormwater retention basins, the impact of development upon drainage systems can be minimized. The Township has adopted a strong Drainage Ordinance. This ordinance takes a comprehensive approach to stormwater management by encouraging: the preservation of existing natural features that perform stormwater management functions, minimization of impervious surface, direction of stormwater discharge to open grassed areas and careful design of erosion control mechanisms. The ordinance generally requires the development of wet ponds and storm water marsh systems for detention. The ordinance requires landscaping of storm water basins, wet ponds and storm water marsh systems. Plantings should be adapted to hydric conditions and be installed to create a system that emulates the functions of natural wetlands and drainage ways both in terms of hydrology and natural habitat. The Township should strictly enforce the provisions of the Township Drainage Regulations.

Erosion & Sedimentation Control: Sediment loadings within the rivers and lakes degrades the water quality in a number of ways. Control methods are a critical issue in Hamburg Township that has a direct bearing on the quality of the Township's numerous water features.

- Management of erosion and sedimentation is addressed in the Township's Drainage Ordinance, described above. This ordinance incorporates elements that help control sedimentation such as utilizing natural grassed swales, sedimentation ponds, wet ponds, and storm water marsh systems. The Township should strictly enforce the provisions of the Township Drainage Regulations.
- The Township may wish to work with the County, State, and Huron River Watershed Council to inventory areas where significant streambank erosion is occurring. A partnership can be formed between government agencies and private groups to undertake a streambank stabilization effort.

Gravel Road Crossings of Streams: In addition to streambank erosion, sediment delivered at road/stream crossings contribute significantly to sediment pollution in waterways. The problem is most pronounce with gravel road crossings. Sedimentation from roads destroys fish and wildlife habitat by filling deep ponds, decreasing hydrologic diversity and covering spawning gravel and aquatic substrate. The sediment also degrades water quality by carrying oils, greases and other pollutants from the roadway into the waterway.

- The Township can work with the Road Commission, the Michigan Department of Natural Resources and the Michigan Department of Transportation to control and manage sediment delivery at road crossings. This can be done through a variety of means including a combination of paving, curb and gutter, drainage control structures, diversions, and sedimentation basins.
- The Township Private Road Ordinance and Drainage Ordinance can be amended to require that sedimentation control structures at all road/waterway crossings.

Septic Disposal: Ground water and surface water contamination from septic drain fields has been a serious concern in the Township. Many of the areas surrounding the chain of lakes in Hamburg Township where developed prior to current zoning and health regulations. Many of these neighborhoods were developed as cottage communities at higher densities than currently allowed and within areas where the soils are not suitable for septic disposal. The continued growth of the community and the conversion of many of these cottages into year round homes has over time lead to contamination problems. In response to this, the Township has established public sanitary sewer districts to serve these areas. Through working with the Livingston County Health Department, the Township can continue to manage the problem of ground water and surface water contamination from septic drain fields:

- Continuation of the provision of public sanitary sewer to higher density areas of the Township and those areas with poor soil conditions.
- Restrict the density of future development in areas where the threat to ground water and surface water contamination is highest. This would include areas along waterways and areas with poor soil suitability for septic drain fields.

Restoration of Wetlands: Previous to current wetland regulations, many wetlands within the Township have been filled, drained or otherwise altered. Wetlands along the Huron River and the Cain of Lakes have been filled for the purpose of development. In other areas, drains and agricultural tiles may have been installed to drain surface water from wetlands so that the land could be farmed.

The location of these altered wetlands can be identified. Although the hydrology of the site has been altered, the native soils will still exhibit coloration and textures associated with hydric conditions. Also, the Michigan Department of Natural Resources has mapped pre-settlement land cover (vegetation) based upon historic survey records. Maps are available for Hamburg Township that show the historic natural land cover.

These wetlands can be restored. Hydrologic restoration may involve the removal of fill material and/or closing (or slowing) man-made drainage ways. Restoration may also involve covering the soil surface with peat and re-establishment of hydrophytes (wetland vegetation). Within Open Space Community developments where there are damaged or filled wetlands, a condition of approval may be the restoration of the natural system.

Floodplains: A significant portion of Township residents live within a floodplain. These areas are characterized by the older lake front cottage developments that pre-date current floodplain regulations. Any attempt to eliminate existing floodplain development is not practical. However, the Township has adopted realistic regulations for any new development or redevelopment within the floodplain.

Within the floodplain there are varying degrees of hazard which require different regulatory treatment. The floodway is that portion of the floodplain which directly adjoins the stream channel and endures frequent flooding and strong currents. The floodway is an inappropriate area for permanent construction, especially designed for human habitation. However, the area within the floodplain but outside the floodway serves as a backwater storage area and may be developed provided structures are elevated above the flood level or flood-proofed. The current Township regulations reflect these standards.

Lake Access & Use Regulations: Increased population in Hamburg Township and lake front development have continued to place pressures on the many lakes of the Township for recreational use. The Township currently has regulations that govern the creation of AKeyhole@ development. A keyhole, also referred to as a common use access site, is a waterfront lot that is used to provide lake access for non-riparians (non-lake front lot owners). There are many existing subdivisions that contain these keyhole lots and predate the ordinance. These keyholes are generally waterfront parks that are owned in common by all lot owners within the subdivision.

When used for access and dockage for numerous boats, these can increase the density of boat usage on the lakes and contribute to the following problems, particularly from power boats:

- Shore erosion.
- Damage to lake bottom and stirring-up of sediment.
- Oil and gas spillage.
- Noise.
- Conflicts and safety problems between numerous users (power boats, sail boats, personal watercrafts, canoes and swimmers).

As the Township continues to grow the problem associated with lake overcrowding will worsen. It is important to point out that keyholes are only one part of the problem. Impacts to the safety and quality of the Township's waterways is also impacted by recreational use by riparian, or waterfront lot owners, as well as public access sites such as MDNR launch sites. While the current keyhole ordinance can help manage the problem, the Township should consider further study towards adopting a more comprehensive approach towards managing usage of the Township's waterways.

- The Township may adopt a lake access ordinance that restricts the number of boats that can access each lake based upon water frontage. This ordinance would apply both to keyhole access as well as lake front lot owners. Under this ordinance, each lake front lot (keyhole or private) would be allowed one power boat plus one additional boat for each specified amount of shore length. The specified amount of shore length would need to be established for each lake based upon a study of the carrying capacity of the lakes based upon following factors:
    - Lake characteristics including: lake size, shoreline perimeter, amount of shallow vs. deep lake area, water quality, bank, and soil characteristics and turnover rate.
    - Land use characteristics including: the number of platted lots along waterfront, ownership patterns, zoning minimum lot sizes/widths and common use/keyhole/public access sites.
    - An inventory of the number of power boats stored on the lake, the number of boats gaining access through common use/keyhole/public access sites and the total number of boats using the lake on peak days.

- The Township may request the MDEQ adopt special regulations for marine safety in Hamburg Township that provide additional regulations for recreational usage of the Township's waterways. With approval from the MDEQ, the Township would adopt a local ordinance that is identical to the MDEQ's special regulations. These regulations could include the following. Most of these items are currently regulated by the Marine Safety Act (Michigan Public Act 303 of 1967) and enforced by the Livingston County Sheriff.
    - Safe operation of vessels.
    - Speed limits.
    - Maximum allowable noise levels.
    - Operation of vessels while under the influence.
    - Operation of vessels in and around designated swimming areas.
    - Pollution of waterways.
    - Obstruction of waterways with structures.
    - Interference with navigation by anchoring or mooring.
    - Use of road ends for mooring.

The marine safety ordinance would be enforced through a coordinated effort between the County Sheriff and the Township Police. Enforcement of both of the above ordinances would likely require additional operational and equipment costs for the Township. But as the Township continues to grow and lake overcrowding and safety becomes a greater concern, such ordinances may be necessary to protect property values and the general public health safety and welfare.

Preservation of Natural Topography Vegetation: For those who have resided in an urban setting, the intrinsic value of rolling topography, trees and vegetation is well understood. Poorly conceived subdivision activity has unwisely removed tree cover and involved massive grading to minimize site development cost.

The scarcity of large tracts with woods or rolling topography make those that still exist highly valuable. The land use densities proposed by the Land Use Plan will promote the preservation of existing vegetation and topography. Further, specific standards can be applied to subdivision plot regulations and site plan review to require preservation of tree cover, the provision of landscaping and buffer strips, and the minimization of site grading. The Open Space Community regulations should continue to be utilized to encourage preservation of open space, vegetative cover, and natural topography.

Natural Features That Should Be Preserved Within Developments,

- Particularly Open Space Communities:
- Wetlands:
    - Regulated Wetlands
    - Non-regulated Wetlands
    - Wetland Buffers
    - Restoration of Wetlands
- Slopes Greater than 13%
- Bluffs along Waterways
- Soils That Are Not Well Suited for Development
- Setbacks from Waterways
- Floodplains
- Woodlands:
    - Along Public Thoroughfares
    - Along Greenways
    - High Quality Woodlands
    - Individual Mature Trees
- Fish & Wildlife Habitat, Particularly Endangered Species
- Scenic Views and Open Space Along Roads
- Connections to Adjacent Open Space

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