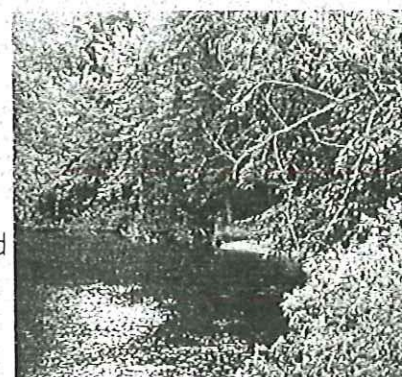
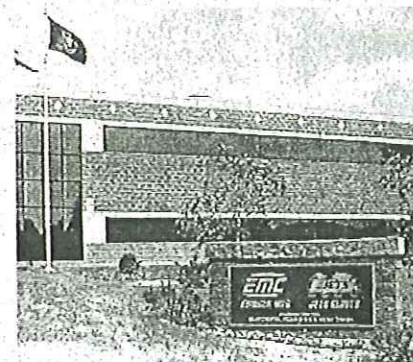
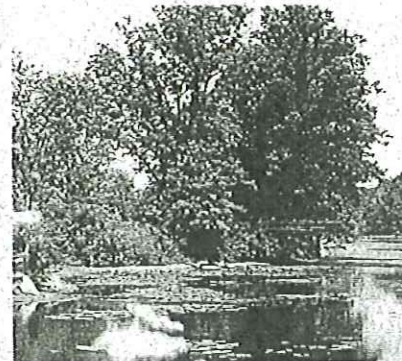


Green Oak Township



Master Plan

A Plan For the Preservation of Rural Character



Adopted
December 18, 1997
Revised and Re-adopted
July 8, 1999

Green Oak Township



Master Plan

A Plan For the Preservation of Rural Character

Adopted

December 18, 1997

Revised and Re-adopted

July 8, 1999

Township Board

Jan Plas, Supervisor
Marlyne McKim, Clerk
Michael Sullivan, Treasurer
Rollin Green
William Palmer
Randy Schonfield
Mark St. Charles

Township Planning Commission

Lary Marshall, Chairman
Wallace Qualls, Vice-Chairman
Harold Ludwig, Secretary
Mark Chaput
Rollin Green
Matt Ikle
Richard Rule

Assisted by:

Carlisle/Wortman Associates, Inc.
Community Planners and Landscape Architects
Ann Arbor, Michigan

**GREEN OAK TOWNSHIP
LIVINGSTON COUNTY, MICHIGAN**

Memorandum of a Resolution adopted at a special meeting of the Planning Commission of Green Oak Township, County of Livingston, Michigan held in the Township Hall, on December 18, 1997.

PRESENT: Green, Ikle, Rule, Qualls, Chaput, Ludwig, Chairman Marshall

ABSENT: None

The following preamble and resolution was offered by Commissioner Ikle, and supported by Commissioner Chaput.

WHEREAS, the Green Oak Township Planning Commission recognizes the need to formulate and adopt a Township Master Plan including establishment and support of a Land Use Plan as described in this document.

NOW, THEREFORE, BE IT RESOLVED that:

- (1) The Green Oak Township Planning Commission hereby adopts the Master Plan, dated December 18, 1997, including the Future Land Use Plan Map, also dated December 18, 1997.
- (2) A certified copy of the Future Land Use Plan portion of the Plan be forwarded to the Livingston County Planning Department for filing.
- (3) All resolutions and parts of resolutions insofar as they conflict with the provisions of this resolution be and the same hereby are rescinded.

AYES: Green, Ikle, Rule, Qualls, Chaput, Ludwig, Chairman Marshall

NAYS: None

RESOLUTION DECLARED ADOPTED

LARRY MARSHALL, Chairman
Planning Commission



WALLACE QUALLS, Vice-Chairman
Planning Commission

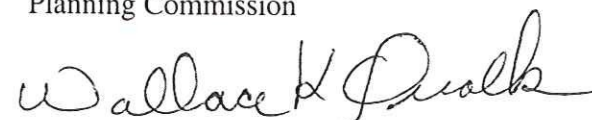


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I. INTRODUCTION

INTRODUCTION

It is the responsibility of the Township Planning Commission to prepare and adopt a Master Plan on behalf of the Township. Section 6 of the Township Planning Act (PA 168 of 1959) states that the "Planning Commission shall make and adopt a basic plan as a guide for the development of unincorporated portions of the Township."

The Township first adopted a Master Plan in 1972. Since 1970, population has increased by 81%, economic conditions have changed, and new Township officials have taken office. The Planning Commission recognized a need to reevaluate the Master Plan and received authorization from the Township Board to begin the updating process.

The Master Plan and the 1992 Green Oak Township Community Planning Survey is intended to effectuate positive change in Green Oak Township. The Plan is based upon the existing conditions which are known and future conditions which are reasonably expected within the Township. Perhaps most importantly, the Plan was developed only after extensive discussions were held by the Planning Commission and with members of the public. The purpose of such discussions was to ensure that the Plan properly addressed issues of public concern regarding growth, development, environmental protection, and quality of life in the Township.

The Green Oak Township Master Plan is a community effort to respond to future challenges by planning for them today. The Plan represents the combined efforts of the Township Board, Planning Commission and individual citizens.

The Township would like to thank the following groups and organizations from which input and information was received throughout the Master Plan update process:

- Livingston County Planning Department*
- Livingston County Road Commission*
- Livingston County Health Department*
- Oakland County Health Department*
- Huron River Watershed Council*
- Sierra Club*
- Green Oak Township Historical Society*
- Southeastern Michigan Council of Governments (SEMCOG)*
- Livingston County Home Builders Association*
- Environmental Research Council*
- Carlisle/Wortman Associates, Inc.*

II. BACKGROUND STUDIES

BACKGROUND STUDIES

A number of studies were conducted to determine existing and predict future conditions in Green Oak Township. The preparation of background information serves as the technical basis for the Master Plan. Existing land use was inventoried and updated from maps originally prepared in 1983. Population and housing was evaluated as to numbers, trends, characteristics and projections. The local economy was analyzed in terms of types of activities and tax base. Community facilities and services and road conditions were inventoried and their adequacy assessed. Finally, information regarding various natural resource characteristics such as flood plains, wetlands and soils suitable for septic systems was collected, mapped and evaluated.

LOCATION

Green Oak Township is situated in the extreme southeast corner of Livingston County. The western third of the Township is traversed in a north-south direction by U.S. 23. The northern boundary of the Township is very close to I-96, a major east-west route in the State. The location of Green Oak Township is strategic because of its proximity to Lansing, Flint, and Ann Arbor and the northern suburbs of Detroit. The availability of land, rural atmosphere, and accessibility to major employment centers are important factors in Green Oak.

EXISTING LAND USE

A basic element in planning the future of Green Oak Township is the consideration of existing land use types and patterns. Mapping of existing land use was first prepared in 1970 and revised in 1983 and 1988. The updated inventory and mapping was conducted by field survey verified by aerial photography. The results of this mapping are presented in Map 1.

Classifications

To maintain consistency, existing land use was classified for the most part according to the same definitions used in the previous 1983 Township Master Plan. The following land use classifications were used:

Vacant and Agricultural - Areas for crop land, permanent pasture land and land lying fallow. Vacant land not used for any purpose and areas occupied by streams, lakes and other bodies of water are assigned to this broad classification.

Single Family and Farm Lot Residential - Areas platted or unplatted, in which single family, detached dwellings and their accessory buildings are located. This category also includes farm and rural non-farm dwelling units.

Multiple Family Residential - Areas in which two or more dwellings per residential structure are located. This primarily includes apartments and townhouses.

Mobile Home Park - Areas in which mobile homes are clustered in mobile home parks.

Commercial - All areas used for commercial purposes including the retail sale of goods and services.

Industrial (including Warehousing and Storage) - Where raw or semi-finished material is processed, fabricated and/or manufactured. Warehousing and storage applies to land areas which are used for the storage of materials, whether enclosed in a building or not. Open storage for junk cars or waste materials are also considered industrial uses.

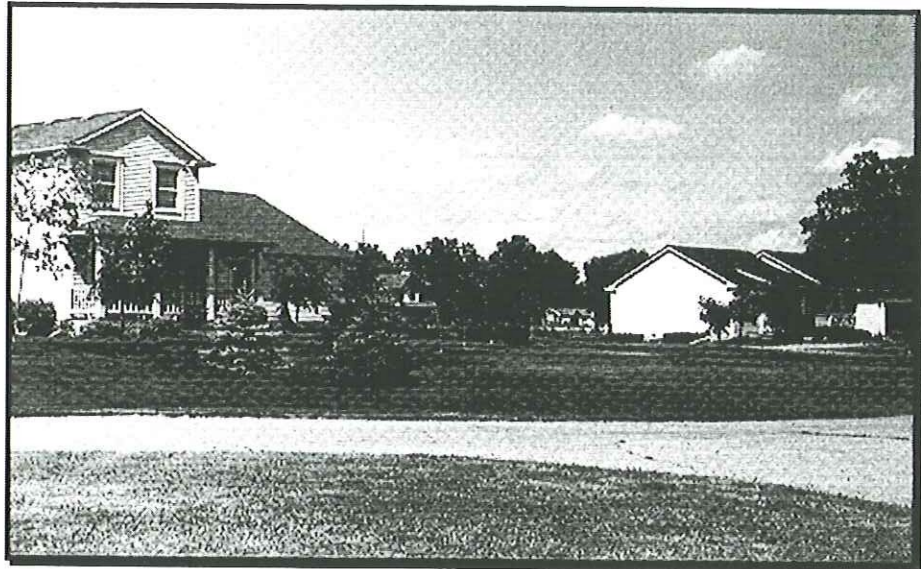
Public, Quasi-Public and Institutions - Land areas and facilities such as schools and government buildings, which are available to or used by the public. Also included in this classification are areas and buildings that are used by a limited number of persons with particular interests such as churches, church-related facilities, and cemeteries.

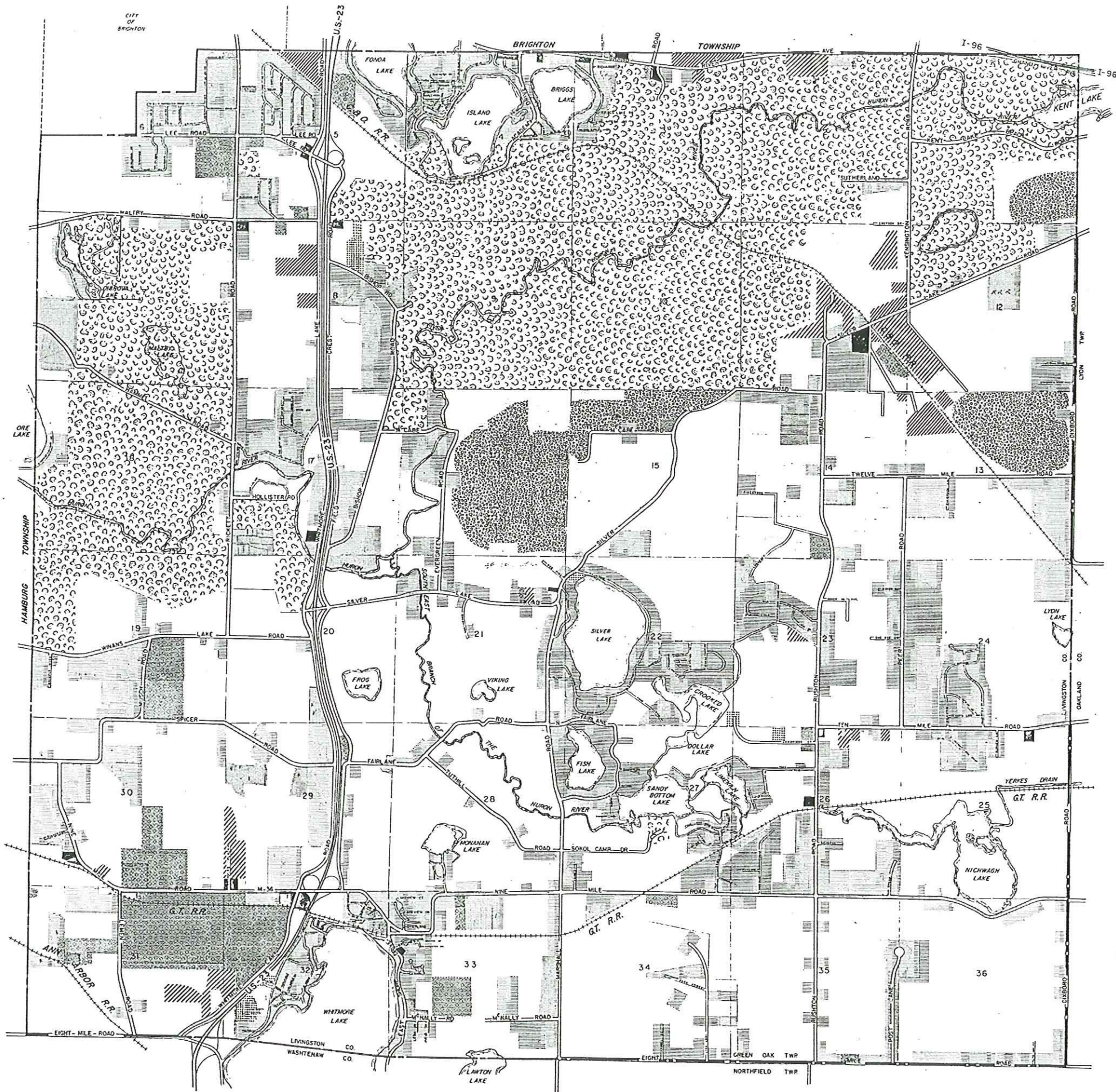
Recreational - Lands owned by public agencies or private organizations for the purposes of recreation.

Extractive - Areas in which sand, gravel, clay, peat or rock are mined have been placed in the extractive category.

Patterns

The map of Existing Land Use on the following page illustrates land use patterns as of 1988. The Township covers an area of 36.8 square miles or 23,714 acres. Table 1 illustrates the approximate acres and percent of existing land use by category.

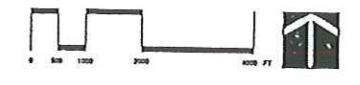




- VACANT OR AGRICULTURE
- SINGLE FAMILY & FARM LOT RESIDENTIAL
- MULTIPLE FAMILY RESIDENTIAL
- MOBILE HOME PARK
- COMMERCIAL
- INDUSTRIAL
- PUBLIC, QUASI-PUBLIC & INSTITUTIONAL
- RECREATION
- EXTRACTIVE

Map 1

1988 LAND USE
Green Oak Township
Livingston County, Michigan



Carlisle Associates, Inc.
Community Planners and Landscape Architects
Ann Arbor, Michigan

Single Family Residential

In 1970, most of the higher concentrations of residential development were situated on Island, Briggs, Silver, Sandy Bottom, Limekiln and Whitmore Lakes. Residential patterns were largely established sixty years ago when lakefront property was platted for small lot cottage development. While the original purpose of lakefront dwellings were for seasonal use, the post-World War II trend has been to convert them to year-round use. Small waterfront cottages have been demolished to provide sites for larger year round homes. Extensive remodeling of existing cottages has also occurred. The redevelopment pressures and use of small lake lots without adequate utilities has contributed to sanitation problems and overuse of the lakes.

Table 1
Green Oak Land Use Comparison
(1983 - 1994)

Use Category	1983 (in acres)	1994 (in acres)	Change (in acres)
Single-Family	2942	3980	1038
Multiple Family/Mobile Home	63	82	19
Commercial/Office	25	80	55
Industrial	152	790	638
Extractive	1,605	575	(1,030)
Recreation	4,732	5,400	668
Public/Semi-Public	240	733	493
Lakes	1,532	1,532	0
U.S. 23	200	200	0
Vacant/Agriculture	12,223	10,342	(1,881)
Total	23,714	23,714	0

Until the 1970's, non-lake residential development was confined to scattered single-family dwellings along road frontages and a few non-lake subdivisions, such as Saxony-Willmor and Horizon Hills. With much of the lakefront property now fully developed, new subdivisions and single-lot residences have scattered to other parts of the Township. A particular characteristic in the Township has been "strip" residential development along major road frontages thereby "landlocking" interior parcels by limiting accessibility. Since the 1970's, numerous new subdivisions have either been initiated or developed along the Nine Mile, Ten Mile, and Rickett Road corridors. Additional residential growth has occurred as a result of lot splits and development of single homes on large parcels not associated with a larger development.

Multiple Family Residential

Four apartment complexes exist within the Township. One is located near Whitmore Lake on East Shore Drive. Two other apartment developments are located along Grand River. The Township's first condominium type complex, Centennial Farms, is situated west of Rushton Road near Ten Mile Road. Centennial Farms consists of units designed strictly for people over fifty-five years old.

Mobile Home Parks

There are five mobile home parks located in the Township. One mobile home park is located on Bishop Road just east of Fieldcrest Road. Two small parks are located near Whitmore Lake, between U.S. 23 and Main Street. Another mobile home park is located on the corner of Silver Lake Road and Silverside Drive. Individual mobile homes now in existence were not mapped for the land use survey. A summary of mobile home facilities is listed below:

<u>Mobile Home Park*</u>	<u>Size in Units</u>
Collins Trailer Park	3
University Mobile Estates #1	21
Starlight Trailer Court	48
University Mobile Estates #2	55
Silver Lake Mobile Park	27

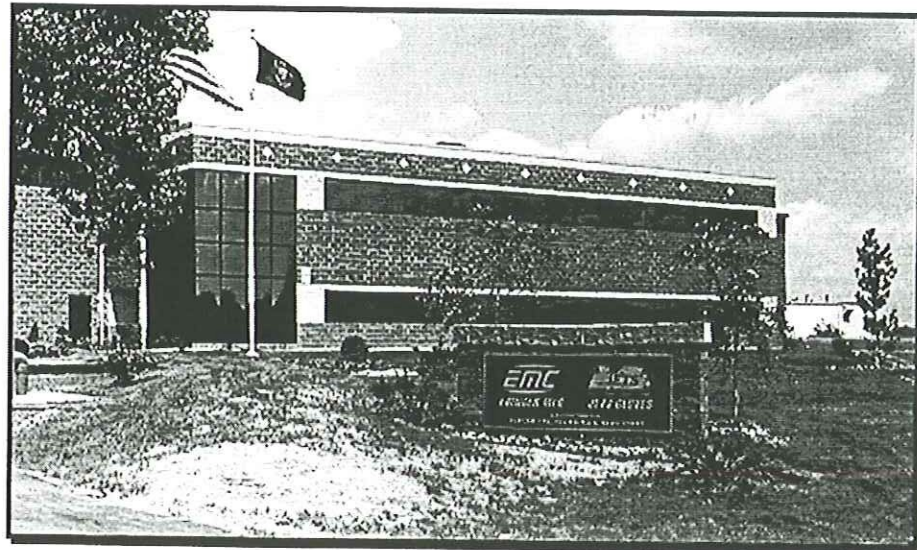
* as licensed by the State of Michigan

Commercial

Commercial uses consisting primarily of local convenience businesses, service stations, and restaurants are scattered in individual locations throughout the Township. Many of these businesses have been established for years. Small concentrations of commercial development are located at the intersections of Lee and Whitmore Lake Roads, Academy Drive and Grand River Avenue, Eight Mile and Whitmore Lake Road and M-36 and Whitmore Lake Road, Ten Mile and Rushton Road. The primary determinant in the location of the few existing commercial concentrations is the accessibility by large volumes of traffic, rather than proximity to Green Oak Residents.

Industrial

A number of industrial sites were scattered in various locations throughout the Township, many of which were in residential areas. The location of these industries was solidified when the current Township Zoning Ordinance was adopted in 1973 when many of these properties were zoned industrial.



More concentrated industrial development has now occurred in four areas of the Township. The area north and south of Silver Lake Road on both sides of the C&O Railroad represents the newest concentration of industrial development. This includes the Gordon Foods complex and the industrial parks along Kensington Road. An industrial complex located on the north side of Grand River provides sites for a concentration of industries. Two other areas with significant industrial development are located adjacent to U.S. 23. North of the C&O Railroad on Whitmore Lake Road is Thermofil, Inc. and Export Corporation. Further south on Whitmore Lake Road is Kelsey-Hayes Company, Lowry Computer, Brighton N.C. Machine and others.

The Township also is credited with a number of industrial parks. These parks provide jobs, tax base and opportunities for industrial expansion. By clustering these uses within an industrial park, impacts to other uses can be minimized. A listing of industrial parks is provided below:

<u>Industrial Park*</u>	<u>Size in Acres</u>
American Aggregates Industrial Park (Edward Levy Co.)	173
Trout lake Industrial Park	15
Kensington Pines	80
Zander Industrial Park	40
Kensington Road Industrial Park	34
Lowry Technology Park	38
Colonial Acre Industrial Park	10
* only facilities over 10 acres	

Public, Quasi-Public and Institutional

The largest institutional use in the Township is the W.J. Maxey Training School which occupies 202 acres on M-36 west of Whitmore Lake Road. The remainder of public uses include the Township Hall, two Township fire stations, public school buildings, and the Northfield Township Sewage Treatment Plant. Several churches and cemeteries are also located in the Township.

Recreation

A dominant feature of existing land use is the large amount of land devoted to public recreation. The State-owned Island Lake Recreation Area occupies much of the northern portion of the Township. The Recreation Area geographically separates the Island-Briggs-Fonda Lakes area from the remainder of the Township.

The Huron-Clinton Metropolitan Authority owns a substantial amount of land in Sections 7, 18 and 19. The Huron-Clinton Metropolitan Authority continues development of the Huron Meadows Metropark including an 18 hole golf course.

Extractive

A substantial land area of the Township was devoted to extractive activities. However, the amount of land is being reduced due to the phase out of mining operations. Only land which is actively being worked has been mapped. As mining operations close, a reclamation process is required to provide for redevelopment opportunities. This as well as the future use of mined lands are issues of major significance to the Township.

Agricultural and Vacant

The amount of agricultural lands within the Township has greatly decreased. However, there are large areas of land that remain vacant and rural. The rural character of the Township has been maintained even though the rate of urbanization has increased in the Township in the 1970's and 1980's and through the present. Lakes, rivers creeks, and natural river areas are included in this category and occupy a considerable amount of area.

Large Land Holdings

A significant portion of Green Oak Township is held in large land holdings by both the public and private sectors. Table 2 illustrates large public and private land holdings within the Township.

The largest landowner in the Township is the State of Michigan with the Island Lake Recreation Area and Maxey Boys School. Combined with Huron-Clinton Metropolitan Authority, public holdings constitute nearly 21% of the Township land base. These public lands will likely remain in public ownership and will be unavailable for any future private use.

Private large parcel land holdings are equally significant. The availability of large parcels of private land will be a key determinant in future development patterns. American Aggregates (now Edward Levy Co.) is one of the largest private landowners. As mining operations are phased out, reclaimed land will become available for private development. Another large privately held parcel is the Mariann Hill Missionary Society property owned by the Catholic Church. Mariann Hill occupies most of Section 20.

**Table 2
Large Public & Private Land Holdings**

Public Ownership	Acres	% of Total
State of Michigan		
Island Lake Recreation Area	3,233	13.6
Maxey Boys School	202	.9
Huron-Clinton Metropolitan Authority	1,428	6.0
Subtotal	4,863	20.5
Private Ownership	Acres	% of Total
American Aggregates (Edward Levy Co.)	517	2.2
Mariann Hill Missionary	532	2.2
Demaria Investment	164	.7
Green Oak Properties	382	1.6
Louis Driver	232	.9
Lloyd Tuthill	188	.8
Other parcels (over 100 acres) 7 parcels	847	3.5
Other parcels (between 40 & 99 acres) 23 parcels	1357	5.7

There remains a number of other private parcels ranging in size from 40 to 100 acres. The suitability of these parcels for development will be dependent upon a number of factors including accessibility to roads, natural resource conditions, environmental factors, development costs, and market conditions.

POPULATION AND HOUSING

A key concern in the preparation of a Master Plan is the preservation and creation of a living environment which is desirable to all members of the community. Past trends, current levels and characteristics, and future expectations of the population are all important elements in determining future land use and facility needs.

Trends

Green Oak Township is located in one of the most rapidly growing areas in Michigan. Population trends are presented in Table 3. The growth of population in Green Oak Township and surrounding communities has been substantial since 1960. The Township remains the third most populous community in Livingston County with a 1990 Census of 11,604 people, an increase of 7% since 1980. SEMCOG population estimates state the Green Oak Township population in 1995 is 13,758. This is an increase of 18.6% from 1990. In 1960 and 1970, Green Oak Township was the most populous community in the County. Population growth between 1960 and 1990 has not been as rapid in Green Oak as in other neighboring communities. However, Green Oak Township was more fully developed in 1970 than other communities and slower growth rates are indicative of a more mature community.



Characteristics

In addition to the actual number of people, the characteristics of the population are important in determining both the Township's development potential and future needs. One of the more important characteristics is age composition. Key facts regarding population characteristics from the 1990 Census, 1995 SEMCOG Estimates and 1996 SEMCOG Projections are presented in the following tables and summarized below:

1. The number of persons per occupied household is 2.82, slightly less than the County average.
2. As a result of Maxey Boys School, nearly 5% of the Township population resides in group quarters.
3. The percentage of minority population in the Township is not significant.
4. The median housing value in 1990 was \$102,000, slightly higher than the County median.
5. Per capita income for Green Oak Township in 1990 was \$17,272 which is slightly less than the County average.
6. A mid-decade census was undertaken in 1997 which revealed that the population growth from 1990 to 1997 exceeded 15%.
7. The 1997 census reports that the Township's total population is 14,924.

Table 3
Population Trends
Green Oak Township and Select Neighboring Communities
1960-1995

Community	1960	1970	% Change 1960-1970	1980	% Change 1970-1980	1990	% Change 1980-1990	Estimated 1995	% Change 1990-1995
GREEN OAK TWP	4,631	7,598	64.1	10,802	42.2	11,604	7.4	13,758	18.6
Brighton (City)	2,282	2,457	7.7	4,268	73.7	5,686	32.2	6,026	6.0
Brighton Twp.	2,875	5,882	104.6	11,222	90.8	14,815	32.0	16,701	12.7
Genoa Twp.	2,402	4,800	99.8	9,261	92.9	10,820	16.8	12,708	17.4
Hamburg Twp.	3,189	5,481	71.9	11,318	106.5	13,083	15.5	16,046	22.6
Livingston County	38,233	58,967	54.2	100,289	70.1	115,645	15.3	133,600	15.5
Lyon Twp.	2,880	4,500	56.3	7,078	57.3	8,828	24.7	9,907	12.2
South Lyon (City)	1,753	2,675	52.6	5,214	94.9	6,479	24.3	7,776	20.0
Northfield Twp.	3,279	3,975	21.2	4,672	17.5	6,732	44.0	7,220	7.2

SOURCE: U.S. Bureau of Census and SEMCOG "Population and Occupied Housing Units in Southeast Michigan, 1995"
Mid-Decade (1997) Census: 14,924

Table 4
Population Projections
Green Oak Township and Select Neighboring Communities
1990-2020

TOWNSHIPS	CENSUS		PROJECTIONS							% CHANGE IN POPULATION	
	1990		1995	2000	2005	2010	2015	2020	% Change 1990-2000	% Change 2000-2010	% Change 2010-2020
	Brighton	14,815		15,689	17,151	18,160	19,177	20,230	20,983	15.8	11.8
Genoa	10,820		12,769	14,854	16,924	18,862	20,401	21,549	37.3	26.9	14.2
Green Oak	11,604		14,000	16,011	18,089	20,573	23,243	25,586	37.9	28.5	24.4
Hamburg	13,083		16,587	19,440	22,517	25,390	28,227	30,677	48.6	30.6	20.8
Hartland	6,860		7,926	8,990	9,909	10,859	11,838	12,700	31.0	20.8	16.9
Howell	4,294		5,036	5,800	6,679	7,835	9,313	10,761	35.0	35.0	37.3
Putnam	4,580		5,137	5,693	6,174	6,509	6,788	6,998	24.3	14.3	7.5
Tyrone	6,854		8,002	9,097	10,053	11,047	12,067	12,960	32.7	21.4	17.3
Unadilla	2,949		3,282	3,565	3,830	4,121	4,433	4,713	20.8	15.6	14.4
CITIES & VILLAGES											
C. of Brighton	5,686		6,690	7,241	7,424	7,409	7,390	7,365	27.3	2.3	-6
C. of Howell	8,147		9,415	10,345	10,622	10,592	10,368	10,078	26.9	2.4	-4.8
LIVINGSTON CNTY.	115,645		135,558	154,061	170,853	187,725	204,875	219,674	33.2	21.8	17

SOURCE: U.S. Bureau of Census, SEMCOG "Regional Development Forecast, June, 1996"
 PREPARED BY: Carlisle/Wortman Associates, Inc., 1997

Projections

Migration and jobs are the most important factor in determining growth. While local government has little control over births and deaths, migration to or from the Township can be influenced by employment, housing, local government services, and the general quality of life.

The inability of local government to exert control over all factors which determine population growth does not diminish the importance of local projections. In the case of Green Oak Township, development policies can have a substantial effect on the level and location of future growth.

...population projections serve not as a self-fulfilling prophecy, but as a target of a desired level of growth which may be altered through local development policies.

As a result, the projection of population should serve as a guide to local decision making to assess the effect of growth on current and desired conditions in the Township. In this manner, population projections serve not as a self-fulfilling prophecy, but as a target of a desired level of growth which may be altered through local development policies.

The Southeastern Michigan Council of Governments (SEMCOG) has prepared detailed population projections for Southeastern Michigan communities. The results of the June, 1996 SEMCOG Regional Development Forecasts for Green Oak Township and select neighboring communities are illustrated in Table 4. The SEMCOG population projections for the year 2000 in the Township is 16,011, for 2010 is 20,573, and for 2020 the projected population is 25,586 which is an 83% increase from 1995. The total number of households are projected to increase from 4,256 in 1990 to 5,322 by 2000 and 6,127 by 2010.

Although the level of growth had slowed since the boom of the 1970's and 1980's, the recent population increases have picked up again. The percentage increase from 1980 to 1990 was only 7.4%, while the projected increase from 1990 to 1995, only half the amount of time, was 21%, nearly three times the rate from 1980 to 1990.

Housing Characteristics

Housing characteristics indicate that growth in housing stock in the Township has shown greater increases than population growth. While population increased by 7% for 1980 to 1990, the number of housing units increased by 21%.

**Table 5
Housing Units
Green Oak Township and Select Neighboring Communities
1980-1990**

Community	Total Housing Units		% Change 1980-1990
	1980	1990	
GREEN OAK TOWNSHIP	3,508	4,256	21.3
Brighton (City)	1,875	2,509	33.8
Brighton Township	3,649	4,874	33.5
Genoa Township	3,359	4,065	21.0
Hamburg Township	4,496	5,090	13.2
Livingston County	34,951	41,863	19.8

Source: U.S. Bureau of Census 1990

Housing data within the Township is presented in detail in the following Tables:

**Table 6
Characteristics of Occupied Housing Units
Green Oak Township and Select Neighboring Communities
1990**

Community	1990 Total Housing Units	Owner Occupied		Renter Occupied	
		%	Median Value	%	Median Rents
GREEN OAK TOWNSHIP	4256	86.7	\$102,000	13.3	\$460
Brighton (City)	2509	63	\$93,600	37	\$472
Brighton Township	4874	92.7	\$128,900	7.3	\$451
Genoa Township	4065	91.1	\$120,900	8.9	\$419
Hamburg Township	5090	89.5	\$100,200	10.5	\$467
Livingston County	41,863	84.5	\$97,300	15.5	\$451

Source: U.S. Bureau of Census 1990

Table 7
Characteristics of Year-round Housing Units
Green Oak Township and Select Neighboring Communities

Community	% Served by Central Water	% Served by Public Water	% of Houses Built		
			1939 or Earlier	1940-1980	1980-1990
GREEN OAK TWP.	20.4	19.1	9.1	69	21.9
Brighton (City)	97.4	97.6	15.1	60.2	24.7
Brighton Township	15.6	3.7	3.2	67.3	29.5
Genoa Township	15.2	19.7	9.1	67	23.9
Hamburg Township	3.7	3.4	11.5	68.4	20.1
Livingston County	23	23.3	13.6	64.3	22.1

Source: US Bureau of Census 1990

The above Tables are summarized below:

1. Housing stock is overwhelmingly year-round versus seasonal resulting from new construction.
2. A greater percentage of housing units were constructed in the Township than in neighboring communities prior to 1939, reflecting the amount of pre-World War II cottage construction prevalent in Green Oak Township.
3. A smaller percentage of housing units were constructed in the Township than in Brighton Township and Brighton City, resulting in a slower rate of population growth.
4. The median value of owner-occupied housing is \$102,000, which is higher than most nearby townships and fourth highest of all Livingston County Townships.
5. Median rents for renter-occupied housing are higher than other nearby townships.
6. Of all Township housing units, 13.3% are renter occupied while of the County's housing stock, 15.5% are renter occupied.
7. Of the Township's 4,256 housing units, 19.1% are connected to public sewers.
8. The Township has 154 mobile home units. Most of these units are located within the Township's five mobile home parks.
9. Green Oak Township has the highest number of rental units of all Livingston County Townships.

The Table below reveals that the national trend of decreasing household size is reflected in the trends in Green Oak Township.

Table 8
Household Size and Occupied Housing Units
Green Oak Township and Select Neighboring Communities
1990-1995

Community	1990		1995	
	Persons Per Occupied Housing Unit	Occupied Housing Units	Persons Per Occupied Housing Unit	Occupied Housing Units
GREEN OAK TOWNSHIP	2.86	3,892	2.82	4,720
Brighton (City)	2.4	2,374	2.3	2,625
Brighton Township	3.17	4,659	3.12	5,331
Genoa Township	2.91	3,709	2.83	4,494
Hamburg Township	2.89	4,435	2.82	5,589
Livingston County	2.94	38,887	2.90	46,024

SOURCE: SEMCOG, "Population and Occupied Housing Units 1995"

Other findings from the Table above include the following: SEMCOG's estimates state the average number of persons per occupied unit in 1995 is 2.82, which is slightly less than the County average, and household size has decreased from 1990 when it was 2.86 persons per occupied housing unit. This decrease is indicative of the following trends:

- Green Oak has a slightly older population than communities with greater household sizes
- People are waiting longer to marry and have children, and are having fewer children, the combination of which results in fewer people per household.

ECONOMIC BASE

The analysis of the local economy includes an evaluation of the existing tax base and employment sectors. An understanding of the local economy is important in order to: develop a long-range plan for commercial and industrial use of land compatible with other land uses; foster and encourage sound employment opportunities for the local population; improve the Township tax base; and, coordinate the overall physical development of the Township. To arrive at a viable and desirable plan, the economic base analysis must combine the existing situation with sound planning concepts, projections of the business market, and the aspirations and goals of the community.

Tax Base

The Township tax base remains even more predominately residential with 85% of the 1996 real property valuations stemming from residential properties. This is a five percent increase over 1982 in the relative predominance of residential assessments over all other land classifications.

Commercial and industrial properties combined to compose 14.2% percent of the real property tax base in 1996, this is up from 10.5% in 1990. Agricultural properties have continued to decline in significance with the total number of parcels decreasing from 42 in 1990, to 32 in 1996. The total Township real estate valuations have increased 224% since 1980 or about 20% annually. This compares to 194% for all of Livingston County over the same period.

In 1980, Green Oak total SEV represented 9.8% of the total County SEV. In 1996 it represented 12.3%. Green Oak is less reliant upon industrial and commercial land assessments than the County as a whole. The total SEV has increase 24.7% from 1994 to 1996.

The 1994 and 1996 Green Oak tax assessments were as follows:

**Table 9
Comparative SEV Green Oak Township
1994-1996**

Classification	Number of Parcels		Total SEV		% of Total	
	1994	1996	1994	1996	1994	1996
Agriculture	36	32	\$3,606,200	\$3,634,600	1.1%	.9%
Commercial	86	89	\$12,127,860	\$13,569,100	3.6%	3.3%
Industrial	245	241	\$32,880,200	\$45,546,019	9.9%	10.9%
Residential	5540	6517	\$285,076,710	\$353,423,908	85.4%	85%
TOTAL	5907	6517	\$333,690,970	\$416,173,627		

SOURCE: Green Oak Township Assessing Department

The Tables on the following page reveal additional SEV related data. In 1996, Green Oak Township was ranked #3 in the County for the percentage of contribution toward the total SEV in the County. This is down from #2 in 1992. Brighton Township and Hamburg Township rank #1 and #2 respectively in contribution toward County SEV total.

Table 10
Green Oak Township
Historical State Equalized Value: 1986-1996

Year	Total SEV	% of County	Rank in County
1986	\$131,520.9	9.7	#4
1988	\$157,201.7	9.9	#4
1990	\$230,952	11.1	#3
1992	\$289,520.9	11.7	#2
1994	\$361,605.4	11.7	#3
1996	\$460,116.0	12.3	#3

Source: Livingston County Data Book 1995

Table 11
State Equalized Value
Green Oak Township and Select Neighboring Communities
1996 (in thousands of \$)

Community	TOTAL SEV	% of County
GREEN OAK TOWNSHIP	\$460,116	12.3
Brighton (City)	\$202,159.5	5.4
Brighton Township	\$543,220.4	14.5
Genoa Township	\$416,666.5	11.1
Hamburg Township	471,809.6	12.6
Livingston County	\$3,753,364.1	100

Source: Livingston County Data Book 1995

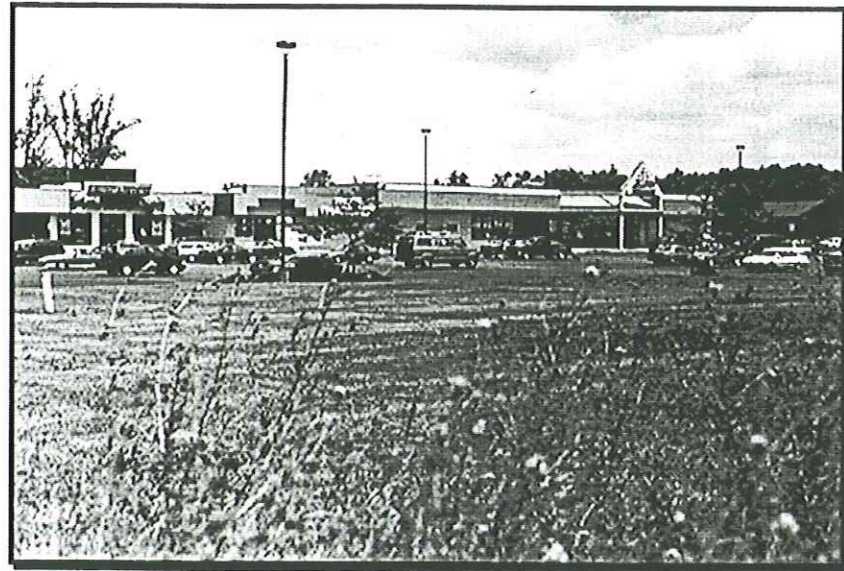
Employment

Green Oak Township has one of the highest civilian labor force in the County. The labor force is largely "white collar" in nature, with a majority in management, professional, technician, sales, and service related positions. Although the Township is by and large a residential community for those who work elsewhere, it is not without significant local employment base. The Township's largest employers include: State of Michigan (Maxey Boys School and parks), Thermofil Inc., Kelsey-Hayes Company, Export Corporation, and Weathervane Windows.

Commercial/Industrial Analysis

As previously discussed, most of the commercial development in Green Oak Township can be classified as convenience or general convenience activity scattered in individual locations throughout the Township. Such uses consist primarily of small convenience groceries, service stations, and restaurants. There is only one shopping center within the Township and this is located near the intersection of Eight Mile Road and U.S. 23. A reason for the lack of major commercial shopping center in Green Oak Township is the proximity of other regional shopping centers located within the city of Brighton, South Lyon, Novi and Ann Arbor.

An analysis of the Township zoning map, indicates that there are three classifications of commercial development within the Township. These are Highway Commercial (HC), General Business (GB), and Local Business (LB). Currently there exists approximately 63 acres of zoned highway commercial land. Most of this commercial zoning is located along the U.S. 23 corridor. Of these 63 acres approximately 30% are currently vacant and would be available for future development.



In addition to highway commercial, the Township zoning map also provides general business zoning. Currently there is approximately 66 acres of GB zoned land. These are scattered through a variety of sites within the Township including the U.S. 23 corridor, Grand River, Rushton Road, etc. Of the 66 acres approximately 40% is currently vacant.

The final commercial zoning designation is local business. Currently there is approximately 34 acres of local business land within the Township. These are also scattered through a variety of sites includes smaller stores, party stores and neighborhood commercial facilities. Of the 34 acres approximately 32% are vacant.

The Township's proximity to U.S. 23 and I-96 is a continuing factor in the location of industrial development. Existing industry such as Kelsey-Hayes and Thermofil have located adjacent to U.S. 23 to take advantage of expressway access. The developing industrial area south of Silver Lake and Kensington Roads is approximately 1 1/2 miles from I-96. The availability of land and rail in this area is an attraction for additional development. The need for road improvements in the Park Place industrial subdivision remains critical. Industrial areas along Grand River are limited for expansion due to lack of available land.

Township, protection of the ground water aquifer must be a primary concern to the residents of Green Oak Township. Public central water systems may be required in the future in certain areas.

The only portion of the Township which is served by public sewers is the area surrounding Whitmore Lake. Sewers were constructed in conjunction with the Northfield Township sewer system. The Northfield Township Wastewater Treatment Plant is located in Green Oak Township in Section 31, just off Lemen Road. The sanitary sewer system is adequate to handle existing users, however, the plant is at or near capacity and will have to be expanded in order to provide additional service.

Private sanitary sewer systems are provided in the following developments: Centennial, Sandy Creek, and Holly Hock residential subdivisions.

Other Community Facilities

A public library is not currently located within the Township, but Green Oak residents have access to public libraries in Brighton, South Lyon, and Whitmore Lake. The Township does not have any community meeting or senior citizen center. However senior services are available in both the City of Brighton and South Lyon. Future expansion of Township administrative offices could include facilities for a library, community room, and senior center, as has been done in other communities.

Recreation

Regional Facilities

An abundance of outdoor recreational facilities are available to Green Oak Township, both within the Township and nearby. Table 12 illustrates regional recreational areas located within a twenty-five mile radius of the geographic center of Green Oak Township.

Over 90% of the Island Lake State Recreation Area is located within the boundaries of Green Oak Township. A variety of outdoor activities are available at Island Lake including swimming, fishing, boating, hiking and camping. Kensington Metropark, part of the Huron-Clinton Metropolitan Authority System, is located adjacent to the northern boundary of the Township. In addition to water recreation and hiking, Kensington has a fine golf course and offers interpretive programs, cross-country skiing, and sledding. The Huron-Clinton Metropolitan Authority system, Huron Meadow Metropark, in Sections, 7, 18 and 19 of the Township is also available for recreation use. The site is traversed by the Huron river and includes a golf course, picnicking, food service, canoe rental, hiking and cross country skiing.

TABLE 12
RECREATION INVENTORY
Regional Recreational Areas
Within 125 Mile Radius of
Green Oak Township, Michigan

	Acreage	Swimming	Picnicking	Hiking	Camping	Boating	Fishing	Playground Equipment	Other Activities
Delhi Metro Park	45		x				x	x	Softball
Dexter-Huron Metro-Park	115		x				x	x	Softball, badminton
Hudson Mills Metro-Park	935		x	x		x	x	x	Nature Trails
Huron Meadows Metro-Park	1,550		x	x					Golfing
Kensington Metro Park	4,300	x		x		x	x		Canoeing, ice skating, sledding, golf
Marshbank Metro-Park	100		x	x				x	
Maybury State Park			x	x					
Seven Lakes State Park	1,400		x	x		x	x		
Brighton State Recreational Area	4,826	x	x	x	x	x	x		Horseback riding
Pinckney State Recreational Area	9,788	x	x	x	x	x	x		Hunting
Pontiac State Recreational Area	3,619	x	x	x	x		x		Hunting
Island Lake State Recreational Area	3,466	x	x	x	x	x			
Proud Lake State Recreational Area	3,515	x	x	x	x	x			
Highland State Recreational Area	5,504	x	x	x	x	x			
Oak Grove State Game Area	1,796			x		x			State game areas offer ice skating & cross country skiing; provide primitive access; and offer no developed facilities
Chelsea State Game Area	654			x					
Gregory State Game Area	2,459			x					
Unadilla State Game Area	891			x					

Local Facilities

Despite the availability of regional outdoor recreation, there is a lack of local recreational facilities to serve community and neighborhood needs. There are few areas available within the Township equipped with such things as softball fields and playground equipment. Only the Hawkins Elementary School, located in the extreme northwest portion of the Township, has playground equipment, baseball diamonds, and other athletic fields. The Township does participate in the South East Livingston County Recreation Authority (SELCRA) which does provide recreational opportunities, however, local recreational needs are unmet due to a lack of a local recreation program and facilities to serve residents of all ages.

ROADS

Highways and roads are developed to provide the safe and efficient movement of people and goods within and through a community. Adequate transportation facilities are therefore a major consideration in a community's development. Conversely, inadequate transportation facilities are also a factor in a community's development. In the case of Green Oak Township, the road conditions within the Township should be a major determinant in the location and intensity of future development.

Interstate and State Routes

The only U.S. trunk line route passing through Green Oak Township is the U.S. 23 Freeway, a four-lane, divided thoroughfare. It is the only thoroughfare within the Township that has State-wide implications. It connects the entire south central portion of the State with other regions via the freeway system. More specifically, the U.S. 23 Freeway connects the Township directly with such population centers as Ann Arbor, Toledo and Flint. The interstate freeway system (I-96) which intersects with the U.S. 23 Freeway immediately to the north of the Township increases the accessibility of additional urban population centers such as Lansing and Detroit for Green Oak Township residents.

The section of U.S. 23 in Green Oak Township is approximately 5.7 miles. It has a 300 foot right-of-way with 24-foot pavement width on each side of the median. There are four interchanges within the Township (Lee Road, Silver Lake Road, M-36 - Nine Mile Road, and Eight Mile Road - Whitmore Lake). This freeway adequately provides Green Oak Township residents with regional accessibility.

The only State trunk line route within Green Oak Township is M-36. It begins at the interchange of U.S. 23 in the Township and travels west through Pinckney and beyond. This State route generally serves as a connector between smaller urban areas in Livingston and Ingham Counties. Approximately two miles of M-36 exists within Green Oak Township.

Primary and Local Roads

Primary roads are established by and are the responsibility of the Livingston County Road Commission upon approval of the Michigan Department of Transportation. By designating a road as part of the County Primary System, the County can obtain State and Federal weight and gas tax revenue for maintenance. All public roads not classified as primary are considered local roads but still under the jurisdiction of the Livingston County Roads Commission. Future funding from Federal, State or County sources will be limited. Any major road maintenance or improvement project will require additional funding by Green Oak Township.

The condition of primary and local roads is presented in Table 13. Various stretches of road are classified as requiring conservation maintenance or substantial improvement. Roads needing conservation maintenance are basically in good condition, but will require more than routine maintenance to stay in good condition. Such conservation maintenance may involve re-surfacing, widening and drainage improvements. The cost of re-surfacing a hardtop road is typically \$300,000 per mile or \$60.00 per foot. Roads requiring substantial improvement, including paving of gravel roads, will require a large expenditure of funds ranging from \$500,000 to \$600,000 per mile to be upgraded to a good condition.

TABLE 13
ROAD CONDITION ASSESSMENT
GREEN OAK TOWNSHIP

Road Name	From	To	Approximate Length (miles)	Surface	Improvement Code 2
Primary Roads					
Whitmore Lake	Twp. Line	Twp. Line	6.1	HT	CM
Silver Lake	Fieldcrest	Silverside	1.5	HT	SI
Silver Lake	Silverside	Rushon	2.0	G	SI
Doane	Silverside	Rushon	1.1	HT	SI
Nine Mile	Marshall	Rushon	1.5	HT	SI
Rushon	Doane	Nine Mile	1.5	HT	SI
Rushon	Doane	Silver Lake	1.8	G	CM
Academy	Grand River	C&O RR	.7	HT	SI
Ten Mile	Rushon	Twp. Line	1.5	HT	SI
Marshall	Nine Mile	Silver Lake	1.8	HT	SI
East Shore	Twp. Line	Nine Mile	.8	HT	SI
Lemen	Eight Mile	M-36	1	HT	SI
Winans Lake	Whitmore Lake	Twp. Line	1.5	HT	CM
Rickett	Winans Lake	Twp. Line	3.5	HT	CM
Lee	Whitmore Lake	Marango	1.0	HT	SI
Fieldcrest	Nine Mile	Lee Road	3.0	HT	SI
Kensington	Silver Lake	Grand River	1.5	HT	CM
Silverside	Silver Lake	Doane	.6	HT	SI
Local Roads					
Eight Mile	Marshall	Twp. Line	3.0	G	SI
Nine Mile	Rushon	Twp. Line	1.6	G	SI
Peer	Ten Mile	Twelve Mile	1.5	G	SI
Maltby	Twp. Line	Whitmore Lake	1.5	G	SI
Musch	Winans Lake	Spicer	.4	G	SI
Spicer	M-36	Whitmore Lake	1.8	G	SI
Fairlane	Fieldcrest	Marshall	2.5	G	SI
Tuthill	Fairlane	Marshall	1.0	G	SI
Bishop	Fieldcrest	Fieldcrest	1.8	G	SI
McCabe	Bishop	Evergreen	.4	G	SI
Evergreen	McCabe	Silver Lake	1.0	G	SI
Twelve Mile	Rushon	Twp. Line	1.5	G	SI

1. Surface HT = Hardtop
G = Gravel

2. Improvement Code CM = Roads needing conservation maintenance
SI = Roads needing substantial improvement

*Based on 1982 Livingston County Road Assessment

TABLE 14
LIVINGSTON COUNTY 2015 LONG RANGE TRANSPORTATION PLAN

ROAD NAME	FROM	TO	LENGTH (MILES)	JURISDICTION	DEFICIENCY	TIER	IMPROVEMENT	COST/MILE (* \$1,000)	TOTAL COST (* \$1000)	SOURCE OF FUNDS FED NON-FED	FUNDS (* \$1000) FED NON-FED
Grand River	Old US23	Kensington	3.62	L.C.R.C.	Capacity	B	Road widening (2-lane to 5-lane)	1300	4706	TEDEF-D.MTF	4706
Lee	Rickett	US23 Fwy	0.70	L.C.R.C.	Capacity	B	Road widening (2-lane to 3-lane)	900	630	MTF	630
Old US23	Lee	Spencer E.	2.19	L.C.R.C.	Capacity	B	Road & bridge* widenings (2-lane to 5-lane)	1300	2847	TEDEF-D.MTF	2847
Silver Lake	Whitmore Lk	US23 Fwy	0.15	L.C.R.C.	Capacity	B	Road & bridge* widenings (2-lane to 5-lane)	1300	195		
Rickett	Lee	Meyer	0.50	L.C.R.C.	Capacity	C	Road widening (2-lane to 5-lane)	900	450	MTF	540
Old US23	Lee	Grand River	1.07	L.C.R.C.	Safety	B	See capacity improvement				

*Involves widening of I-96 or US23 overpass; the costs for which are not included in the cost estimates shown.

**Indicates road segment that has substantially higher volume than that used for computation of accident rates. May not be candidate for safety improvement.

Tier denotes priority rating (A through C)

TEDEF denotes Transportation Economic Development Fund

MTF denotes Michigan Transportation Fund

The Livingston County Road Commission (LCRC) has developed a long range, twenty year, transportation plan for primary road improvements. This plan establishes priority road improvement projects which are implemented as funds become available. A summary of identified LCRC projects is provided in Table 14 and include Grand River, Lee, Old U.S. 23, Silver Lake and Rickett roads. A short term, three year plan established by the LCRC, has also identified more immediate improvements to Green Oak Township. This three year plan provided funding for improvements of the Rushton Road and Fairlane Road bridges.

In addition to primary roads, a number of gravel roads are in desperate need of improvement. Specifically, the gravel portions of Silver Lake and Nine Mile Road. The Township administration has frequently sought to have the LCRC pave these and other roads but due to limitation of funds, paving has not been accomplished. The LCRC has suggested a local millage or special assessment to pave these roads.

The road network in Green Oak Township is indicative of the Township's rural character.

The road network in Green Oak Township is indicative of the Township's rural character. Due to the Township's topography, natural features and large land holders, considerable meandering is required for anyone traveling within the Township. U.S. 23 and its service drives, facilitate north-south travel through the Township and provides four intersections for east-west travel.

Functional Classification

Road classifications identify the volume and type of traffic that is appropriate for each segment of the roadway network. For purposes of transportation planning, a functional classification of roads has been developed. Table 15 lists the national functional classification for Principal Arterials, Minor Arterials, Major Collectors and Minor Collectors for Green Oak roadways.

**Table 15
Functional Classification
Green Oak Township Roadways**

Principal Arterials	US 23
Minor Arterials	M-36, West of US 23
	Grand River Avenue
Major Collectors	Nine Mile Road
	Base Line Road
	Rushton Road
	Ten Mile Road
	Kensington Road
	Silver Lake Road
	Winans Lake Road
	East Shore Drive
	Maltby Road
Minor Collectors	Doane Road
	Eight Mile Road
	Marshall Road
	Whitmore Lake Road

SOURCE: Michigan Department of Transportation

Traffic Counts

Table 16 on the following two pages depicts traffic counts taken by the Livingston County Road Commission taken between 1990 and 1996. The roadway, direction, cross road, road class, and month and year the count was taken are all shown in the table.

Bridges

Green Oak Township has 13 bridges, 7 on primary roads and 6 on local roads. The Road Commission has classified bridges as adequate. A bridge is considered adequate if it provides safe travel without undue delays, with normal maintenance under normal conditions.

Future Road Right of Way

Green Oak Township participates within the Livingston County Inter-County Highway road right of way designation. This highway plan establishes future road right of way widths for major roads within the Township. Where possible, future development should adhere to the recommended setbacks as designated within this plan as noted on Map 2.

Private Roads

Green Oak Township has a significant quantity of private roads. Typically, these have a single point of ingress & egress (i.e. dead end) and serve residential subdivisions. Green Oak Township currently requires all private roads to be built to L.C.R.C. standards, but due to the excessive clearing required (minimum width 90') and the associated costs, much discussion has been held regarding the adoption of AASHTO standards for private roads. Many private roads in Green Oak Township are not currently built to L.C.R.C. standards.

Table 16
24-Hour Traffic Counts for Green Oak Township 1990-1996

ROADWAY	DIR.	CROSSROAD	CLASS	MONTH	YEAR	2-WAY TOTAL
Field Crest	N	Bishop	L	6	91	820
	N	Bishop N.	L	6	95	1839
	N	Nine Mile	L	6	91	3597
	N	Silver Lake	L	6	91	911
	N	Silver Lake	L	8	96	907
Grand River	S	Silver Lake	L	6	91	305
	E	Kensington	P	7	92	4406
	W	Kensington	P	7	92	7684
	W	Kensington	P	7	96	6050
	W	Kensington	P	7	96	6541
	E	Pleasant Valley	P	7	92	7286
	E	Pleasant Valley	P	6	95	9912
Kensington	W	Pleasant Valley	P	7	92	12,251
	W	Pleasant Valley	P	6	95	14,651
	N	Grand River	P	7	96	4351
	N	Grand River	P	7	96	4850
	S	Grand River	P	7	92	6491
	S	Grand River	P	6	95	12,831
	S	Grand River	P	6	96	4030
Lee	S	Grand River	P	6	96	4378
	N	Silver Lake	P	7	92	5198
	N	Silver Lake	P	6	94	6375
	E	Rickett	P	8	92	8033
	E	Rickett	P	6	95	12,424
	W	Rickett	L	8	92	1454
	W	Rickett	L	6	95	3672
Maltby	W	Whitmore Lake	P	4	91	10,202
	W	Old US 23	L	6	95	2388
	E	Rickett	L	1	92	332
	W	Rickett	L	8	90	632
	W	Rickett	L	11	93	1826
	W	Rickett	L	7	95	1132
	W	Whitmore Lake	L	1	92	469
Marshall	N	Nine Mile	L	5	93	1090
	N	Sandy Creek	L	5	93	896
	S	Silver Lake	L	5	93	1640
Nine Mile	W	Dixboro	L	8	92	1876
	W	Dixboro	L	8	94	2376
	E	East Shore	P	5	93	4458
	W	East Shore	P	5	93	5412
	E	Field Crest	P	6	91	6665
	W	Field Crest	P	6	91	7357
	E	Rushton	L	8	92	900
	E	Rushton	L	8	94	1671
	E	Rushton	L	5	95	1660
Rickett	W	Rushton	P	5	95	6013
	N	Lee	P	8	92	7140
	N	Lee	P	6	95	11,151
	S	Lee	L	8	92	4096
	S	Lee	L	6	95	6760

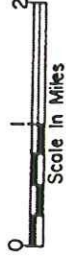
P=Primary L=Local

Table 16
24-Hour Traffic Counts For Green Oak Township 1990-1996 - Continued

ROADWAY	DIR.	CROSSROAD	CLASS	MONTH	YEAR	2-WAY TOTAL
	N	Winans Lake	L	6	95	3339
Silver Lake	E	Field Crest	P	6	91	4381
	E	Field Crest	P	8	96	5084
	E	Field Crest	P	8	96	5802
	E	Kensington	P	7	92	2960
	W	Kensington	P	6	94	2936
	W	Kensington	P	6	94	3667
	W	Kensington	P	7	96	3399
	W	Kensington	P	7	96	3256
	W	Marshall	P	6	91	4297
	E	Rushton	P	5	95	2532
	W	Rushton	P	6	91	659
	W	Rushton	P	5	95	1305
	E	Whitmore Lake	P	6	94	5593
	E	Whitmore Lake	P	8	94	5964
	E	Whitmore Lake	P	8	96	7072
Ten Mile	W	Dixboro	P	5	95	12,296
	E	Rushton	P	8	92	7542
	E	Rushton	P	5	93	8617
	E	Rushton	P	6	94	9281
Whitmore Lake	N	Eight Mile	P	7	93	6190
	N	Eight Mile	P	8	93	5771
	S	Grand River	P	10	96	15,624
	S	Grand River	P	10	96	16,361
	N	Lee	P	8	92	12,247
	N	Lee	P	6	93	15,084
	N	Lee	P	7	94	14,899
	S	Lee	P	7	94	7273
	N	Lee Drive	P	7	94	16,140
	N	Leo	P	8	96	14,292
	S	M-36	P	8	92	4462
	S	M-36	P	6	95	3232
	N	Silver Lake	P	7	92	4172
	N	Silver Lake	P	6	93	3677
	N	Silver Lake	P	6	94	3551
	N	Silver Lake	P	8	96	3900
	S	Silver Lake	P	7	92	7001
	S	Silver Lake	P	8	94	7511
	S	Spicer	P	6	95	2409
	N	Winans Lake	P	6	93	7223
	S	Winans Lake	P	7	92	1524
	S	Winans Lake	P	6	93	1345
	S	Winans Lake	P	6	94	1616
Winans Lake	E	Musch	P	7	92	7283
	E	Musch	P	6	93	7021
	W	Musch	P	7	92	6234
	W	Whitmore Lake	P	8	92	6280
	W	Whitmore Lake	P	6	93	7362
	W	Whitmore Lake	P	6	94	7334

P=Primary L=Local

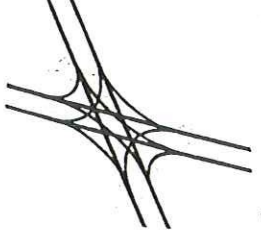
SOURCE: Livingston County Road Commission



Legend

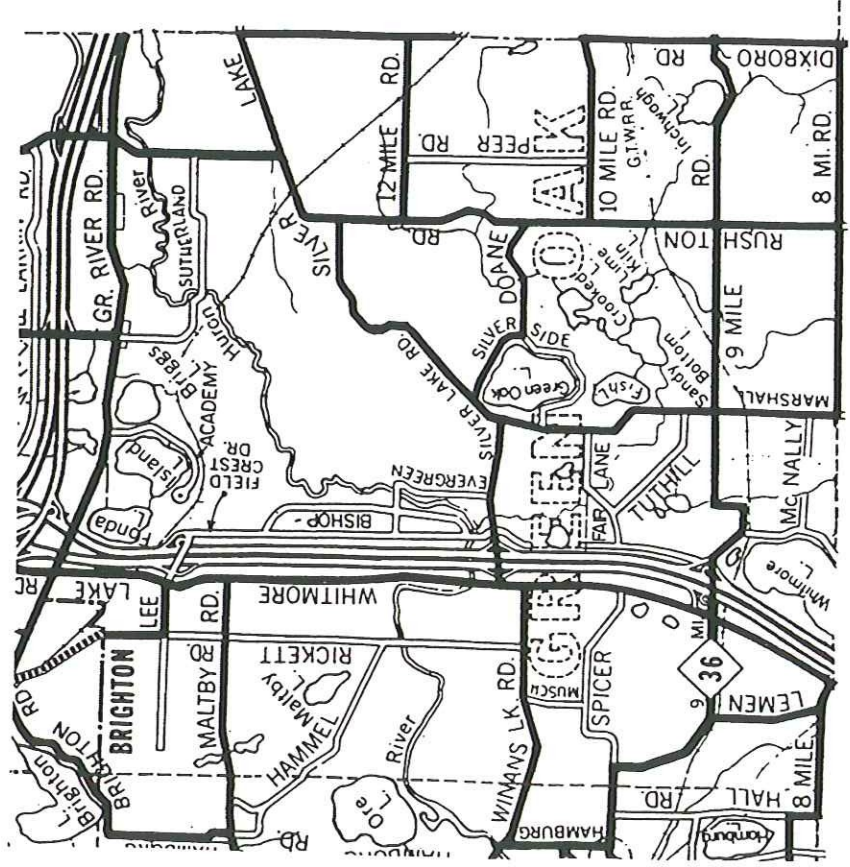
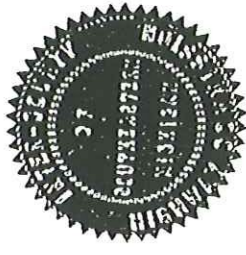
- Major Thoroughfare
- Major Thoroughfare*
- Major Thoroughfare*
- Secondary Thoroughfare
- Secondary Thoroughfare*
- Super highway
- Freeway
- 120' Right-of-Way
- 100' Right-of-Way
- 86' Right-of-Way
- 120' Right-of-Way
- 100' Right-of-Way
- 86' Right-of-Way
- 20 1/2' Right-of-Way
- 350'+Right-of-Way

*These widths have been established through special action of the Inter-County Highway Commission of Southeastern Michigan.



**inter-county
highway
commission**
of southeastern michigan

24719 VAN DYKE AVENUE
CENTER LINE, MICHIGAN 48013
(313) 759-3344



CERTIFIED *Franklin D. Meyers* DATE Oct. 16, 1972
Franklin D. Meyers, P.C.P. Executive Director

COUNTY OF LIVINGSTON
STATE OF MICHIGAN

MAP AND RESOLUTION RECEIVED FOR RECORDING
ON THE 27TH DAY OF APRIL, 1973 A.D.,
AT 10:03 O'CLOCK AND IS RECORDED IN LIBER 640
PAGE 247 LIVINGSTON COUNTY RECORDS

Julia C. Blackburn
Julia C. Blackburn, Register of Deeds

NATURAL RESOURCES

The natural features of Green Oak Township have historically played a major role in influencing growth and development. The natural resources of the Township including the Huron River, its tributaries, and lakes have provided beautiful settings for homesites, and recreational facilities serving the entire region. Indeed, the attractiveness of the natural environment is one of the major reasons why people have located in the Township.

While there are many opportunities for enjoyment and utilization of the natural resource base, particular features of the natural environment are incapable of supporting development or are of sufficient significance to be preserved. It is helpful to examine the various natural resource factors in detail to determine the opportunities and constraints for development, as well as weigh the value of preservation. Various individual factors were inventoried and mapped by the Environmental Research Council (ERC) and are used in natural resource analysis. These maps are on display at the Township Hall and include:

...the attractiveness of the natural environment is one of the major reasons why people have located in the Township.

- Base Map
- Greenways
- Woodlands
- Wetlands & hydric soils
- Pre-settlement land patterns
- Michigan Natural Features Inventory
- Floodplains
- Groundwater vulnerability
- Watershed boundaries
- Topography

A detailed description of the Township's resources is provided below:

Topography

The topography of Green Oak Township is gently rolling to hilly with sandy uplands and ridges, sandy plains and numerous wet flat plains. Land elevations range from about 860 feet above sea level found in the floodplain of the Huron River to about 1,035 feet above sea level, the high point of a moraine north of Winans Lake Road near the western border of the Township. This "rugged" type of topography presents many possibilities to developers with ingenuity. The Township's topography has been and will continue to be a principal attraction to residential development.

Topography has played a major role in determining locations of highways, railroads, industry and other land uses. Roads in the Township have generally bypassed steep hills and swamp areas since the cost of cutting and filling is prohibitive. The numerous lakes in the Township have also prevented a rigid grid line road network which contributes to the rural character of the Township.

Soils

An understanding of soil characteristics is essential to the development of a community in a manner which minimizes construction costs, risks to public health, and environmental damage. This is especially critical in Green Oak Township because of the limitations of many soil types.

Soil types within the Township are identified in the Livingston County Soil Survey prepared by the U.S. Soil Conservation Service. Detailed soils maps are available through County Planning or the Soil Conservation Service. Two soil characteristics which are most important to Green Oak Township are suitability for septic systems and susceptibility to wetness and flooding. The latter characteristic is typically associated with low-lying wetland and floodplain areas and is discussed in another section of this report.

Due to the Township's geologic past, areas of sand and gravel have been deposited in large volumes. Over the years, much of this sand and gravel deposits have been mined. Many of these depleted areas are in the process of reclamation.

Because the sanitary sewer system in the Township is limited, individual septic systems are the primary means of wastewater disposal. Therefore, the location of septic systems on proper soils is extremely important.

There are many areas within the Township which exhibit severe limitations for septic systems. Such limitations are associated with slow permeability, high water table, or excessive slope. In some cases, limitations may be overcome with a more sophisticated and costly system or central sanitary sewers. In cases where severe septic limitations are associated with a susceptibility to flooding, development should be sited in more suitable areas.

Surface Water

One of the most significant features of Green Oak Township is the abundance of surface water. The Township is traversed by the Huron River. Other smaller streams and tributaries such as Spring Mill Creek, Davis Creek, and the South Branch of the Huron River meander through the Township. Much of the land adjoining the Huron River in the Township is under public ownership. The river is also protected under the provisions of the Michigan Natural River program.

Glacial lakes are also a predominant feature. The largest lake within the Township is Silver Lake encompassing 152 acres. A portion of Whitmore Lake (236 total acres) is located in Section 32 of the Township. Other major lakes include:

Island	-	140 acres
Nichwagh	-	130 acres
Fonda	-	83 acres
Briggs	-	75 acres
Sandy Bottom	-	56 acres

Wetlands and Floodplains

The presence of surface waters, poorly drained soils, and low-lying areas gives rise to substantial floodplain and wetland areas within the Township. Wetlands and floodplains, once perceived as waste lands, are now being recognized as valuable natural resources. They play an important role in maintaining balanced hydrological and ecological systems. In addition to providing wildlife habitats, wetlands can provide valuable functions related to the maintenance of water quality: nutrient retention and filtration, sediment removal, and groundwater recharge and discharge.

Wetlands also provide very valuable functions by acting as storage basins for flood waters and thus reducing the severity of floods.

Portions of the rivers, creeks and their tributaries in Green Oak Township are within the 100 year floodplain as established by the Federal Emergency Management Administration (FEMA). These floodplain areas were taken into account in the analysis described later.

The wetlands map includes generalized areas as inventoried by the Michigan Resource Inventory Program (MIRIS) as prepared by Livingston County Planning Department (Map 3). The MIRIS data was compiled from aerial photographs, County information, and U.S. Fish and Wildlife Maps.

In accordance with the Goemaere-Anderson Wetland Protection Act (Act 203 of 1979) as amended, dredging, filling and other activities in regulated wetlands require a permit from the Michigan Department of Natural Resources (MDNR). Because of the environmental sensitivity of these lands and because of these regulations, development in wetland areas is discouraged. A Township Wetlands Ordinance is currently being considered which would regulate those wetlands not governed by the MDEQ.

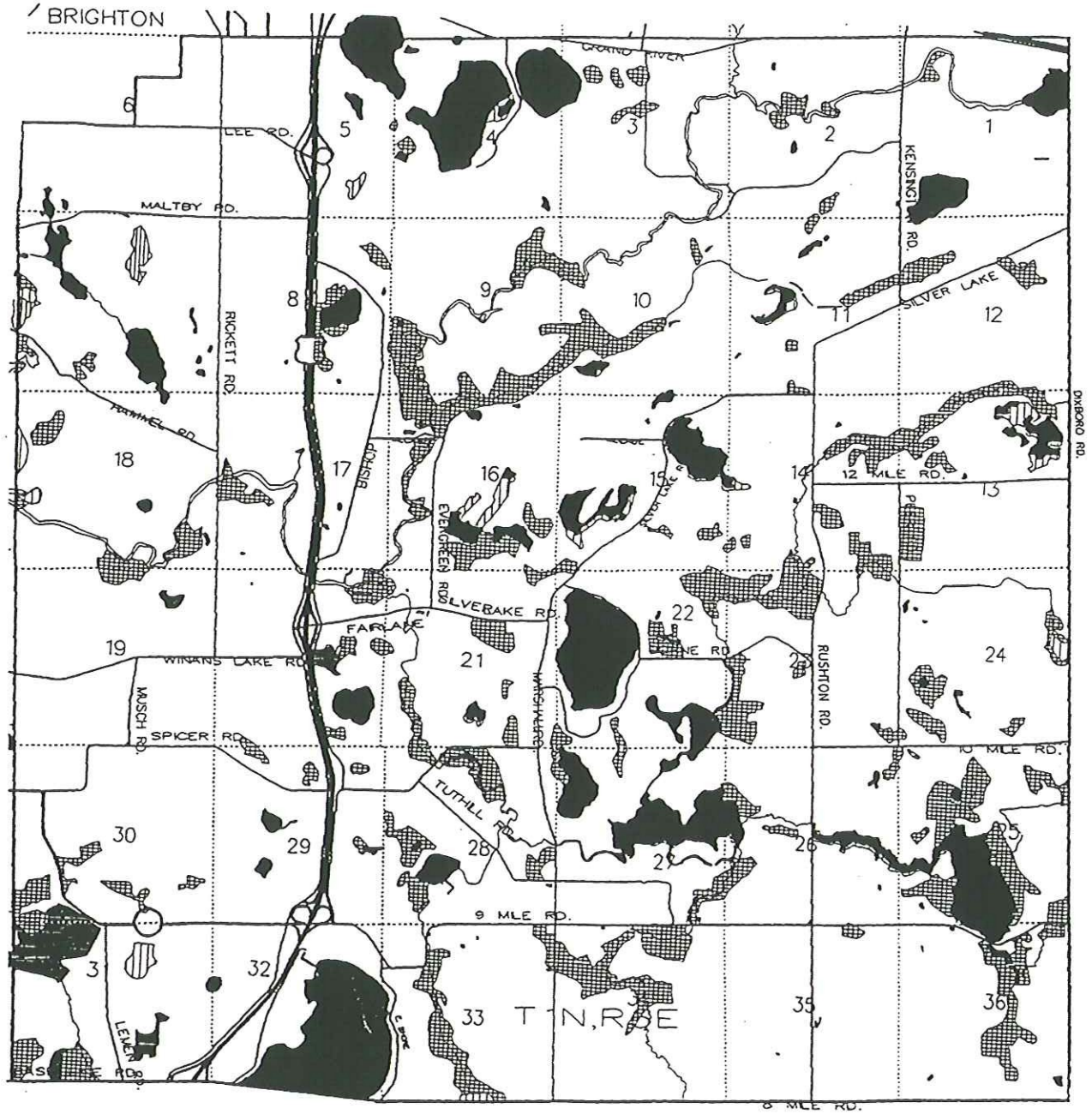


Groundwater Vulnerability

The groundwater vulnerability map, (Map 4) is a composite of three factors that influence how quickly contaminants spilled on the ground may move into groundwater: depth to the water table, permeability of the underlying geology of the township, and soil permeability. The study used data collected from well logs completed by well drillers to derive a depth to water table map. Areas were then ranked, with least vulnerable areas receiving a one (depth to water table over 40 feet), and most vulnerable areas receiving a five (depth to water table under 5 feet). The well logs also provided information about the types of geologic materials in the township. The study mapped which areas held the most permeable materials (such as sand or gravel), and ranked the areas, with the least vulnerable areas receiving a one (less than 20% of the materials are sand or gravel) and the most vulnerable areas receiving a five (over 80% sand and gravel present). County soil maps provided information about soil types and their permeability. The study mapped which areas held the most permeable soils and ranked the areas from one to five.






The three parameters were then weighted and combined to give an overall vulnerability ranking. Depth to water was given a weight of 0.6, underlying geology a weight of 0.3, and soil permeability a weight of 0.1. Rankings of one to two were classified least vulnerable, three moderately vulnerable, and four to five most vulnerable.

GREEN OAK TOWNSHIP



Map 3

WETLANDS

-  Shrub/Scrub
-  Wooded
-  Emergent
-  Flats
-  Lakes

SCALE: 1=60,000
DATE: June 1993



Data Source: Michigan Resource Inventory Program (MIRIS)
PREPARED BY LIVINGSTON COUNTY PLANNING DEPARTMENT



GROUNDWATER VULNERABILITY TO CONTAMINATION

GREEN OAK TOWNSHIP, LIVINGSTON COUNTY, MI

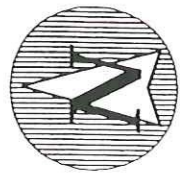
This map depicts the vulnerability of groundwater to contamination from surface sources.

The classification is based on a weighted combination of the following parameters:

- 1) Depth to water table (60%)
- 2) Permeability of unconsolidated, subsurface materials (30%)
- 3) Permeability of soil surface (10%)

LEAST VULNERABLE
MODERATELY VULNERABLE
MOST VULNERABLE

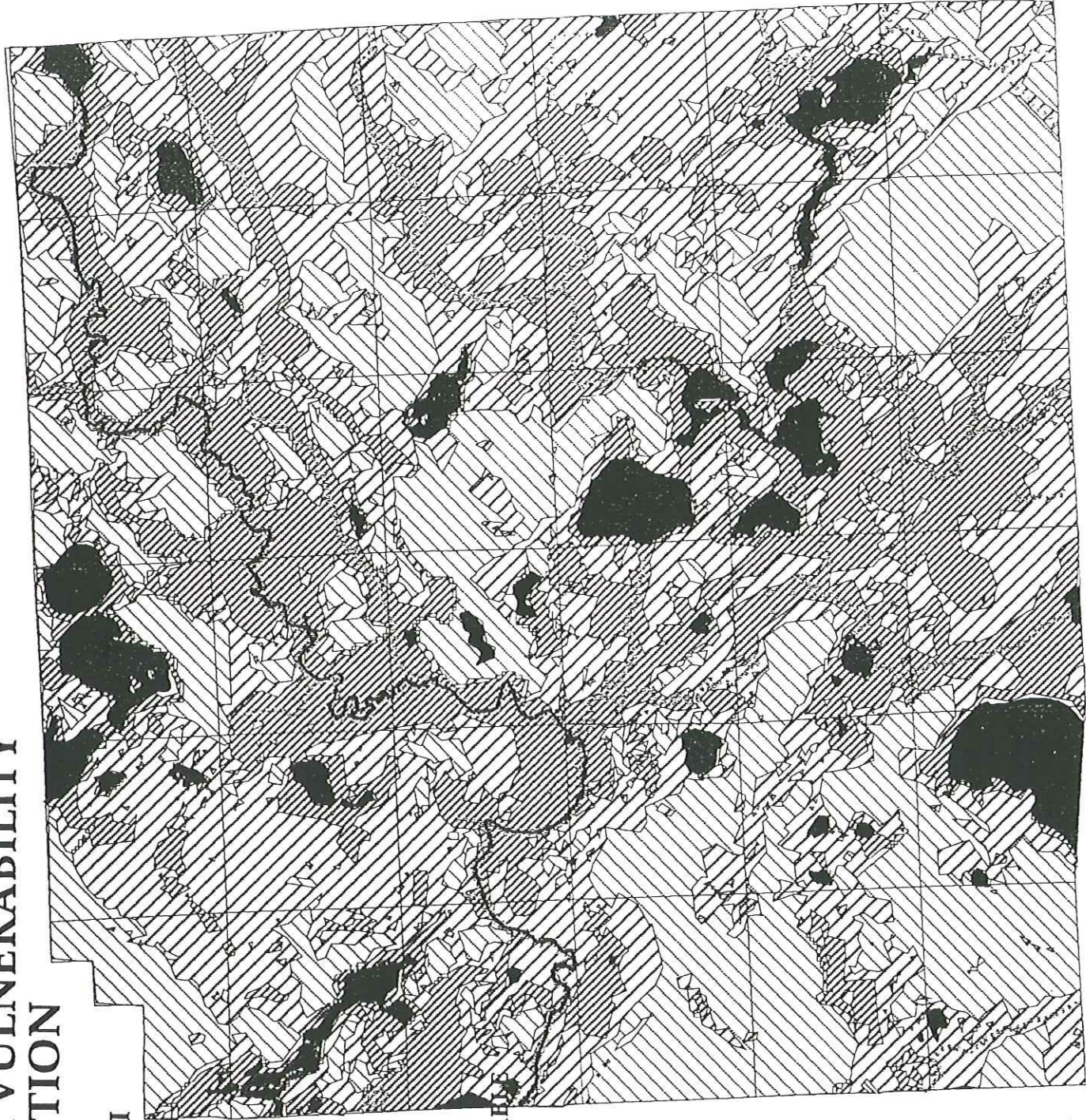
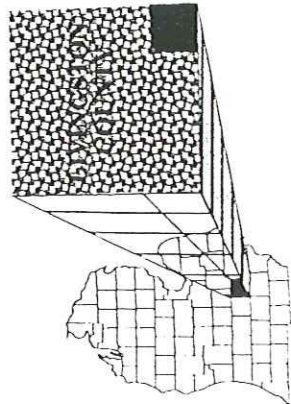
SURFACE WATERS



0.5 0 0.5 1 Miles



Map 4



Natural Rivers

A key natural feature of Green Oak Township is the Huron River. The Township's 36 square miles provides important watershed areas which are critical to the maintenance of surface and ground water quality. Green Oak Township is a participating member of the Huron River Watershed Council. The Township supports this agency's efforts in monitoring surface water of the Township and for developing strategies for effective management of this important resource.

A key natural feature of Green Oak Township is the Huron River.

Green Oak Township includes rivers and creeks which are designated for protection under the Natural River Act (Act 231, P.A. 1970) by Michigan Department of Natural Resources and under the Township Natural Rivers District. The purpose of this designation is to preserve and enhance the scenic value and quality of rivers.

Generally, the area 400 feet from the ordinary high water mark on each side of and parallel to the Huron river and its tributaries, Davis Creek and Spring Mill Creek, is designated as Natural Rivers District. Regulations include a building setback of 125' from the river or 50' from the tributaries and a minimum lot width of 150'.

ERC

The Green Oak Environmental Research Council (ERC) was officially recognized as a standing committee by the Green Oak Township Board of Trustees on December 4, 1996. The committee was formed to develop an inventory of the Township's natural resources and to participate in developing a long range environmental plan for the Township. The Council is charged with the responsibility of developing recommendations to protect the rural characteristics and quality of life of the Township and for all its residents. Their mission includes the following tasks:

- Identification of natural resources within the Township

- Outline reasonable development processes to protect these resources

- Preservation of the Huron River and its tributaries within the Township

- Protection of wetlands and assist in review of any drainage proposals for the Township

- Provide direction regarding environmental impact for any future sewage systems

- Provide detailed information regarding site characteristics comprised during a site walk for development applications, including subdivisions, rezonings, site condominiums, site plans, etc.

As part of their work responsibilities, the Environmental Research Council has been actively involved in mapping various Township resources. These maps are incorporated within the Appendix of this Master Plan.

Resource Capability And Lot Size

There is a direct correlation between resources capability and preferred lot sizes. In areas where there are sensitive environmental features such as high water table, wetlands, hydric soils, and floodplains, smaller lots are generally not appropriate. Within these areas of sensitive environmental features it is often difficult to site a septic field and adequately protect ground water resources. Dredging and filling activities associated with home construction are often disruptive and harmful to these sensitive environmental features. It is also difficult to obtain necessary isolation distances between the well and the septic field. Larger lots (1 acre and greater) are generally more conducive for the siting of homes within environmentally sensitive areas. Larger lots will allow greater land area to site septic fields in areas of acceptable soils. The larger lot will also afford greater isolation distance for on site wells. Finally, larger lots are more appropriate for the construction of larger homes, which is a common trend for residential home buyers. Larger lots allow ample room for attached garage, family room, deck, swimming pool, etc.

The Livingston County Health Department has adopted a policy of discouraging on-site septic for lots less than 1/2 acre in size. The agency's policy states that the only ideal situation where less than 1/2 acre divisions should be considered are where sites include the following factors:

- Topography is flat and "high and dry"
- Soil conditions are predominantly coarse sand, with no water encountered within the upper 6 feet
- House sizes are on the "small side"
- Groundwater report concludes that the aquifer is protected and has the ability to accommodate high density
- Sanitary sewers or community water is available

...the Green Oak Township Planning Commission discourages lots less than 1/2 acre in size and promotes larger lots in environmentally sensitive areas.

With this new policy in place, the Green Oak Township Planning Commission discourages lots less than 1/2 acre in size and promotes larger lots in environmentally sensitive areas. In land areas incorporating Natural River districts or sensitive environmental features, the lot sizes should even be larger in order to minimize the potential for failing septic fields or nitrate contamination.

Green Oak Township also recognizes the Oakland County Health Division Sanitary Code. This document adopts standards for minimal residential building site which states that a single family or two family residential building site must contain a minimum of 1 acre of area for each three bedroom residence. Minimum site size may be reduced when dedicated open spaces are provided as part of the total project (e.g. cluster homes). This sanitary code also includes extensive documentation, including over 100 scientific articles, studies and reports concerning groundwater protection, nitrate contamination, and residential lot density.

The interrelationship of residential home site within Green Oak Township and the Natural River areas make it necessary for Green Oak Township to adopt specific policies for protecting its groundwater resources. Control of the application of waste water effluent is the single most effective method of controlling groundwater contamination within the Township and the Natural River areas. Therefore, density control and land use restrictions are valid methods which are utilized and incorporated within a comprehensive groundwater protection policy for Green Oak Township and the Natural River watershed areas.

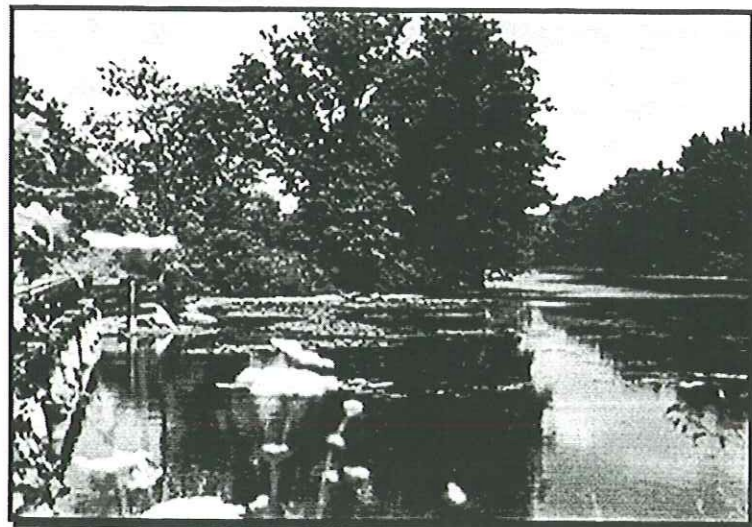
Environmental Contamination

The Livingston County Health Department and the Michigan Department of Environmental Quality has mapped sites of environmental concern. These sites are included on Map 5, and include areas of environmental contamination, leaking underground storage tanks, water supplies with nitrates, and closed dumps or landfill sites.

Perhaps the most serious areas of environmental contamination involve contaminated ground water. The Livingston County Health Department has recently denied well permit requests for land development near the U.S. 23 and Lee Road corridor areas, as well as proposed residential areas near Spicer Road and Musch Road. Within these areas it will be necessary for developers to seek a community well and closely monitor groundwater quality. The Township and private developers will be forced to investigate options for groundwater improvement or extension of community wells or central water systems for these affected areas.

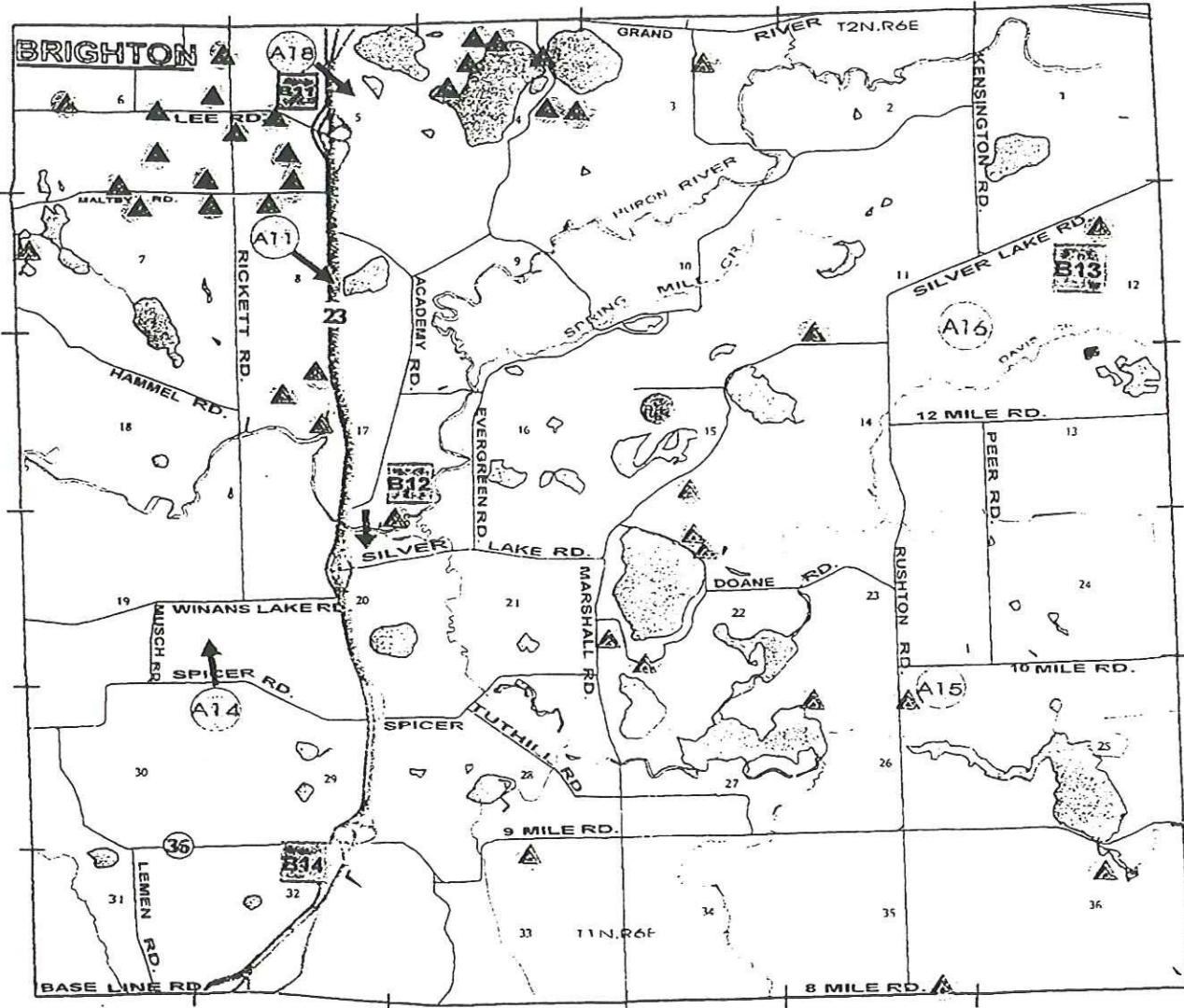
Other areas of concern include numerous sites which have reported nitrate contamination within groundwater supplies. This includes areas around the Fonda-Island-Briggs residential areas, Lee Road/Maltby Road areas, as well as selected sites around Silver Lake. These areas of high nitrate concentrations are largely the result of failing septic fields located within small lot areas containing high ground water. As these septic fields fail, it is not uncommon for nitrates to percolate into groundwater resources, thereby contaminating on site wells.

The Township and County Health Department officials are currently investigating options for correction of these areas of contamination. Possible options include central water service and stricter enforcement of septic regulations. On the local level, the Planning Commission has adopted policies which encourage larger lots within these sensitive environmental areas, as well as greater isolation distances between the wells and septic fields.







GREENOAK TOWNSHIP

Livingston County, Michigan



LEGEND

-  SITES OF ENVIRONMENTAL CONTAMINATION
See Appendix A
-  LEAKING UNDERGROUND STORAGE TANK
See Appendix B
-  WATER SUPPLIES WITH NITRATES (5ppm or greater)
See Appendix C
-  CLOSED DUMP/LANDFILL SITES
See Appendix D

N



Livingston County



Health Department

Map 5

III. COMMUNITY GOALS

COMMUNITY GOALS

The adoption of community goals and objectives is a vital step in the planning process. The desires and needs of the people must be properly interpreted so that workable solutions can be achieved. It therefore requires careful analysis of the various factors which characterize Green Oak Township and the specific problems to be faced.

Citizen Input

Citizen input is the core of any planning effort. In order for the goals of the plan to be achievable, general consensus regarding the vital issues to the community must be reached. Many techniques exist which facilitate the gathering of citizen input, and Green Oak Township has had the opportunity to utilize two different methods in this Master Planning endeavor which are described below.

Planning Survey

The development of community goals is based upon input received from Green Oak Township Board members, Planning Commissioners and Township residents. The goals are also developed in part from input received from the 1992 Community Planning Survey. This survey was distributed to over 4,000 Green Oak Township households. Roughly 33% of these households completed and returned these surveys.

The survey is an excellent means of determining citizen attitudes on growth and development. It also measures the level of satisfaction for community services, roads, fire and police safety as well as the quality of life for residents of Green Oak Township. The specific results of the survey are presented as Appendix A of the Master Plan.

Visioning Workshop

Another method utilized to collect citizen input was a Visioning Workshop. The goal of conducting Visioning Workshop is to attempt to gather citizen input on a variety of topics and to encourage conceptualization of desired future for the community. The visioning process provides a vehicle for people of diverse viewpoints to identify and agree upon the common dreams they have for their community, and encourages people to express with words a desired future.

The Township held a Visioning Workshop in December 1996. Approximately 80 people attended the workshop, including Township Board Members, Planning Commissioners, and others interested in future planning for the Township. The Workshop started with a brief overview of the evening's agenda, an explanation of the current Master Planning efforts, and a presentation of the role of Visioning in the Master Planning process. After this introduction, participants chose a group based upon a topic which interested them. Ten topics were included and were broken down into five small groups, therefore each group addressed two topics each. The topics and groups were as follows:

- 1) **Community Facilities/Governmental Services and Big Picture**
- 2) **Environmental Planning and Natural Rivers Planning**
- 3) **Commercial Corridor and Industrial Uses**
- 4) **Density/Lot Sizes and Open Space Preservation**
- 5) **Roads and Public Utilities**

The small groups, entitled "break out" groups, were facilitated by Planning Commissioners. The facilitators generated and guided the discussion, and recorded vision statements. The groups brainstormed vision statements regarding the future of the community based upon the following principles:

- ✓ Visions should generate new and bold ideas for the future
- ✓ All ideas and visions are welcome
- ✓ No ideas or visions will be criticized
- ✓ Participation from all is encouraged

Following the above principles, each group generated lists of vision statements which reflected individual ideas regarding the group topics. After brainstorming, each group was asked to vote on the top five vision statements, deemed "Priority Vision Statements."

After each group had voted, the larger group reconvened and each group facilitator presented the "Priority Vision Statements" from their group. The large group was then asked to vote on all the "Priority Vision Statements" from all five groups. All vision statements generated that evening are included as Appendix B to the Master Plan. The small group and large group votes are depicted as well.

Overall, concerns regarding the pace of development and the decreasing amount of open space and farmland were prevalent themes. These ideas were summarized by one participant's statement that they wanted to preserve the "Green of Green Oak Township." The vision statements generated that evening have assisted the Planning Commission in formulating the goals and policies of the Master Plan.

Green Oak Township Vision Statement

Green Oak Township is a residential community defined by its rural characteristics. The residents and their governing body are committed to:

- ✓ the preservation of open space and rural characteristics
- ✓ protection of the Township's natural resources
- ✓ managing growth
- ✓ providing residents with recreational areas, quality services and appropriate infrastructure to meet social needs.

Green Oak Township seeks to maintain its natural beauty by identifying sensitive environmental areas, establishing goals, objectives, and strategies, formulating a thorough plan review process and enacting appropriate ordinances.

Goals and Policies

In terms relevant to community planning, goals and policies give the Master Plan the philosophical guidance it needs to address the present issues and advance plans into the future. They are defined as follows:

- Goals** are overall broad statements that provide a focus for future discussions.
- Objectives** are more specific planning statement used to qualify the goals and provide more detailed direction for planning efforts.
- Strategies** are very specific, action-oriented statements that would help achieve the goals and objectives. Policy statements provide justification to revise or draft new ordinances or regulations or finance specific capital improvements.

COMMUNITY IDENTITY

GOAL: Green Oak Township's community identity should underscore the Township's rural atmosphere, the diverse natural beauty, its historic significance and the resident's commitment to maintain these attributes while effectively managing growth.

OBJECTIVE I

Promote the Township's natural beauty and provide accessibility to these assets for Township residents and visitors.

STRATEGIES

1. Promote the Huron River as a symbol of the Township.
 2. Evaluate feasibility of Township acquiring land along the River.
 3. Coordinate efforts with the Huron Clinton Metro Authority and the Michigan Department of Natural Resources to promote the Natural River District and existing parks.
 4. Recognize and promote the importance and significance of non-active open space in all planning activities.
 5. Maintain the natural features of the Township which are significant to its image such as wetlands, woodlands, and water bodies.
 6. Coordinate with and support the Greenway efforts in Livingston County.
-

OBJECTIVE II

Highlight and preserve the Township's historic significance and its historic resources.

STRATEGIES

1. The Township shall create a Historic Commission which will strive to educate the community regarding the Township's historic heritage, foster civic beauty and promote civic pride.
2. The Township Historic Commission shall keep an inventory of all historic sites, homes and buildings.
3. The Historic Commission may recommend historic sites to be designated by Township markers for the education, pleasure and welfare of the citizenry. The Historic Commission shall be responsible for design of the markers.
4. The Historic Commission will be available to advise property owners in recognizing and protecting their historic resources.
5. The Historic Commission may nominate properties meeting the established criteria to the State and National Registers of Historic Places.

COMMUNITY IDENTITY *continued*

6. The Township shall protect historic sites, homes and buildings through enforcement of zoning regulations.
7. Development affecting historic sites and structures shall be coordinated with the Historic Commission.
8. The Township may create specific historic districts to safeguard sites and protect the exterior of buildings.
9. The Township may adopt a Historic District Ordinance to govern specific historic districts.
10. The Historic Commission may inform and educate the citizens of Green Oak concerning the historic and architectural heritage of the Township by publishing information and by sponsoring historic programs open to the public.
11. The Historic Commission may promote historic site tours.

OBJECTIVE III

Develop and nurture community involvement, community pride and community awareness.

STRATEGIES

1. Develop a signage program which highlights significant community sites such as rivers, historic homes, and "Welcome" signs at entrance points signaling the Township boundaries.
2. Support Township sponsored events celebrating the heritage of Green Oak Township.
3. Promote awareness of civic identity through involvement of churches and schools.
4. Increase communication of Township activities and ongoing services via newsletter, cable access, or web site development.
5. Continue coordination and communication between Township officials, Commission, Committees, citizen organizations, Planning Commission, Environmental Research Council, and Historic District Commission.
6. Identify the major and minor entry points into the community and treat these areas with special consideration during the site plan review process. Review the Zoning Ordinance and consider more stringent setbacks and landscaping requirements for these areas.

ENVIRONMENTAL PROTECTION

GOAL: Preserve and enhance the Township's abundant natural resources, including lakes, rivers, wetlands, woodlands, and rolling topography. Green Oak Township should protect its vast groundwater and aesthetic surface water resources by continuing to be progressive in its leadership toward groundwater protection and establishing a future legacy.

OBJECTIVE I

Protect the Township's ground water to ensure quality drinking water.

STRATEGIES

1. Consider development of an overlay zone to protect groundwater recharge areas.
 2. Site commercial and industrial land uses which use or process hazardous materials away from environmentally sensitive lands or aquifer recharge areas.
 3. Incorporate groundwater protection measures into Site Plan Review standards.
 4. Adopt a wetlands ordinance to protect those wetlands in their role of providing filtration and aquifer recharge.
 5. Coordinate groundwater protection efforts with the Environmental Research Council, Livingston County Health Department and MDEQ.
 6. Develop a wellhead protection program for community wells.
 7. Consider establishment of Septic System Maintenance Districts for the lake areas with drain fields to ensure proper operation, inspections, regular pump outs, and education of homeowners.
-

OBJECTIVE II

Protect the Township's surface water resources including lakes, rivers, streams, tributaries, and wetlands.

STRATEGIES

1. Promote the minimization of impervious surfaces which contribute to increased runoff; this may include evaluating Zoning Ordinance requirements for parking, etc.
 2. Require isolation buffers between industrial or other potential polluting uses and recharge areas.
 3. Establish programs and appropriate land use regulations to reduce or eliminate the impact of failing septic fields on nearby surface waters.
 4. Control stormwater and agricultural runoff, and nutrient loading.
 5. Initiate education efforts on impact of fertilizers and pesticides in areas adjacent to watercourses and wetlands.
 6. Discourage mass grading and encourage selective grading practices for development.
 7. Adopt a local wetlands ordinance to regulate those wetlands not under MDEQ jurisdiction.
-

ENVIRONMENTAL PROTECTION *continued*

OBJECTIVE III

Protect the Township's land resource features, including topography, steep slopes, wildlife habitat, flora and fauna.

STRATEGIES

1. Conduct a Natural Feature Inventory to identify features of significance to be protected.
 2. Identify areas of wildlife habitat in order to promote protective mechanisms.
 3. Discourage development in areas of steep slopes and consider greater setbacks for bluff areas.
 4. Consider a *Cluster* ordinance to promote preservation of open space.
 5. Encourage contiguous open space systems between residential developments.
 6. Consider programs for donation or purchase of conservation easements to protect significant natural features.
 7. Adopt a woodlands ordinance for tree preservation.
 8. Encourage the use of P.A. 116 Farm and Open Space agreements.
 9. Consider the use of purchase of development rights as a method of preserving natural features.
-

OBJECTIVE IV

Protect the Township's air quality. Ensure protection from excessive noise, light or visual intrusion.

STRATEGIES

1. Attract clean industries such as hi-tech or research related uses.
2. Enforce industrial performance standards for noise, vibration, fumes, gases, glare, etc..
3. Consider adopting a "Night Sky" ordinance, and/or adopting standards for light maximums in the Zoning Ordinance.
4. Coordinate protection strategies with MDEQ, EPA, and MI-OSHA.

NATURAL RIVERS

GOALS: It is the goal of Green Oak Township and its residents to preserve, protect and enhance the Huron River and its tributaries.

OBJECTIVE I

Continue existing management programs and develop new management techniques designed to protect and enhance the resources of the Natural Rivers and tributaries.

STRATEGIES

1. Promote the protection of natural vegetation along shoreline areas and prohibit the dredging and filling of wetlands areas adjoining river front property.
 2. Encourage activities of Lake Associations and River Associations and their efforts to maintain water quality, lake management, and lake loading studies.
 3. Encourage lake or river front property owners to control application of pesticides, fertilizers and other forms of nutrient loading.
 4. Promote the preservation of a 25' wide vegetative buffer along the lakes and rivers to help filter sediment and contaminants.
-

OBJECTIVE II

Continue existing regulatory controls and develop new zoning regulations or other Township regulations useful in efforts to protect and enhance watercourse assets.

STRATEGIES

1. Limit density in lakeside areas and enforce state and Natural River District regulations in regards to setbacks and zoning.
2. Consider expansion of Natural Rivers District to include more of the Huron River's tributaries and flood plain areas in the Township.
3. Reduce the allowable percentage of impervious surfaces in the Natural Rivers District.
4. Identify view sheds and promote sensitive development in those areas via scenic easements.
5. Develop regulations such as anti-keyholing ordinances to minimize the overcrowding of rivers and lakes and limit public access.
6. Develop more stringent stormwater management requirements along rivers and tributaries.
7. Identify areas that warrant protection through conservation easements, purchase of development rights, or fee simple purchase for public ownership.

GROWTH MANAGEMENT: RESIDENTIAL

GOALS: Develop residential growth management techniques useful in maintaining the Township's rural character.

OBJECTIVE I

Protect existing rural residential areas by preventing incompatible adjacent development which detracts from rural character.

STRATEGIES

1. Maintain low density or very low density residential uses in agricultural and livestock areas to prevent land use conflicts.
 2. Provide land use buffers or transitional land use areas between existing or proposed single family residential areas and areas of commercial and industrial uses.
 3. Provide sufficient open space to serve each dwelling unit either by larger lot sizes or large common open space areas.
 4. Plan higher density residential development only in areas that are properly serviced with public utilities and adequate roadway networks.
-

OBJECTIVE II

Manage new residential development to retain the rural character of Green Oak Township.

STRATEGIES

1. Establish utility service districts with distinct boundaries.
2. Consider programs such as purchase or donation of development rights, conservation easements, and scenic easements.
3. Retain a high proportion of large lot areas to promote the maintenance of horses and other farm type animals.
4. Consider cluster/open space ordinance.
5. Support Greenways efforts and coordinate with planned open space in existing and proposed residential areas.

GROWTH MANAGEMENT: COMMERCIAL AND INDUSTRIAL

GOALS: Manage commercial and industrial development necessary to provide adequate services employment and tax base to support the Township and its rural residential character.

OBJECTIVE I

Limit industrial and commercial expansion to established areas or future designated areas.

STRATEGIES

1. Promote attractive and clean industrial or office research uses within the Kensington Road industrial corridor.
 2. Ensure that industrial and commercial uses are well separated/buffered between residential and industrial uses.
 3. Identify re-development alternatives for existing industrial uses currently located in residential areas.
 4. Discourage the introduction of new commercial areas which by their location and method of development may encourage the creation of new "strip commercial" zones.
 5. Develop design guidelines to encourage quality design and architecture
 6. Promote shared service drives to minimize number of curb cuts along major roadways.
 7. Consider development of a M-36 Corridor Plan which would coordinate land use and traffic. The Corridor Plan will also be coordinated with the M-36 Hamburg Township Plan which establishes design guidelines for driveways, traffic management, landscaping, land use, etc.
-

OBJECTIVE II

Within designated areas, cluster industrial and commercial uses to minimize impacts on less intensive land uses.

STRATEGIES

1. Explore ways to cluster and/or stack commercial and industrial uses.
2. Promote placement of shared parking behind buildings.
3. Consider development of a Commerce Park to cluster commercial, industrial, and research uses and to prevent "strip commercial" type developments.

COMMUNITY FACILITIES AND SERVICES

GOALS: All facilities or services such as schools, library, police, fire and parks must be functional, safe and accessible to all residents. The facilities should be designed with one major goal — providing the best service possible to the residents.

OBJECTIVE I

The Township should explore options for shared services agreements with adjoining communities for such services as library, recreation, and other governmental services.

STRATEGIES

1. Coordinate Library services with adjoining communities.
 2. Provide opportunities for a variety of recreation activities, both active and passive, throughout the Township and explore joint service relationships with adjoining communities.
 3. Coordinate with schools in providing recreational opportunities.
-

OBJECTIVE II

The Township shall provide quality and efficient governmental services.

STRATEGIES

1. Provide convenient access and one stop service for residents.
 2. Explore using computer kiosks to display information.
 3. Development of a Township web site for residents to access information via the Internet.
 4. Regularly evaluate services which seeks maximum value of tax dollar.
-

OBJECTIVE III

Provide quality facilities for Township residents.

STRATEGIES

1. Consider development of a new Township Hall or remodeled Township Hall.
 2. Consider creation of a Master Recreation Plan for Green Oak Township.
 3. Maintain a Recreation Committee to assess needs and develop recommendations for future park development and recreation programs.
 4. Provide adequate facilities and equipment for Police and Fire protection.
-

COMMUNITY INFRASTRUCTURE

GOAL: Provide quality infrastructure to effectively service the residents of Green Oak Township.

OBJECTIVE I

Discourage expansion beyond the capabilities of the current infrastructure. Development should not be allowed without the prior or simultaneous completion of the infrastructure improvements necessary to support the growth.

STRATEGIES

1. Infrastructure enhancements should parallel growth in order to maintain the health and safety of the Township.
 2. Establish utility service districts with distinct boundaries.
 3. Coordinate infrastructure improvements with adjoining communities to increase efficiency and save funds.
 4. Consider development of a Capital Improvements Plan process to ensure needed improvements are completed.
 5. Do not allow "leap-frogging" or inappropriate extension of infrastructure improvements.
 6. Adopt the Subdivision, Rules and Drainage Policies of the Livingston County Drain Commissioner and the Soil Erosion and Sedimentation Control Rules for Livingston County.
-

OBJECTIVE II

Promote the development of a safe and efficient road system and circulation network.

STRATEGIES

1. Promote managed transportation plan/road improvements.
2. Pursue available grant resources for needed improvements.
3. Consider adoption of AASHTO standards for private roads.
4. Pursue ISTEA funding for the development of bike paths and greenways.
5. Maintain the Township's Road Committee to assess the Township's road and transportation needs.

RURAL CHARACTER

GOAL: Maintain the rural character of the Township by ensuring that existing and future development is in harmony with Green Oak Township's unique natural resources and that abundant open space is preserved.

OBJECTIVE I

Promote the rural residential character of the Township by promoting design guidelines which foster open space within existing and future development.

STRATEGIES

1. Protect agricultural and like uses from the impact of residential subdivisions by encouraging residential dwelling units to be clustered and surrounded by dedicated open space.
 2. Preserve parcels of land large enough for viable wildlife habitat, small scale agriculture, recreation and woodlot management through clustered residential development and dedicated open space.
 3. Support the keeping of horses in low density residential areas.
 4. Encourage greenbelts along roadways, incorporating existing trees and vegetation and preserving existing tree canopy.
 5. Discourage frontage splits along roadways to preserve rural roadway character.
-

OBJECTIVE II

Promote the preservation of rural character through institutional and regulatory techniques.

STRATEGIES

1. Consider programs such as purchase or donation of development rights, conservation easements, scenic easements P.A. 116, and the creation of a land trust.
2. Identify areas of the Township where zoning may need to be altered in order to maintain rural character such as Livingston County "PEARL" zoning or an overlay district with open space provisions.
3. Continually evaluate the Master Plan as conditions change in the Township and in adjacent communities. This shall include a complete re-evaluation of every section within a five year period.
4. Work with the Environmental Research Council to identify preservation measures.
5. Develop Sub-Area plans for rural areas in order to guide proper development and preserve vital components of rural character.
6. Promote flexible road standards which preserve natural features.
7. Adopt zoning ordinance regulations which will assist in the maintenance of the Township's rural character.

IV. FUTURE LAND USE PLAN

FUTURE LAND USE PLAN

The Future Land Use Plan, Map 6, presented in this section, establishes future land use categories, illustrates the location of land use and community facility improvements within the Township, and provides strategies for implementation. This section also provides a descriptive rationale as to the reasoning and placement of preferred land uses and density.

The Plan is formulated to serve as the primary policy guide to local government regarding future land use decisions, investment in public improvements, and coordination of public improvements and private development.

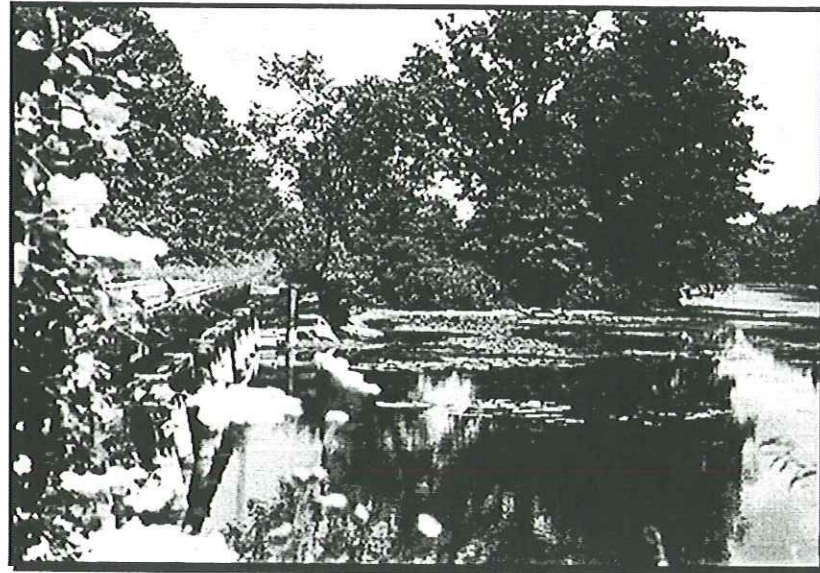
In one sense, the Plan presents an idealized view of future growth patterns in the Township. However, the Plan must also provide practical guidance to local decision-makers regarding today's issues. It is the intent of this Plan to be a working document which will provide for the orderly development of the Township, assist the community in its effort to maintain and enhance a pleasant living environment, and spark a vision towards the future.

Natural Resource Planning Considerations

A positive influence on growth is the existing rural and natural character of the Township. The lakes, streams, woodlands and wetlands provide a pleasant natural environment. Low residential densities, which are prevalent in most of the Township, portray a rural ambiance which will continue to lure new residents seeking refuge from urban living.

A positive influence on growth is the existing rural and natural character of the Township.

Green Oak Township has a number of opportunities and limitations which will influence future growth. Among the most significant influences are U.S. 23 within the Township and I-96 directly to the north. The north-south and east-west accessibility represented by the two expressways will continue to make Green Oak Township an attractive place to reside.



The development of the U.S. 23 corridor will have a direct impact on the Township. A developable land base with moderate resource constraints, proximity to available utilities, and accessibility to expressway interchanges make the U.S. 23 corridor attractive to development. The proximity of I-96 will primarily affect the Kensington Road-Silver Lake road area.

The expanses of publicly owned recreational land both encourage and inhibit new growth. The domination of public land in the north and west part of the Township serve as a barrier between various portions of the Township. In addition, it is unlikely that such lands will ever be put to an economic use which adds to the tax rolls. However, the location of public recreational lands adds to the uniqueness of Green Oak Township as a residential community with a large variety of recreational opportunities. A limitation on growth is the frequent occurrence of flood prone and wetland areas within the Township. The designation of flood prone and wetland areas and the restriction of their development is a measure designed to protect life, health, and property. In addition to providing fish and wildlife habitat, flood prone and wetland areas also maintain and stabilize groundwater supplies, reduce the dangers of flooding, and contribute to the improvement of water quality. Federal and State laws regulate encroachment, dredging, and filling within flood prone and wetland areas.

Another limitation on growth is the abundance of soils which are unsuitable for septic systems due to slow permeability, high water table, or excessive slope. In some cases, limitations may be overcome with more sophisticated and costly septic systems or central sanitary sewers. In cases where poor soils are associated with flood prone and wetland areas, development should be located elsewhere.

A final constraint to growth in certain areas of the Township is the lack of a central supply of water. The inadequacy of existing groundwater supplies has been especially critical in the northwest portion of the Township. The availability of potable water will be a primary factor in the future growth of the U.S. 23 corridor.

Land Use and Density Criteria

It is important to consider various factors when locating land uses. The Land Use Plan should guide the future development pattern of the community into a logical arrangement which maintains the integrity and character of the community, protects the environment, ensures that adequate services exist, and provides for the general health, safety and welfare of the citizens. The factors listed in Table 17 are some of the factors considered when determining overall land uses and lot densities. Other issues to consider are population, market trends, economic factors, and other more elusive goals such as "community character." The criteria are meant as a guide for considering as many issues as possible prior to designating land uses and densities. The Land Use Plan should be based upon clear and factually supported rationale. The following is a discussion as to why certain factors included in Table 17 are important.

The Land Use Plan should guide the future development pattern of the community into a logical arrangement which maintains the integrity and character of the community, protects the environment, ensures that adequate services exist, and provides for the general health, safety and welfare of the citizens.

Roads

The proximity and access to roads is important in locating land uses for the following reasons:

- It is more efficient and less disruptive to natural features to utilize the existing transportation network than to develop in areas where the system is not complete or does not have the capability
- The costs of sprawl can impact negatively upon a community as funds are used to build infrastructure in new places as opposed to maintaining the existing infrastructure
- Higher densities are generally more appropriate in proximity to US-23 and major arteries because more people then have access to the road systems

Sewer and Water

Proximity to services such as sewer and water is an important element in determining density because higher densities should be placed in areas where services are currently available. This allows for a more efficient system which is cost effective. Furthermore, siting lower densities in areas where services are not available prevents an undue burden on the Township to provide services to areas which are difficult to serve.

Watersheds, Rivers, Tributaries and Drains

The Huron River, Davis Creek, Spring Mill Creek and other tributaries in the Township are recognized as sensitive environmental features. These water courses and their accompanying watershed areas are indispensable and fragile resources that provide public benefits including maintenance of surface and groundwater quality, fish and wildlife habitat, stormwater runoff control, and aesthetic resources. The Township has recognized their importance by designating these streams within Natural River Areas (P.A. 231 of 1970).

It is inappropriate to consider these fragile resource areas for high or suburban density development. Smaller lots within these areas can degrade natural resources. Clear cutting, dredging, filling and other activities associated with higher density development can be harmful to natural systems. It is therefore recommended that areas within close proximity of streams and watercourses be reserved for medium to very low density development.

Natural Features

Natural features play a vital role in the health of Township residents and the natural systems of the Township. Overall density and lot size should be closely related to natural features. In general, the Township may consider larger lots for environmentally sensitive areas and smaller or moderate size lots in areas more suitable for development. Large lot sizes can allow the following:

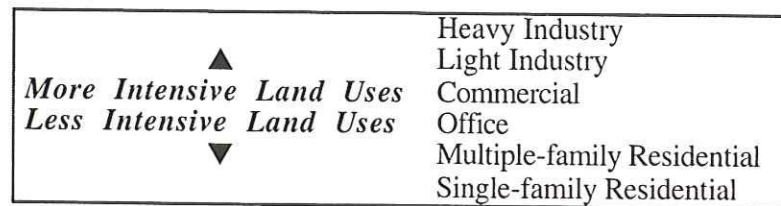
- Greater flexibility in siting the home, septic system, and well for each lot. This is important in considering the isolation distance requirements between the well and the septic system, where unsuitable soils exist such as high water table or steep slopes, or where ground water recharge areas exist which are unsuitable for development

- Reduction of impervious surfaces which reduces runoff and protects water quality
- Greater setbacks for the septic systems and homes from water bodies or ground water recharge areas
- Provision of buffers for run off filtration of sediment and pollutants
- Less soil erosion and disturbances from construction activities because the density is lower
- For larger areas to be preserved which contain woodlands or wildlife habitat
- Protection from hazards such as flooding, wet basements, and sagging foundations




It is recognized that large lots are not always a guarantee of environmental preservation. Large lots consume more land and may diminish local control of wetlands, woodlands, or other environmental features. Small lots or cluster residential developments may be sensitively planned to preserve natural features and may be more appropriate than some large lot development. In general, however, large lot development has the potential of creating fewer environmental impacts as noted in the above listed criteria.

Adjacent Zoning and Land Use

Adjacent land uses and zoning are important factors to consider. Increasingly, the separation of land uses is no longer the prime objective of zoning, rather, zoning objectives include allowing for a logical transition of land uses. There are land uses which are incompatible, for example, residential uses and intense agricultural production are not always compatible. Residential uses adjacent to heavy industrial facilities or commercial uses are also incompatible. Land use planning theory proposes an orderly transition of more intensive land uses to less intensive land uses, usually progressing as noted in the following figure:



**TABLE 17
PROPOSED LAND USE CRITERIA
AND LOCATION FACTORS**

CRITERIA	LOT SIZES					
	.5 acre	1 acre	2 acres	5 acres	Commercial	Industrial
INFRASTRUCTURE						
Sewer service: <i>public</i>	High	Low	Low	Low	High	High
<i>private</i>	Low	Low	Low	Low	Medium	Medium
Water service	Low	Low	Low	Low	High	High
Emergency Service Accessibility	Low	Low	Low	Low	Medium	High
Fire protection available	Low	Low	Low	Low	Medium	High
Proximity/access to schools	High	Low	Low	Low	Low	Low
ROADS						
Proximity (≤.5 mile) to US-23	High	Low	Low	Low	High	High
Proximity to major roads	Low	Low	Low	Low	High	High
Direct access to: paved roads	Low	Low	Low	Low	Low	Low
<i>public</i>	Low	High	Medium	Medium	Low	High
<i>private</i>	Low	High	Medium	Medium	Low	Medium
gravel roads	Low	Low	Low	Low	Low	Low
<i>public</i>	Low	Low	High	Medium	Low	Medium
<i>private</i>	Low	Low	High	Medium	Low	Medium
Substandard roads	Low	Low	Low	High	Low	Low
NATURAL FEATURES						
Lakes	Low	Low	Low	Low	Low	Low
Rivers	Low	Low	Low	Low	Low	Low
Wetlands	Low	High	High	High	Low	Low
Unsuitable soils for septic systems	Low	Low	Low	Low	Low	Low
Groundwater: <i>recharge areas</i>	Low	Low	Low	Low	Low	Low
<i>poor groundwater quality</i>	Low	Low	Medium	Low	Low	Low
Woodlands	Low	High	High	High	Low	Low
Steep slopes	Low	Low	Low	Low	Low	Low
Wildlife habitat	Low	Low	Low	Low	Low	Low
Other unique features	Low	Low	Low	Low	Low	Low
*Lands most capable of supporting development	High	High	Medium	Low	High	High
*Lands least capable of supporting development	Low	Low	Medium	High	Low	Low
(*See Resource Capability Map)						
ADJACENT ZONING/LAND USE						
Agriculture/Very Low density Resid.	Low	Low	Low	High	Low	Low
Low-density residential	Low	Low	High	Medium	Low	Low
Medium-density residential	Low	High	Medium	Low	Low	Low
High to medium density residential	High	Medium	Low	Low	Medium	Low
Commercial or Industrial	Low	Low	Low	Low	High	High
Institutional	Low	Low	Low	Low	High	High
High consideration factor =  Medium consideration factor =  Low consideration factor = 						

Future land use patterns are graphically illustrated on Map 6. The following describes the key features of the Plan by land use category.

Residential Land Use

The predominant developed land use category in the Township is land used for residential purposes. The Plan calls for various categories of residential land use including single-family (very low, low, medium, suburban and high density), multiple family, and mobile home parks. In keeping with the Community Goals, the Future Land Use Plan will permit a range of housing types and development concepts.

The following residential land use categories and densities are accommodated within the Future Land Use Plan. Corresponding zoning which is applicable to the proposed land use designation is illustrated in Table 18.

**TABLE 18
RESIDENTIAL LAND USE CLASSIFICATIONS AND CORRESPONDING
ZONING DESIGNATIONS**

Residential Land Use	Residential Lot Density	Applicable Zoning District(S)
Very Low Density	1 unit/5 acres	Residential Farming RF
Low Density	1 unit/2 acres	Rural Estates RE
Medium Density	1 unit/1 acre	Single Family R-3
Suburban Density*	1 unit/1/2 acre	Single Family R-2/R-2A
High Density*	1 unit/less than 1/2 acre	Single Family R-1

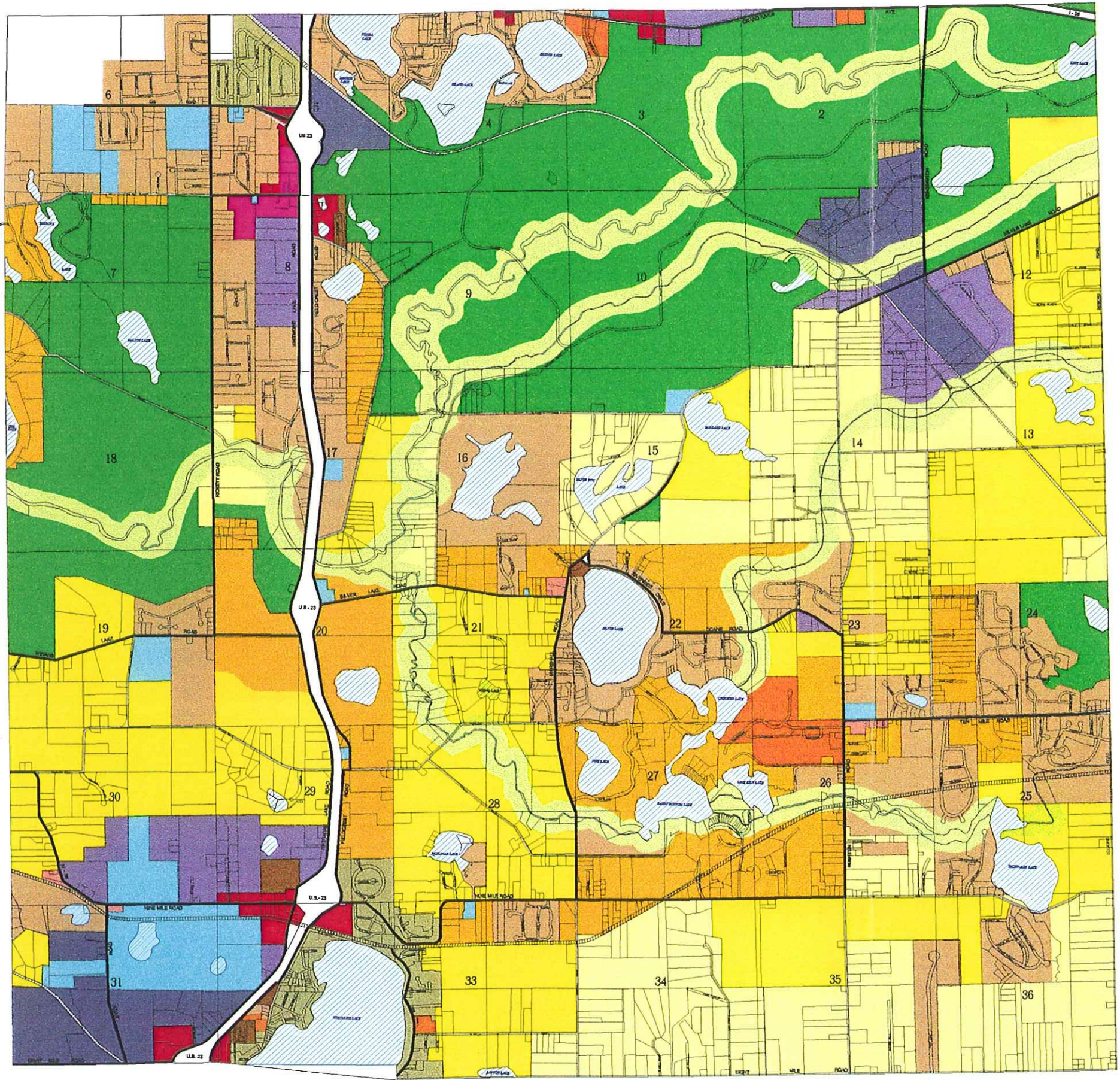
*No additional areas are planned in the Township with these land use designations

The recommended residential lot densities shall be considered to be net density and shall exclude public road right-of-ways or private road easements, wetlands, steep slopes, and/or flood plains. For all residential building sites, adequate building area must also be set aside to accommodate a house, garage, driveway, primary and reserve septic fields, and well. The following residential land use categories are further described:

Very Low Density Single Family Residential is planned for areas with existing and adjacent very low density development and is intended to provide for the continued preservation of open space, natural areas, and the rural atmosphere of the Township. Many of these areas are characterized by flood prone and wetland areas and are therefore considered to be least capable of supporting additional development due to natural resource and road conditions. Furthermore, it is unlikely that these areas will be served by paved roads or sewers which could allow more dense development. Very low density is also common in areas designated by the Livingston County Soil Survey as having heavy soils not suitable for on site septic use. Larger lot sizes are preferred in these areas in order to protect groundwater.

Very Low Residential areas are common in the southeastern and southwestern portion of the Township as well as areas near the center of the Township where natural resource conditions, proximity to paved roads and other factors as listed under Table 17 preclude higher density development.

This category of residential density is also recommended for areas near Monahan Lake, and Viking Lake because of its proximity to the Natural Rivers district and incorporation of fragile environmental features. Very low density uses are also recommended for areas northeast of Silver



Legend

	Very Low Density Residential, 1 d.u./5 ac.
	Low Density Residential, 1 d.u./2 ac.
	Medium Density Residential, 1 d.u./1 ac.
	Suburban Density Residential, 1 d.u./ 1/2 ac.
	High Density Residential, 1 d.u./less than 1/2 ac.
	Multiple Family
	Mobile Home Park
	Local Commercial
	General Commercial
	Research - Office
	Light Industrial
	General Industrial
	Public - Semi-Public
	Recreation - Conservation
	Natural River

ADOPTED BY THE GREEN OAK TOWNSHIP
PLANNING COMMISSION ON JULY 8, 1999

FUTURE LAND USE PLAN

**Green Oak Township
Livingston County, Michigan**



Carfield/Worlman Associates, Inc.
Community Planners and Landscape Architects
Ann Arbor, Michigan

Plot Generation Date: 6/21/00

Lake and along the Twelve Mile Road corridor where the current pattern of large lots prevail. Much of this area is within the natural river watershed and is served primarily by gravel roads.

As indicated in Table 18, Very Low Density areas as designated on the Township's Future Land Use Plan would allow an overall density of one dwelling unit for every five acres. This density may be reduced to one unit for every two and one half (2 1/2) acres if a proposed development is incorporated within a Planned Unit Development (PUD) Open Space Community or cluster option. Within these types of developments, large amounts of open space are set aside for protection of significant natural resources and for the preservation of rural character. The granting of higher density is allowed under a Planned Unit Development, or a cluster housing option as specified within the Green Oak Township Zoning Ordinance. While overall density may be calculated at one dwelling unit for every two and one half acres, the effective minimum lot size for building envelope areas shall not be less than one half acre in size.

Low Density Single Family Residential is planned for areas with existing and adjacent low density development. Although road conditions in such areas are not ideal, existing population densities are sufficient to warrant road improvements. The areas designated for low density uses include large portions of land where soils and groundwater conditions warrant larger lots. Soils are often heavy in these areas and are often not suitable for smaller size lots. The proximity to natural river areas and tributaries make these areas sensitive to watershed resources and groundwater quality and are therefore only moderately capable of supporting additional development due to these natural resource conditions.

Low density and very low density designations are also preferred for the location of large acreage horse or livestock operations. These rural residential uses, in conjunction with optional livestock use, help preserve the preferred rural residential character of the Township.

Low density residential development occurs primarily within the east central portion of the Township and southwestern Township areas. Low density uses as depicted on the Future Land Use Map are also appropriate in established large lot developments near the intersections of Dixboro and Silver Lake Roads, and Rushton and Doane Roads. This classification is also appropriate in areas near Winans Lake Road, Spicer Road and M-36 where poor groundwater quality is prevalent.

Medium Density Single Family Residential is planned for areas with existing medium density development and areas that are more capable of supporting additional development due to lack of constraining natural resource conditions. Such areas are located primarily near the central portions and the northwest areas of the Township. The central portion of the Township contains a large portion of the Township's fragile resources. This includes the Huron River, Davis Creek, Spring Mill Creek and the chain of lakes. Lots less than 1 acre in size are deemed to be inappropriate for these areas because of the need to protect these valuable resources.

Table 17 notes that there is a high consideration factor for medium density (1 acre lots) for land areas having direct access to paved roads, land areas most capable of supporting development and for areas which are compatible with existing zoning/land use. Larger lots (1 acre and greater) are also more appropriate for those areas containing sensitive environmental features.

Suburban Density Single Family Residential is represented in areas with moderate density upon lands which are most capable of supporting development due to adequate natural resource conditions and roads. It is recognized that there are existing areas of the Township where 1/2 acre lots are the dominant land use. This includes portions of the Ten Mile Road corridor, Silver Lake area, Rickett Road corridor and areas southeast of the City of Brighton. However, no additional 1/2 acre lot areas are planned due to concerns regarding impacts to natural resources and concerns

that 1/2 acre lots provide insufficient land area for house, garage, septic field and necessary isolation distance of a well. In order for additional lands to be designated for 1/2 acre zoning, sewer and water must be available, and the criteria in Table 17 must be considered.

High Density Single Family Residential is represented in areas with existing high density development and where lands are most capable of supporting additional development due to the availability of utilities, suitable natural resource conditions, and the adequacy of roads. These areas are located near the vicinity of the City of Brighton and around Whitmore Lake. No additional high density areas are planned with this designation in the Township. Rather, sewer and water service is intended to assist or rectify existing developed areas where failing septic systems, or ground water contamination necessitate extension of water and or sewer services. Table 17 provides location criteria for these high density areas and includes availability of utilities, emergency services, fire protection, schools, proximity to U.S. 23 and land capability.

Multiple Family Residential is represented in areas with existing multiple family development, proximity to available sanitary sewers, and existing adequate roads. A new area of approximately 10 acres is planned along M-36 in the southwest portion of the Township. The area meets the general criteria summarized on Table 17. This area has suitable natural resource conditions, is in close proximity of paved roads and commercial services, and is in an area contemplated for possible sewer service extensions.

Mobile Home Parks The Township currently has five licensed mobile home parks within the community (see page 6). It is believed that the Township and region has sufficient sites for manufactured housing both within the Township and within surrounding municipalities. An inventory of these sites is presented below in Table 19. Additional capacity for future growth is provided by a 22 acre mobile home park site near M-36 and Whitmore Lake Road, as noted on the Future Land Use Map. This site is selected because of location factors including access to paved roads, proximity to U.S. 23, proximity to commercial services and proximity to anticipated sanitary sewers within the M-36 corridor. These location factors are also summarized by the density criteria as established on Table 17.

**TABLE 19
EXISTING MOBILE HOME PARKS
IN THE VICINITY OF GREEN OAK TOWNSHIP**

NAME	TOWNSHIP	SCHOOL DISTRICT	NUMBER OF UNITS
Collins Trailer Park	Green Oak	Whitmore Lake	3
University Mobile Estates #1	Green Oak	Whitmore Lake	21
University Mobile Estates #2	Green Oak	Whitmore Lake	55
Starlight Trailer Court	Green Oak	Brighton	48
Silver Lake Mobile Park	Green Oak	Brighton	27
Woodland Lake	Brighton	Howell	64
Pine Lodge	Brighton	Howell	46
Hamburg Hills	Hamburg	Pinckney	152
Coventry Woods	Hamburg	Pinckney	195
Brighton Village	Genoa	Howell	195
Sylvan Glen	Genoa	Howell	482
Red Oaks of Chemung *	Genoa	Hartland	248
Suburban Mobile Home Estates *	Genoa	Howell	103
Country Estates	Lyon	South Lyon	336
Kensington Place	Lyon	South Lyon	488
Northville Crossing (Under Construction)	Salem	South Lyon	784
South Lyon Woods	City of South Lyon	South Lyon	211
Northfield Estates	Northfield	Whitmore Lake	648
		TOTAL	4,106

* Not Licensed by the Manufactured Housing Commission

An additional site for manufactured housing will also be considered by the Township. However, a specific location is difficult to identify because of the uncertainty of sanitary sewers. The Township is currently discussing extension of sewers with adjoining Townships. It is also possible that a treatment facility built to service the Hidden Lake development will have additional sewage capacity to accommodate additional growth. Actual siting will also be dependent upon detailed soils investigation, wetlands investigations and other factors. Therefore, the Township will consider an additional site for a manufactured housing community as changes in Township infrastructure occur or as specific development applications are forwarded for Township review.

It is the Township's preference that future Manufactured Housing Communities be submitted in the form of a PUD. This will allow the Township and developer to work in cooperation on a specific parcel.

Consideration and successful siting will also be influenced by a determination that the site is appropriate and that sufficient analysis of site features has been conducted. Criteria used to evaluate a proposed manufactured housing community site will be based upon the criteria established in Table 17 as well as the following factors:

- Frontage on paved roads
- Capacity of roads and/or intersections to handle additional traffic
- Proximity to existing or anticipated sanitary sewer service districts
- Proximity to commercial services
- Proximity to U.S. 23 or a freeway interchange in order to facilitate traffic flow and provide quick access to freeways
- Consideration for impact on the school district capacity
- Central water or availability of quality groundwater in sufficient quantity
- Hydrogeologic conditions where central wells will not have a negative impact on residential surrounding wells
- Lack of sensitive natural features such as unique wetlands, woodlands, steep slopes, groundwater re-charge areas
- Proximity to Township Fire stations
- Proximity to emergency services including police and ambulance services
- Consideration of a Planned Unit Development Manufactured Housing Community with specified limits on density, setbacks, buffers and land use controls

Commercial Sector

Commercial Area Concepts

The extensive use of the personal automobile has brought many drastic changes to lifestyles and the physical makeup of communities. The most vivid change has been to shopping habits and patterns. In rural areas, such as Green Oak Township, an automobile is required for almost any type of shopping trip.

Much of the commercial activity prevalent today is found in a linear or "strip" pattern on major roadways as opposed to planned clustered commercial areas or shopping centers. While understanding that the Township's development policies recognize that the Township's local commercial facilities are much different than regional shopping centers and are not intended to compete with the larger regional shopping centers in Brighton, Novi or Ann Arbor, the Township's policies favor local commercial development that is clustered rather than strip commercial land use. Factors favoring clustered commercial vs. strip commercial are listed below:

STRIP COMMERCIAL

- Dangerous disruption of traffic flow as a result of uncontrolled turning and parking maneuvers.
- Frequently inadequate parking facilities.
- Lack of coordination of commercial functions and activities.
- Haphazard arrangement of buildings.
- Difficult to service.
- Prevents "one stop" shopping.
- Often has blighting effect, particularly on contiguous residential land.
- Loud and unattractive signs.

PLANNED COMMERCIAL CENTERS - GROUP CONCENTRATIONS

- Functional and attractive grouping of buildings.
- Controlled entrance and exit points.
- Controlled interior circulation
- Access from more than one major traffic route.
- Overflow area for future expansion.
- An abundance of parking spaces
- Economical and effective service facilities.
- Can be effectively buffered from contiguous residential areas.
- Uniform attractive signs.

Commercial areas can be classified according to the function they serve. The following descriptions are generalized to allow a contrasting picture of the various types of commercial areas:

Convenience commercial areas usually deal with goods that represent daily needs such as goods, medicine, laundry service, and beauty and barber shops. Convenience commercial activities may be located either individually or in small centers which serve one or more neighborhood trade areas.

Comparison commercial areas provide commodities that are purchased less frequently. Therefore, there is a desire on the part of the consumer to compare price and quality at more than one store. Uses typically found in comparison shopping areas include larger supermarkets and drugstores, discount stores, department stores, appliance and furniture stores, and specialty shops. Comparison commercial activities also may be individually located but are more typically found in shopping centers. Hence, comparison centers are normally larger than convenience centers, and have larger trade areas. In fact, the consensus of experts is that in order to have a true comparison center including a department store, the trade area should include at least 30,000 potential customers.

General commercial areas are often highway oriented and individually located. Such activities include gas stations, auto service and sales, eating and drinking establishments, motels, and similar uses. General commercial activities are frequently located in a strip commercial pattern.

The conclusion from this commercial zoning analysis is that zoned land for commercial development is available both now and in the future. It is anticipated that much of the comparison commercial shopping needs will continue to be met outside of the Township in Brighton, South Lyon and Ann Arbor. However the Township does have potential for convenient shopping to serve local neighborhoods and general commercial activities. It is likely that there will be continued expansion for local business, general business type development in response to an increase in residential building activity. These establishments will provide important residential service needs for local neighborhood areas. The key to success for future commercial development is proximity to these neighborhood concentrations and accessibility by major roadways.

Commercial Land Use

The Master Plan calls for maintaining existing commercial uses which are currently scattered in individual locations around the Township. The development of the area along M-36 west of Whitmore Lake Road will be encouraged in a clustered, rather than strip fashion due to its proximity to U.S. 23 and the availability of infrastructure. Commercial development within the M-36 Corridor should also be consistent with long range goals and studies which promote traffic management, driveway access, landscaping and potential sewer district service areas. It is anticipated that the demand for large shopping centers will continue to be met in Cities of Brighton, Ann Arbor, and South Lyon and will therefore not be constructed in Green Oak Township.

Local Commercial. This designation is planned to provide commercial uses to support existing residents and local business needs. Local commercial uses would include stores, offices or other commercial activities which are small in nature generally serving Township residents rather than regional markets. Consideration factors as summarized on Table 17 includes accessibility to water and sanitary sewers, paved roads, and lands capable of supporting development. Local

commercial is appropriate in selected areas near Silver Lake, and Ten Mile Road and M-36 as designated on the Land Use Map.

General Commercial. General Commercial uses are larger in scale (generally more than 5,000 sq. ft.) and cater to a regional market. These areas have a closer relationship with highway uses and could include automobile related services, restaurants, shopping centers, etc. The criteria for location of these uses is also summarized on Table 17 and include accessibility to water and sewers, proximity to paved roads and lands capable of supporting development. General Commercial is appropriate near U.S. 23 and M-36, U.S. 23 and Eight Mile, and U.S. 23 and the Lee Road intersection, as designated on the Land Use Map.

Industrial Land Use

Two categories of industrial land uses are set aside in the Master Plan. Light industrial areas are designated to accommodate uses enclosed mainly within a building whose external effects are not experienced beyond their own property lines. General industrial areas are for industries whose influence or environmental effects are sometimes experienced beyond their own property line.

At a future time, the Planning Commission may also wish to establish an intermediate industrial land use called Medium Industrial. This designation would accommodate more intensive uses than light industrial, but less intensive than general industrial. It would also allow the Planning Commission to restrict light industrial uses to those areas adjoining residential areas.

Key conditions in the location of industrial lands are the accessibility to adequate roads, availability of rail (where needed), availability of adequate water supply and wastewater disposal, and compatibility with neighboring land use. A large area of light industrial use exists west of Kensington Road. This is an ideal industrial park due to the proximity to I-96 and relative isolation from existing residential areas. Other limited industrial areas include several existing individual uses found in scattered locations around the Township. At some locations in the Township, older isolated areas of existing industrial uses exist which are incompatible with adjacent residential uses. These areas will be planned for residential uses in the future once these industries close. However, other less intense uses may be appropriate for these areas as well such as local commercial or office.

General industrial areas are largely confined to areas of existing general industrial use. The largest general industrial area is located south of the intersection of Kensington and Silver Lake Roads. Future expansion of general industry will likely occur in this area.

Other areas of general industry include a strip on both sides of Grand River Avenue, as well as areas near Lee Road and U.S. 23.

Research-Office Land Use

Research-Office is a category that provides areas for research and office uses which are clean, attractive, and developed in a campus-type setting. The area planned for research/office activities is focused around the Whitmore Lake Road and U.S. 23 interchange to provide maximum visibility from and accessibility to the expressway.

Public/Semi-Public Land Use

Areas set aside for public, semi-public, and institutional uses are confined to those existing uses in the Township. This would include schools, state facilities, cemeteries, fire stations, police and Township offices.

If lands should ever be converted from public ownership to private ownership, the zoning of this property shall automatically convert from Public Land PL to the lowest density residential or Residential Farming RF.

Recreation-Conservation Land Use

The abundance of recreational lands provided by HCMA and the State of Michigan has already been discussed. While Regional and State facilities meet a portion of the recreational needs of Township residents, there is a decided lack of community playground and park facilities. The master Plan proposes the designation of an area to be devoted to community park facilities. This area is located near Silver Lake and Silverside.

The greatest expanse of planned open space is found in the Island Lake Recreation Area. The preservation of the Huron River corridor in open space will be afforded through its designation under the Michigan Natural River Program and the Township Natural Rivers District. This also includes the Southeast tributary and Davis Creek.

Recreation-Conservation uses are also appropriate for designated or future *greenway* corridors. These corridors could include connecting recreation areas utilized for bike paths, pedestrian easements, horse trails or scenic easements. The intent is to link Township open space or conservation areas within an entire greenway system. Future development is encouraged to provide greenway linkage incorporated within subdivision, site condos or site plans.

Natural River Areas

Green Oak Township includes rivers and creeks which are designated for protection under the Natural River Act (Act 21, P.A. 1970) by the Michigan Department of Natural Resources and under the Township Natural Rivers District. Generally, the area 400 feet from the ordinary high water mark on each side of and parallel to the Huron river and its tributaries, Davis Creek and Spring Mill Creek, is designated as Natural Rivers District. Regulations include a building setback of 125' from the river or 50' from the tributaries.

The Township proposes to expand these designations to include unnamed tributaries as shown on the Township's wetlands and surface water maps provided by the ERC. These expanded natural River areas include three tributaries south of Nine Mile Road, a tributary south of Twelve Mile Road and other small tributary segments. Many of these expanded tributary sections traverse wetlands, and sensitive soil areas which are critical for wildlife habitat surface water filtration and groundwater recharge.

COMMUNITY FACILITY AND ROAD PLAN

The impression created by a community is often directly related to its public buildings, parks, and roads. The adequacy of these public facilities has a direct influence upon the Township's ability to attract new residents, businesses and industry. Within Green Oak Township, there is an acknowledged gap between the facilities that residents demand and the facilities that are provided. Rapid population growth, increased expectation of new residents, costs of public improvements, and constrained public budgets have contributed to the inability of local government to provide extensive public improvements.

The presentation of an overly ambitious Plan will not contribute to a solution of the problem. Too many plans have been developed which are nothing more than a "wish list." Rather, the Plan attempts to identify broad areas of need and priority, not specific projects. Such an approach is intended to provide guidance to decision-makers in the allocation of tax dollars towards public improvements. The Community Facilities Plan is strongly coordinated with the Land Use Plan so that scarce dollars are devoted to projects benefiting the greatest number of residents.

Community Facilities and Services

Efforts should be directed at the following areas of need:

- New or Expanded Township Hall - Three things which Green Oak Township lacks are adequate Township office space, adequate meeting facilities, and a community identity. The creation of a new or remodeled Township Hall would contribute to alleviating all three deficiencies. Included in the Hall could be Township offices, community meeting hall, police offices, and senior citizen activity center. The exact location of a future Township hall is currently being studied.



- Community Park - At least one community park is recommended to meet the recreation needs of local residents. One park should be integrated into the new Township Hall complex and provide such things as picnic areas, playground equipment, a shelter house for outdoor gatherings, and recreational facilities for

senior citizens. Another park should be developed to provide for more active recreation with such facilities as baseball/softball diamonds, and football/soccer fields. The preferred location for such a park would be near the intersection of Silverlake and Silverside.

- Water and Sewer Extensions - The growth of the U.S. 23 corridor with uses which will be a positive contribution to the community is predicated upon the availability of adequate water supply and sewage disposal. The area which deserves the highest priority is the northernmost portion of the corridor in Sections 5 and 8. The provision of central water sewer to this area will alleviate existing problems and prevent future problems from occurring. Sanitary sewers are also needed for the tri-lakes including, Fonda, Island and Briggs lakes. The Township has appointed a sewer committee to investigate the feasibility of sanitary sewer service and special assessment districts for this area. A committee has also been appointed for the M-36 corridor with the purpose of investigating long term sewer service alternatives. Until sanitary sewers are available, the Township should explore creation of septic field maintenance districts as promoted by the Livingston County Health Department. These districts establish regular maintenance, pump out and homeowner education for areas with severe septic system limitations.
- Fire Station - An additional station will be required to serve the eastern portion of the Township. The recommended location is in the proximity of Ten Mile and Rushton Roads.
- Township Wide Solid Waste Collection and Recycling - The Township should consider soliciting bids for Township wide solid waste collection. This would maximize efficiency in collection, provide cost savings for residents, increase recycling and reduce illegal dumping of household materials.
- Schools - The Township incorporates three school districts. These include the Brighton, South Lyon and Whitmore Lake School Districts. All of these school districts are experiencing over crowding and many schools are at capacity or have exceeded capacity. It is likely that the Brighton and South Lyon Districts will be in need of new elementary schools within the next few years. New schools will possibly be sited within Green Oak Township. This Master Plan recommends that any future schools be carefully sited and that location criteria be established which would consider the following: First, school districts should explore options for expansion at existing school sites. Some of these sites have adequate room for additional school facilities. Second, any future school sites should be located on paved roads and in close proximity to residential or neighborhood areas. Preferred locations for new facilities within Green Oak Township includes the Nine Mile/Rushton area, Ten Mile/Rushton area or the Winans/Rickett road areas. School officials and Township officials are encouraged to maintain open communication regarding long range planning in order to properly plan future school facilities.

Roads

The road network proposed by the Plan is a hierarchy based upon the function each road serves. The four road classifications which are defined below include major thoroughfares, minor thoroughfares, collector roads, and local streets or roads. It is the intent of this plan to provide guidance regarding the allocation of future road improvement dollars towards roads which function to benefit the greatest number of Township residents. For example, it makes little sense to improve a collector road which empties onto a major thoroughfare in a state of disrepair. No

attempt is made to propose costly road relocations or alter basic road patterns which have been established for years. In addition, no attempt is made to identify specific improvements projects.

- Major Thoroughfares - The function of major thoroughfares is to carry larger volumes of traffic either between activity areas within the Township or through the Township. They also provide access to the expressways which serve the Township. The improvement of major thoroughfares rate the highest priority within the Township.
- Minor Thoroughfares - The function of minor thoroughfares are much the same as major thoroughfares although more moderate volumes of traffic are carries. The improvement of minor thoroughfares rate the second highest priority within the Township.
- Collector Roads - The function of collector roads are to collect traffic from residential areas and carry it to major or minor thoroughfares. Traffic volumes are generally low. The improvement of collector roads rate the third highest priority within the Township.
- Local Streets or Roads - The function of local streets or roads are to provide direct access from individual properties. Traffic volumes are very low. The improvement of local streets or roads rate the lowest priority within the Township.

The Master Plan also establishes long range road improvements for the Township. These projects are intended to upgrade the Township's road system and provide safe and convenient passage through the Township. A listing of long range improvements are listed as follows:

1) Work through the Brighton Area Council of Governments to prioritize and attempt to fund improvements to the five major problem intersections in Green Oak Township which are:

- Lee Road/U.S. 23 interchange,
- Eight Mile Road and North Main Street interchange with Whitmore Lake Road and U.S. 23,
- Silver Lake and Kensington Road intersection,
- Silver Lake and Silverside Drive intersection (because of the intersection geometrics), and
- Doane and Rushton Road intersection (because of the intersection geometrics and great change in grade).

2) Several bridges have inadequate load bearing capacity and must be replaced as county, state and federal funds become available. These bridges over the Huron River and the Southeast Branch of the Huron River include:

- the McCabe Road bridge
- the Fairlane Road bridge

3) As County Road Commission funds or as special assessment districts can be formed the following road segments should be paved:

- Maltby Road from Rickett Road west to the Township line
- Silver Lake Road from Silverside Drive to Boardwalk in Section 11 (2.2 miles)
- Rushton Road between Silver Lake Road and Doane Road (2.1 miles)
- Nine Mile Road east of Rushton Road to the County Line (1.2 miles)

4) The west shore neighborhoods of Whitmore Lake have had their access severely restricted by the construction of U.S. 23. The only outside access to the neighborhoods (some 200 homes and two mobile home parks) is from the south via the North Main Street/Eight Mile Road/U.S. 23 interchange. This intersection is very congested at present. Extension of North Main Street (old U.S. 23) north to the Nine Mile/U.S. 23 interchange could occur but environmental and traffic impact on the Nine Mile/U.S. 23 interchange may rule out such an alternative. Therefore, redesign of the North Main/U.S. 23 intersection must occur before approval of additional housing units in the area is given. Future residential densities shall be directly influenced by the design capacity of the intersection.

5) The Briggs-Fonda-Island Lakes neighborhoods were developed as summer resort/second home communities. The road right-of-ways are very narrow and winding. Although a public water supply and distribution system serves much of the neighborhoods, each small lot has its own private septic disposal system.

As the neighborhoods have converted to year-round residences the infrastructure has become insufficient to serve the area. Any effort to resolve one of the many problems in this area, must also include resolution of the other problems. These problems include:

- Properly paved roads, engineered to Green Oak Township public road standards,
- Coordinated stormwater facilities,
- Public sanitary sewer service throughout the neighborhoods, and
- An improved source of water.

6) U.S. 23 Intersections - The Township has four freeway interchanges within its governmental limits. These interchanges include:

- Eight Mile Road
- Nine Mile Road
- Silver Lake Road
- Lee Road

All four of these interchanges have inherent safety concerns. Issues such as excessive ramp speed, turning movements, sight visibility and driveway access have caused numerous accidents at these interchanges. These concerns also have an interaction with adjoining land use. For example, if additional or new commercial uses are developed at these interchanges, these land uses will spawn traffic with accompanying congestion. This congestion may further exacerbate traffic problems at these intersections.

The Township shall therefore encourage the Livingston County Road Commission and the Michigan Department of Transportation to evaluate these interchanges and develop long range traffic safety improvements. Likewise, the Township should carefully study the impacts of future land use, and devise access management strategies to reduce traffic safety hazards.

7) Other Intersections. In addition to the intersections associated with freeways, the Township has other intersections which are problematic. The Township should continue to monitor these intersections and encourage long range improvements by the Road Commission which will increase capacity, and traffic flow. At some intersections lane widening, signalization or adjustment of traffic light phasing will also be needed to handle increased traffic flow.

8) Private Roads. The Township should also examine the Township's Private Road Ordinance. Revisions to this Ordinance will help ensure that all private roads provide safe and efficient travel. Revisions should also include incorporation of the American Association of State Highway Transportation Officials (AASHTO) standards.

IMPLEMENTATION

Once adopted, the Green Oak Master Plan is the official policy guide to be used by the Township Board and Planning Commission to solve the existing and anticipated community development problems identified in this document. Through text and maps, the Master Plan illustrates the attitude and desire of the community toward future growth and development. Further, the Plan also promotes continuity in development policy as memberships on the Planning Commission and Board change over the years.

Through text and maps, the Master Plan illustrates the attitude and desire of the community toward future growth and development.

To implement the Master Plan, the following specific recommendations are made:

Township Policy

The Master Plan is the official policy document regarding the development of the community. It establishes an idealized goal toward which the entire community can work. The Plan establishes the foundation against which private and public development proposals can be based. Too often, local officials and citizens find themselves in a reactive role to development proposals within their community. Without a firm base of information, communities must either accede to development pressures or be criticized for arbitrary denials. In addition, decisions regarding public improvements are often made incrementally and not related to any overall concept.

Zoning

The Land Use Plan reflects long-term desired growth patterns and land uses. The chief tool used to implement the land Use Plan is the Township Zoning Ordinance. Future rezoning requests should be reviewed for agreement with the basic proposals of this Plan.

Cluster Housing/Open Space Planning

The methods of cluster housing and planned unit development, offer the potential of setting aside tracts of open space while allowing the property owner some potential for development. This is desirable for both the property owner and the Township. The property owner is able to develop portions of the site while maintaining significant areas of open space helping to maintain the rural character of the Township. Preservation of open space promotes the general ambiance and property values for current and future residents. There are existing methods available and several methods currently proposed by the State to help ensure the maintenance of open space.

The following are examples of existing methods that can be utilized to ensure the maintenance of open space. It is emphasized that these methods are options only and will require incorporation or adjustments within the Zoning Ordinance. This Master Plan, in conjunction with Township Board concurrence, authorizes the Planning Commission to explore new open space zoning options. These options are described as follows:

- **Zoning Regulations** - Zoning standards can be written to include and promote open space in development. A Cluster Housing Option included in the Zoning

Ordinance encourages developers to set aside areas of open space in subdivision development. The open space would then be restricted pursuant to the Zoning Ordinance (i.e., special use permits) and could be developed only under circumstances agreed upon by the developer and Township during site plan review. Clustering with agreements for open space preservation are the most important technique for open space preservation and should receive priority attention for zoning implementation.

A second method used to maintain open space is the Planned Unit Development (PUD). A PUD is a rezoning that is tied to a specific plan. If an open space element is included as a part of the PUD, an amendment of the PUD, or a rezoning, would be required to alter the open space. The Township can then, of course, either approve or deny the amended PUD.

A development which proposes the use of Planned Unit Development or the Cluster Housing Option is eligible for a density bonus. For example, areas that are designated very low density residential with a corresponding density of one dwelling unit for every five acres would be allowed to increase density calculated at a rate of one dwelling unit for every two and one half (2 1/2) acres if the development is incorporated within the Planned Unit Development/Open Space Community or Cluster Housing option. It is believed that this density bonus is warranted due to the amount of open space that would be required to be set aside in order to make such development eligible for PUD or cluster option development.

- **Restrictive Covenants and Deed Restrictions** - These types of regulations can be used when open space is included as a part of residential subdivision. Depending on how these documents are written, restrictive covenants and deed restrictions can be effective, requiring both Township, subdivision association, or individual parcel owner approval for any substantial changes to the approved plan. These restrictions, though effective, can be somewhat difficult to monitor and enforce.
- **Land Trust** - Open space created through cluster housing, sliding scale or a PUD can be placed into a land trust. A land trust is an organization that holds the development rights for a given piece of property through a recordable agreement with the property owner and, in some cases, the Township. Land Trusts are normally non-profit organizations that work directly in protecting land for its natural, agricultural, scenic, historic and productive uses.

Land Trusts may acquire development rights through donation and, in rare cases, may purchase those rights. It should be noted that enrollment of lands in a Land Trust is a serious proposition as it is unlikely that the Trust will relinquish development rights except under extreme circumstances. Land Trusts can use conservation easements as a tool for preservation and can also offer long range tax incentives for property owners. Within Livingston County, the Livingston Land Conservancy (810-229-4141) is available to help property owners and Township officials implement open space preservation with appropriate funding.

- **Conservation Easement** - Conservation easements are legal instruments executed between two or more parties where the property owner "gives up" the right to develop to the other party (or parties). Traditionally, the property owner receives something in return. This may be a payment, a tax break, a service, or anything agreeable to the parties. The easement remains in effect for the period agreed upon and cannot be broken unless all parties agree. This is one of the most

powerful tools for protecting open space because the term of the agreement can be long or short, the agreements are less subject to changes in township government, and they are more readily identified during a sale. The inclusion of a third party to the agreement in addition to the property owner and the community, such as an environmental conservancy group, might strengthen the long-term probability that the agreements would be maintained. The State of Michigan authorizes conservation easements under Act 197 of 1980, the Conservation and Historic Preservation Easement Act.

- **Public Act 116 Open Space Provisions** - Act 116 of the Public Acts of 1974 provides for a development rights agreement for locally designated open space. This technique is similar to the conservation easements discussed earlier. It requires both local and state approval of the application. No subsequent development can occur without the permission of the community. No minimum acreage is required to enroll land in the State Open Space program. There is a 40 acre minimum requirement for the enrollment of farmlands under a farmland agreement. The tax benefits realized are through a reduction in value of the dedicated open space land due to relinquishment of the development rights by the property owner(s). The term of open space easements ranges from a minimum of ten years to as long as ninety-nine years.

Local units of government may terminate an open space agreement at any time if they determine that development of the land is in the public interest and the property owner(s) agrees. The property owner(s) may request termination of an open space agreement by applying to the local governing body. The petitioner is required to pay a penalty plus interest on the development rights during the period it was held by the local unit of government.

The primary purpose of these agreements is the permanent dedication of open space. Some agreements have a spin-off advantage of a tax benefit; the taxing benefit is a windfall for the property owner and should not be viewed as the primary reason for the dedication of open space.

- **Purchase of Development Rights** - Purchasable Development Rights (PDR's), are used to compensate a landowner for value of lost development rights in exchange for maintaining the property at a desired use and density. PDR programs can be used to preserve resources, open spaces, and even affordable housing areas. A PDR can be used to buy some or all of the development rights of a landowner.

Non-conforming Zoning

In some areas of the Township, the Master Plan recommends larger lots and lower densities than what is currently recorded. This non-conformity is especially prevalent around lake areas where the Master Plan and zoning regulations require larger lots than what is currently provided. Larger lots and lower densities are preferred because of environmental concerns and overcrowding. The Planning Commission recognizes that the current non-conforming status may place limitations on property owners who wish to re-build or expand. It is recommended that the Township consider Zoning Ordinance amendments which would modify regulations pertaining to non-conforming lots and/or structures, thereby easing current regulations and making it easier for property owners to utilize non-conforming lots or structures.

Capital Improvements Program

The Township's role in providing and financing community facilities will undoubtedly increase in the future. An orderly procedure for planning and financing such facilities can be achieved through the adoption of a Capital Improvements Program (CIP) attached to the annual budgeting process. The CIP is a schedule of projects developed for a six-year period and contains estimated costs and sources of funding. The CIP should be updated annually in conjunction with the preparation of the Township budget.

Federal/State Funds

Given the high cost of public improvements, many local units of government have become reliant on outside sources of funding. Green Oak Township has already enhanced its ability to secure grant funds by adopting a Master Plan. The Plan not only sets priority for public improvements but should also be used to justify the need for such improvements to funding agencies.

Local Funds

The potential availability of grant funds does not eliminate the necessity to finance all or portions of projects with local funds. It is the rule rather than the exception that federal grants require the local unit of government to fund a portion of the project. Local funding can be raised through the following sources:

1. General Fund - The Township Board may make an appropriation from the general fund to finance certain improvements. However, this method is not considered entirely feasible because general funds are usually needed to finance essential services, leaving little available money for additional projects.
2. Revenue Sharing - Again, the Township Board may choose to appropriate a portion of federal and state revenue sharing funds for improvement projects. However, federal revenue sharing cannot be used as a local match to federal grants.
3. General Obligation Bonds - With the approval of the voters, the Township can sell general obligation bonds, usually having a long payback period and low interest rates. GO bonds enjoy the backing of the full faith and credit of the Township. However, the sale of GO bonds usually results in a millage increase.
4. Revenue Bonds - Revenue bonds are paid off through revenues generated by a project. For example, most municipal water systems are financed through revenue bonds with user charges paying off the bond. Revenue bonds are not necessarily back by the full faith and credit of the Township, do not require voter approval, and usually are sold at higher interest rates than GO bonds.
5. Special Millage - The Township Board may ask for voter approval to earmark increased millage for a specific improvement project.
6. Special Assessment - Many projects which benefit only a segment of the community rather than the community at large are financed through special assessments to the benefit of property owners. Drainage and street improvements are projects frequently financed through special assessments.

Master Plan Updates

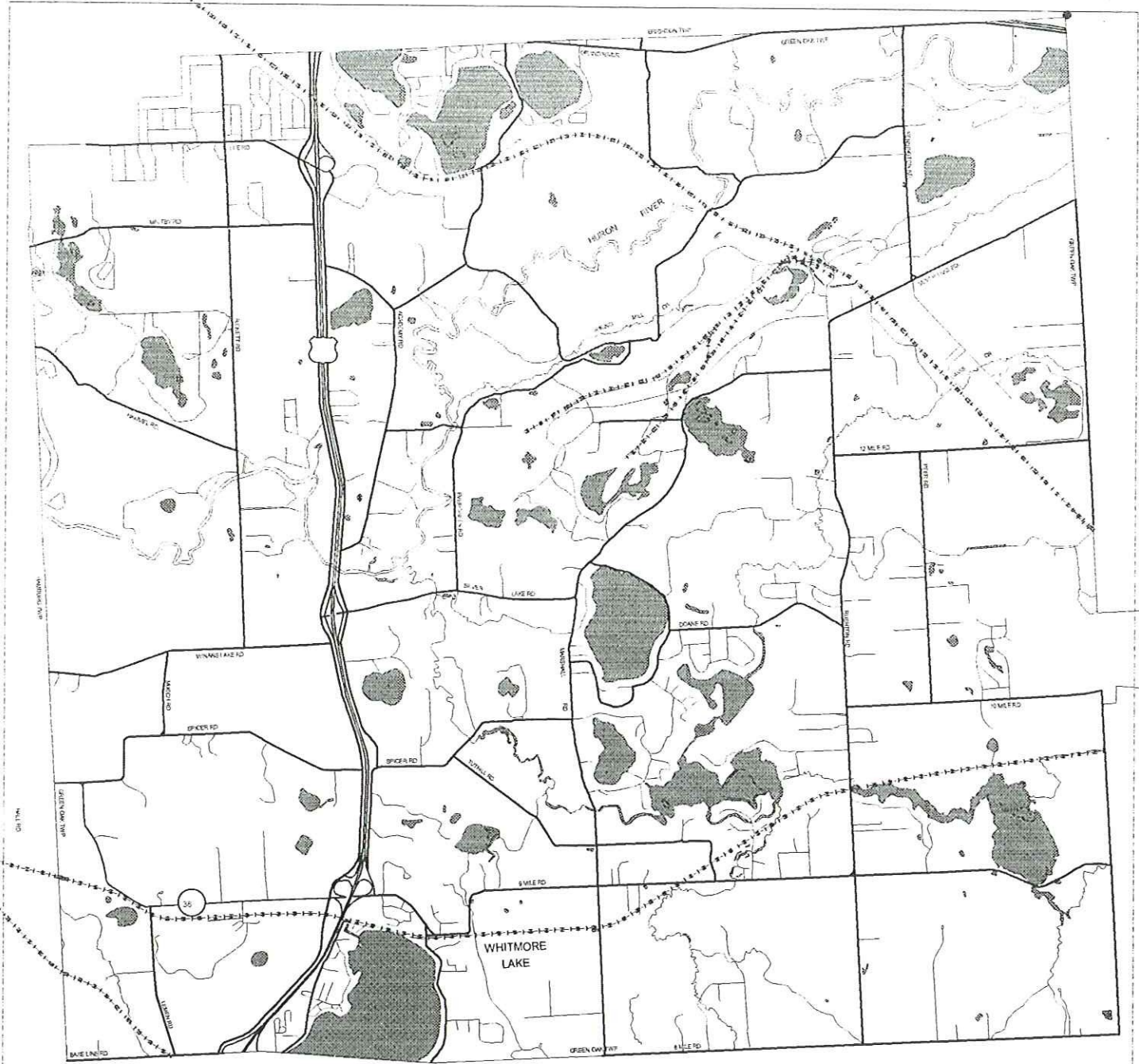
This plan should not become a static document. The Township Planning Commission should attempt to re-evaluate and update portions of it on an annual basis. The land use portion should be updated at least once every few years and the Planning Commission should set goals for the review of various sections of this Plan on a yearly program.



V. APPENDIX

- **ERC Resource Inventory Maps**
- **1992 Citizen Survey**

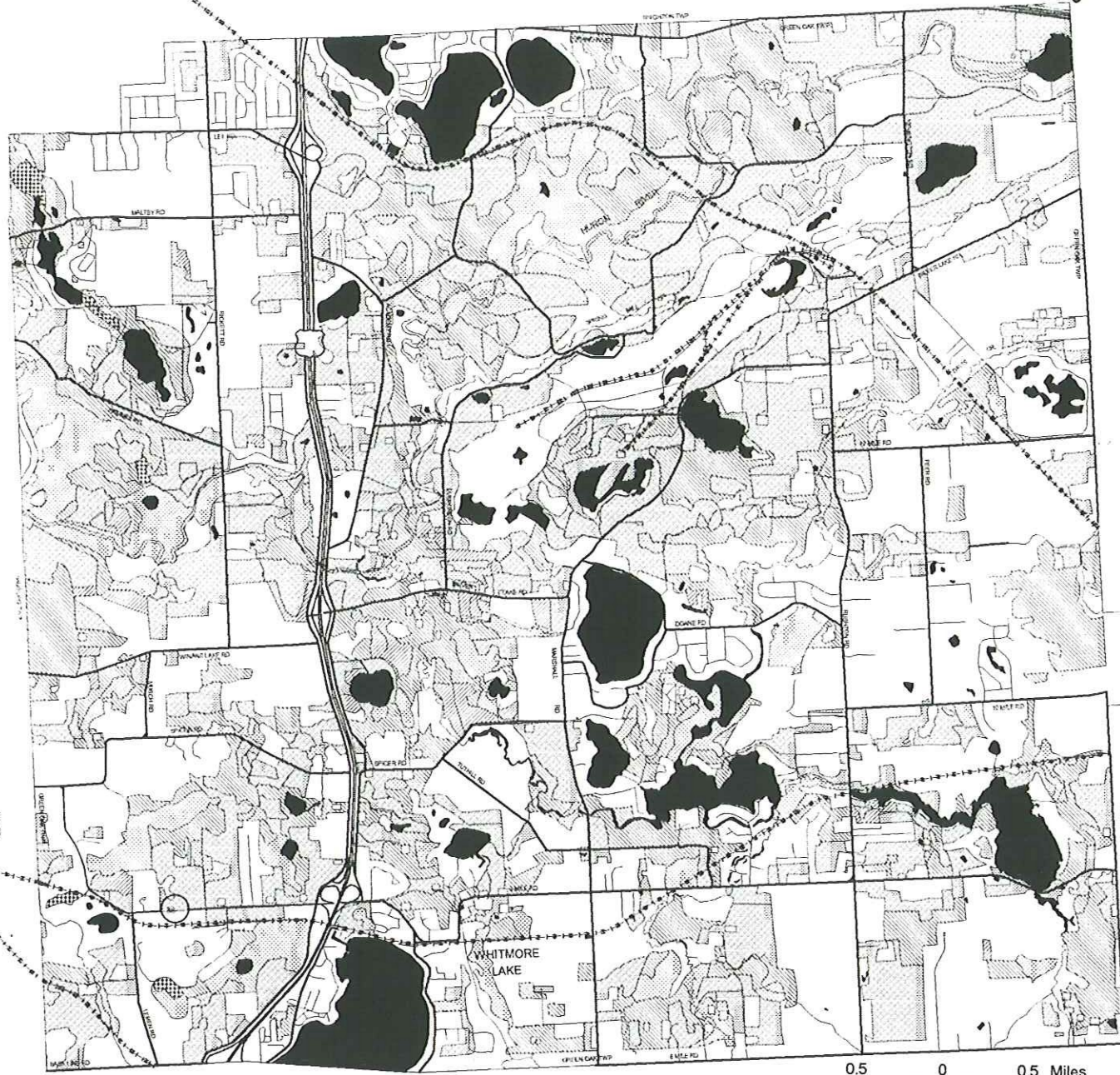
Green Oak Township Basemap



Basemap

Basemap					

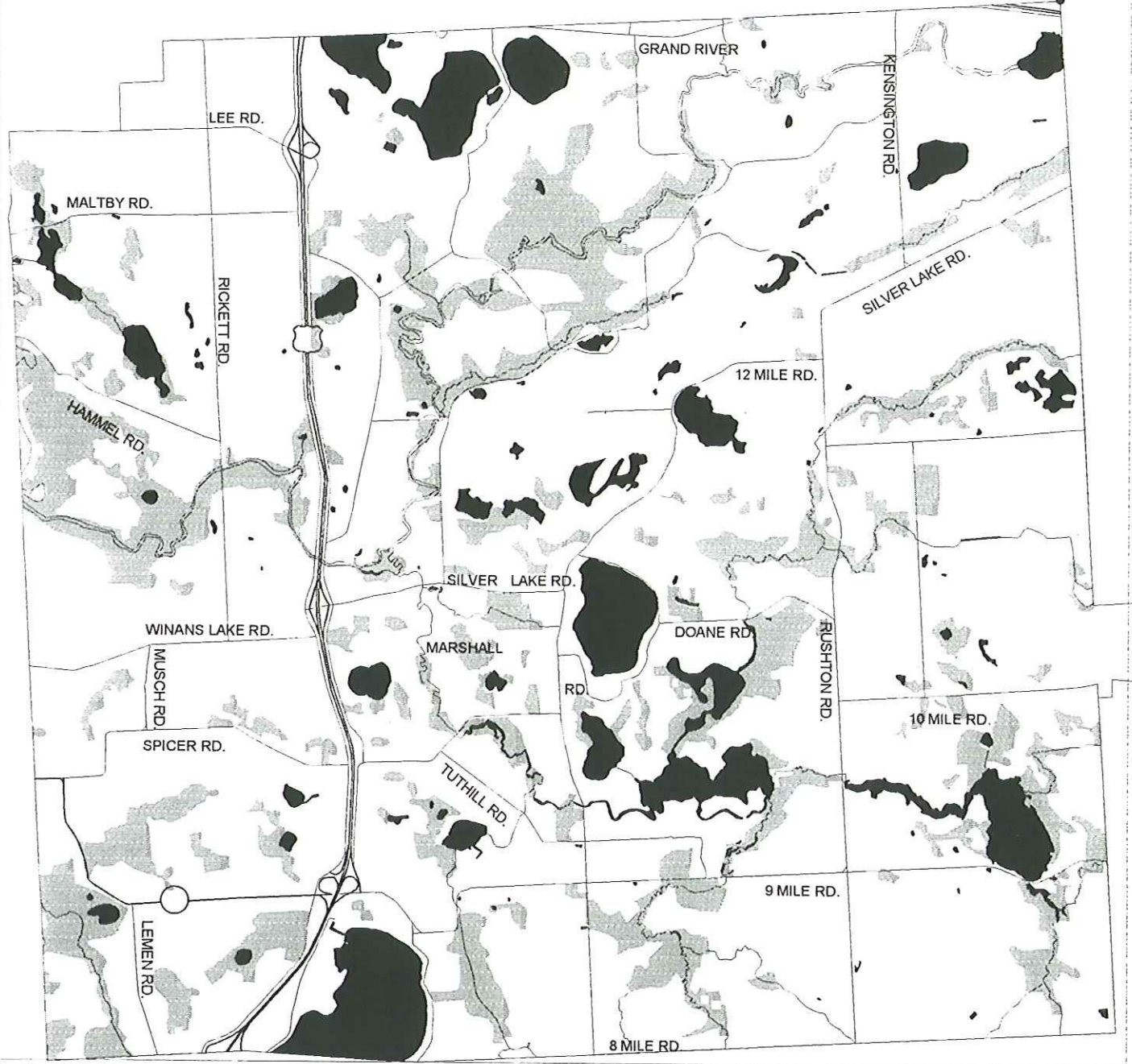
Green Oak Township Woodlands/shrublands



0.5 0 0.5 Miles

- shrub
- upland hardwoods
- lowland hardwoods
- upland conifers
- lowland conifers

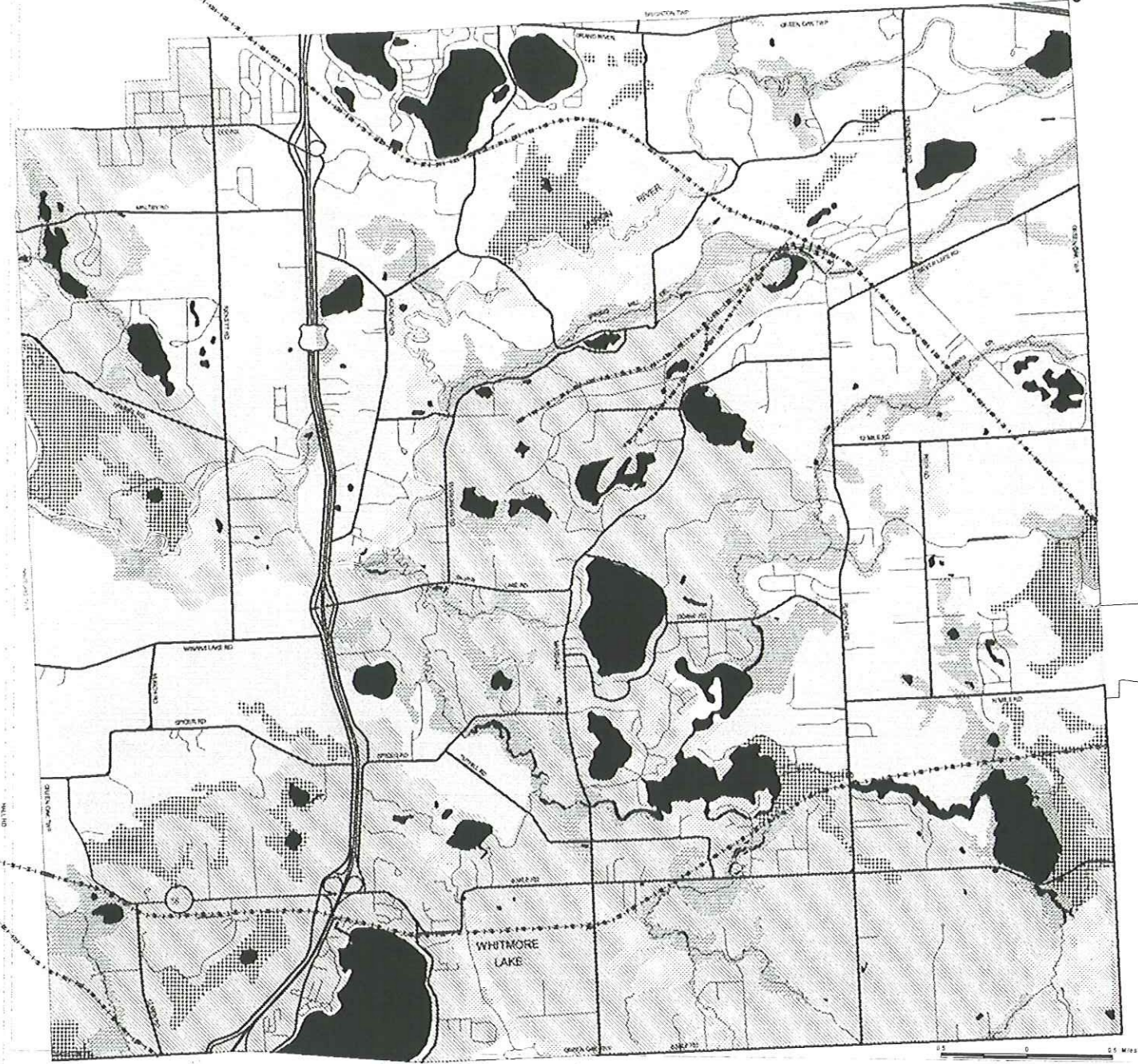
Green Oak Township Wetlands and Hydric Soils



Wetlands/hydric soils

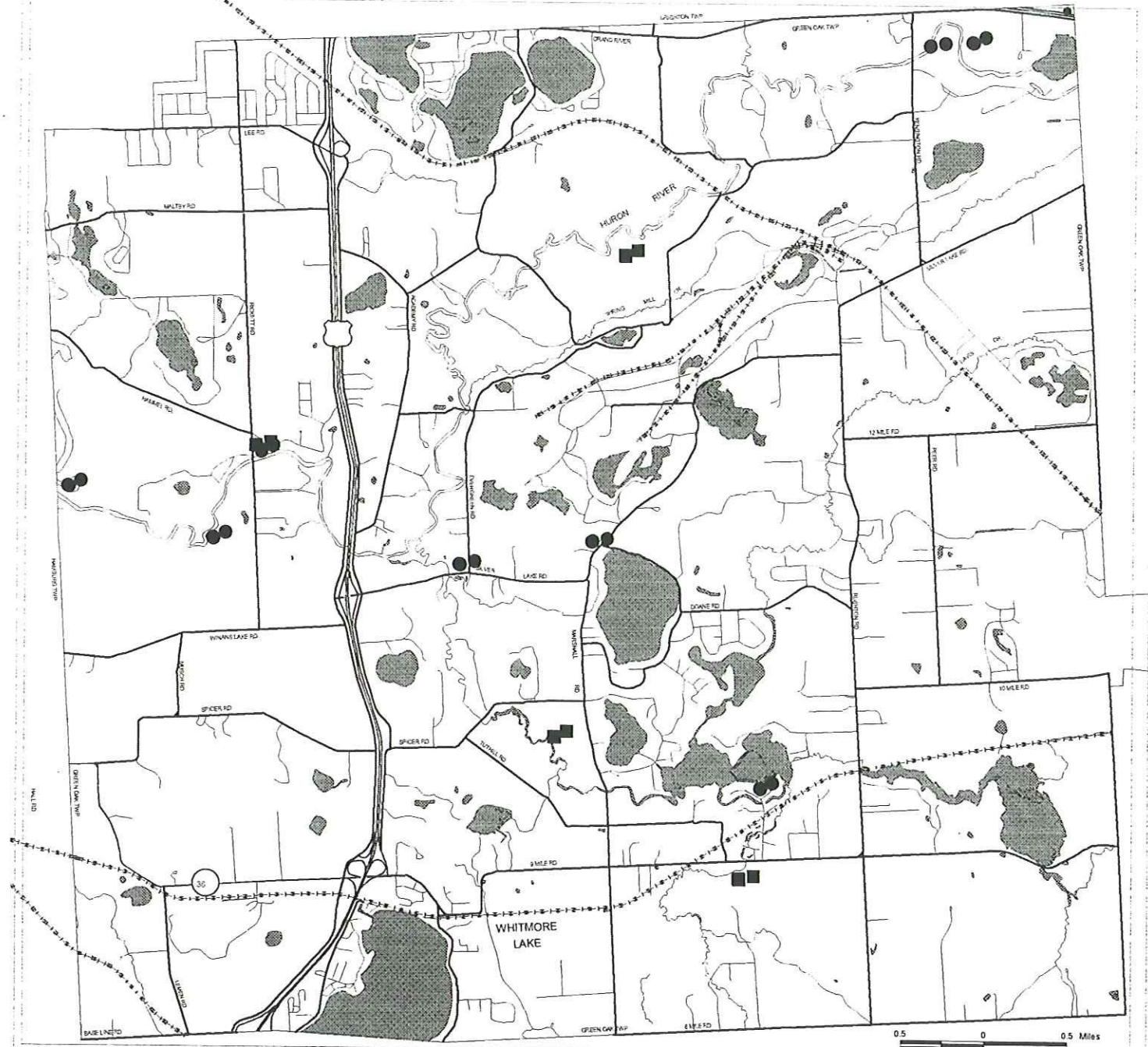
3/25/94

Green Oak Township Presettlement Habitats



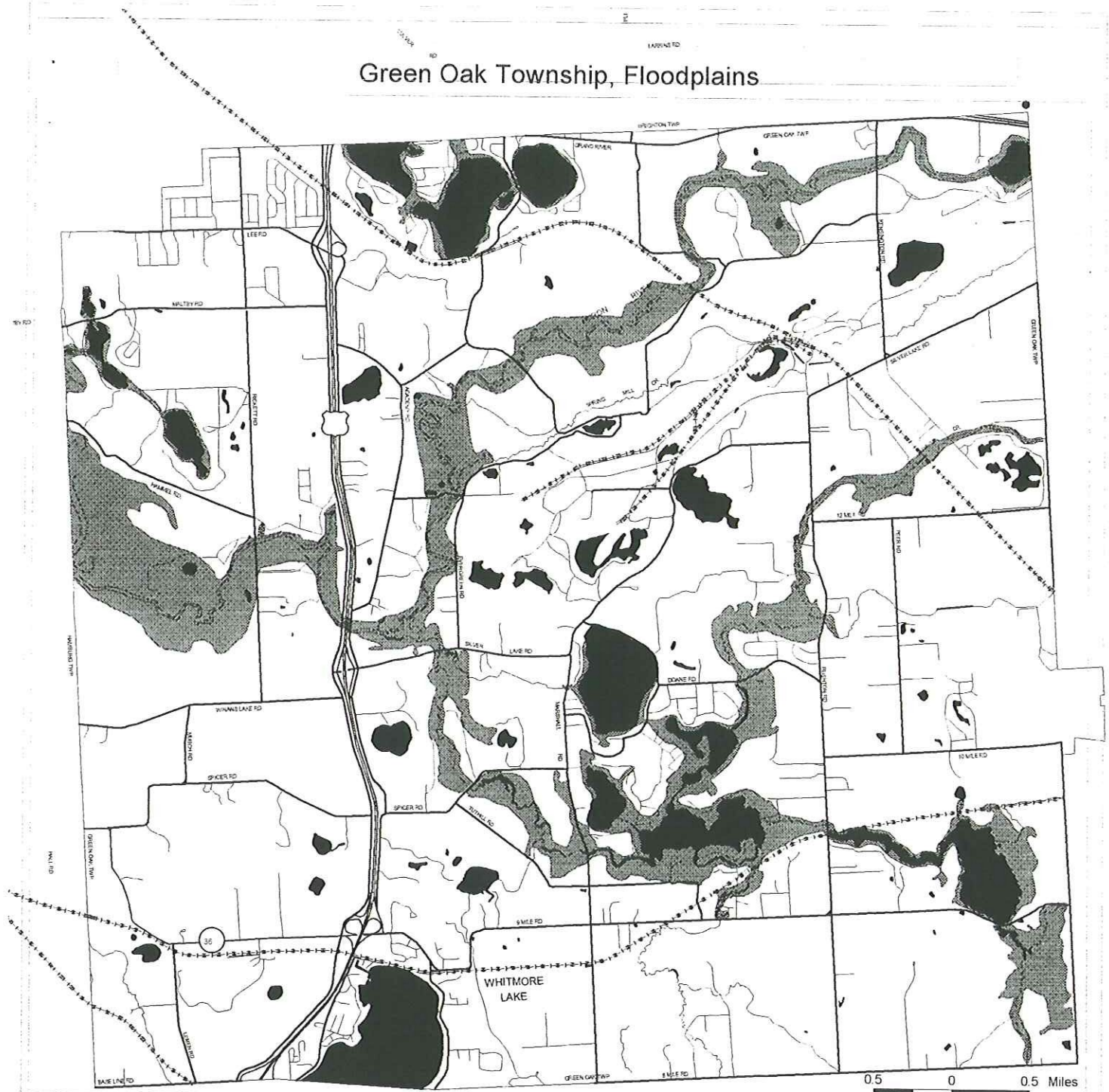
- oak barrens
- upland hardwoods
- lowland hardwoods
- lowland conifer
- wetlands

Green Township Endangered and Threatened Species



- Endangered animal species
- Endangered plant species

Green Oak Township, Floodplains



 Floodplains

0.5 0 0.5 Miles

GROUNDWATER VULNERABILITY TO CONTAMINATION

GREEN OAK TOWNSHIP,
LIVINGSTON COUNTY, MI

This map depicts the vulnerability of groundwater to contamination from surface sources.

The classification is based on a weighted combination of the following parameters:

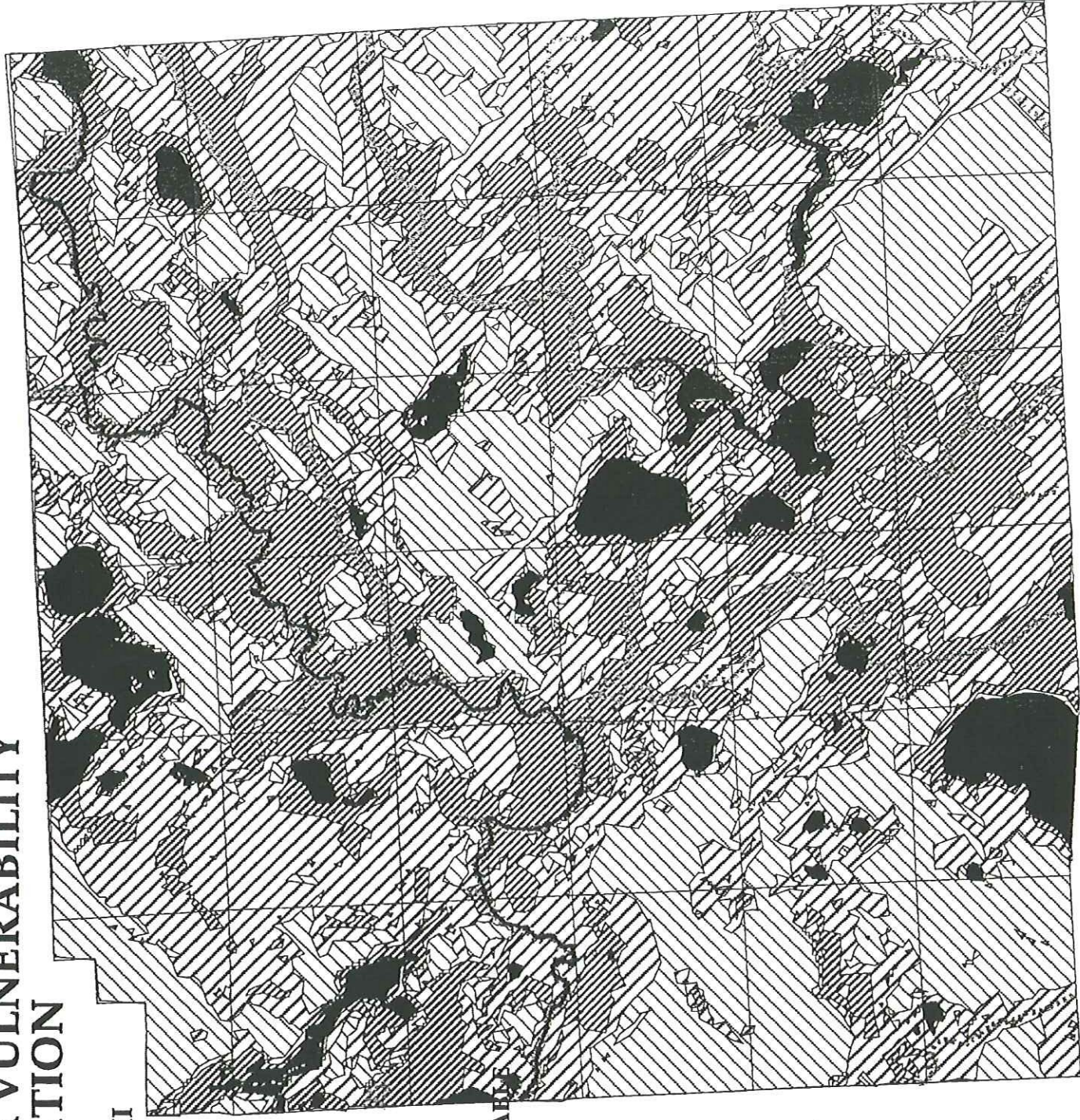
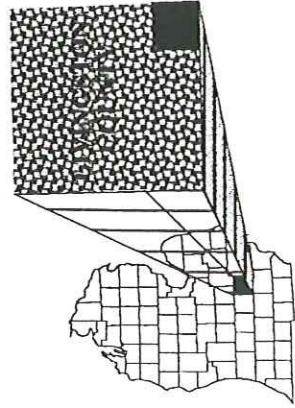
- 1) Depth to water table (60%)
- 2) Permeability of unconsolidated, subsurface materials (30%)
- 3) Permeability of soil surface (10%)

LEAST VULNERABLE
MODERATELY VULNERABLE
MOST VULNERABLE

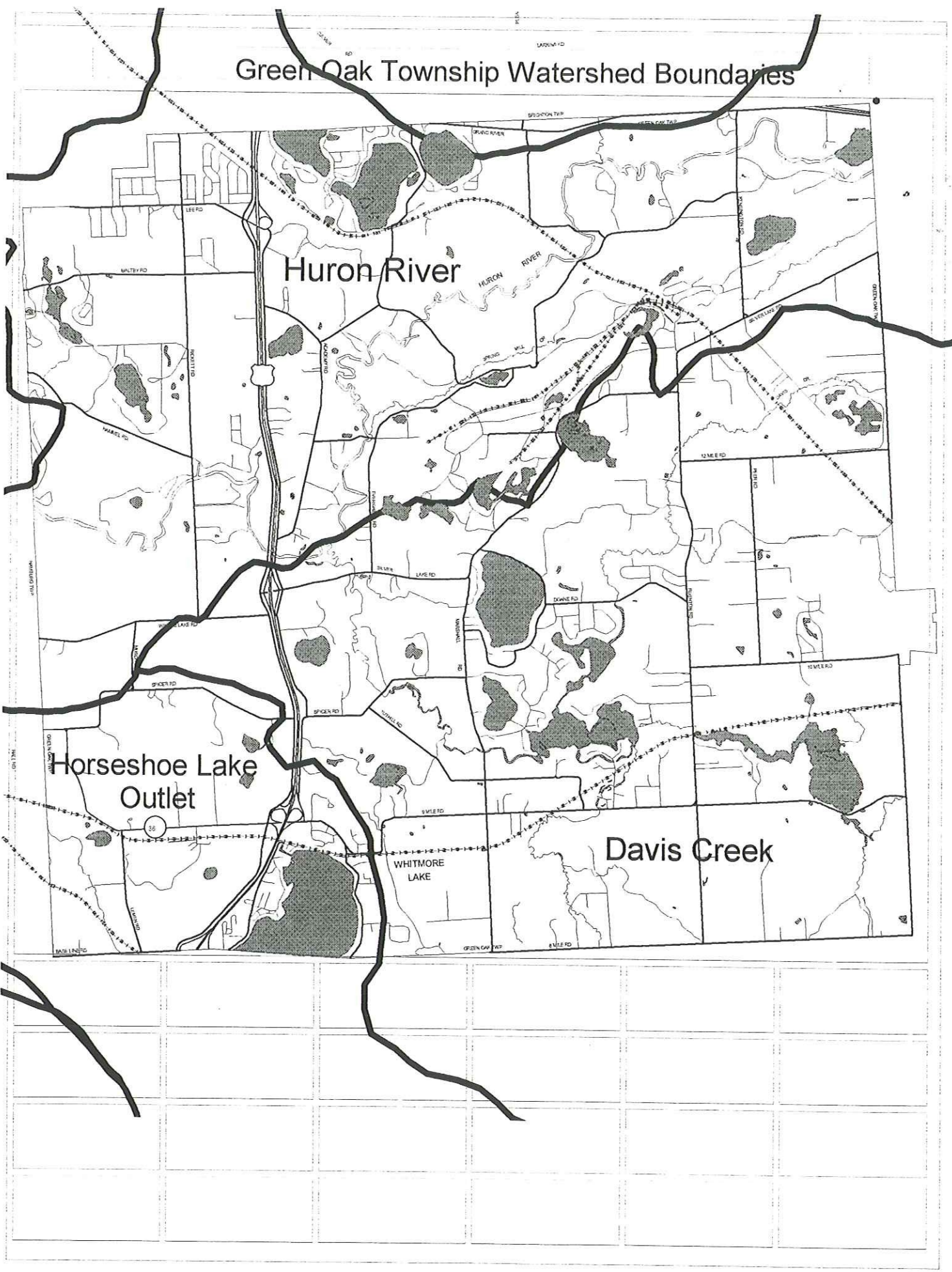
SURFACE WATERS



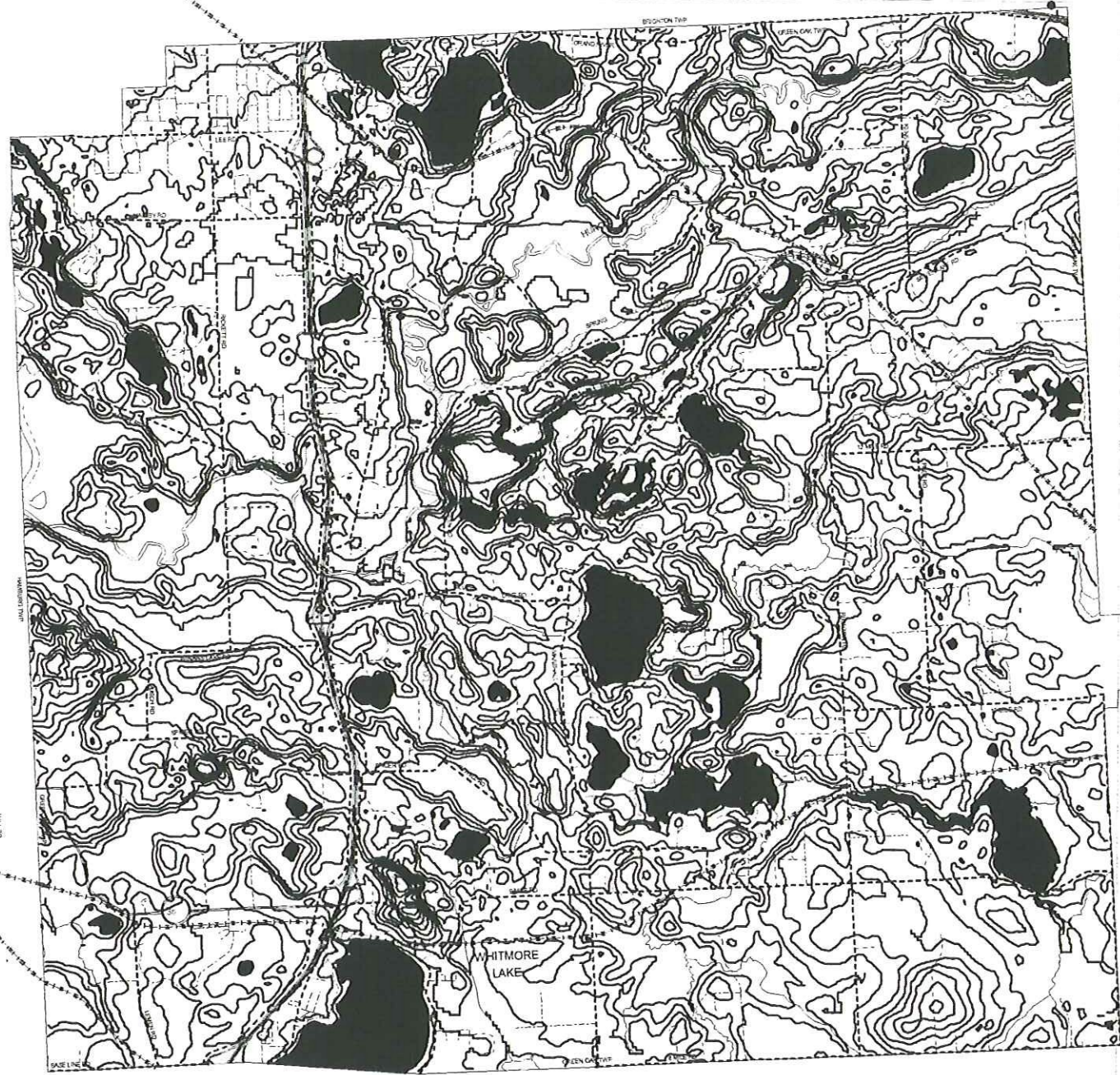
0.5 0 0.5 1 Miles



Green Oak Township Watershed Boundaries



Green Oak topography



Green Oak Township

10789 SILVER LAKE ROAD • SOUTH LYON, MICHIGAN 48178

(313) 449-4649 OR (313) 437-1388 OR (313) 231-1333



GREEN OAK TOWNSHIP COMMUNITY PLANNING SURVEY

Dear Property Owner/Resident:

Green Oak Township is rapidly growing. The Township is currently reassessing the community's priorities. As part of this planning process, the Township Board, Planning Commission and Zoning Board of Appeals are very interested in what citizens think about changes in our community. Your input is vital to the success of this planning process.

We have attached a questionnaire, which should be completed by the head of the household. All responses will remain strictly confidential. Please answer the survey thoughtfully and drop it in the mail prior to June 30, 1992.

Thank you for your time and consideration in this important matter. If you should have any questions or request additional information, please feel free to contact the Green Oak Township Hall (437-1388, 449-4649, 231-1333)

Township Board of Trustees
Township Planning Commission
Township Zoning Board of Appeals

GREEN OAK TOWNSHIP COMMUNITY PLANNING SURVEY TABULATION

Section A. Current Community Problems

Changes in Green Oak Township have brought about numerous concerns to our community. These concerns range from environmental and planning-oriented issues to social service concerns now facing our communities. Please check if you think each item is

- a serious problem in Green Oak Township,
- only a minor problem in Green Oak Township, or
- not a problem at all.

(Results given in percentages)

	Serious Problem	Minor Problem	Not a Problem	Do not know or cannot rate
1. Breaking and entering, crime.	19.3	52.3	10.8	17.7
2. Drug use.	25.3	36.7	8.4	29.5
3. Groundwater contamination.	29.4	30.8	13.0	26.8
4. Air pollution.	13.6	33.2	35.7	17.5
5. Declining quality of homes.	5.72	3.6	60.8	9.8
6. Shortage of affordable housing.	18.1	25.3	41.2	15.4
7. Unattractive or undesirable areas or buildings.	15.8	47.4	30.1	6.7
8. Excessive signs or billboards.	7.6	29.3	56.1	7.0
9. Excessive industrial development	13.3	23.7	54.8	8.2
10. Excessive commercial or industrial development.	14.8	24.9	51.5	8.8
11. Excessive residential development.	28.3	30.3	37.2	4.2
12. Traffic congestion.	28.8	42.3	28.4	1.7
13. Paved roads not maintained.	36.7	40.5	20.7	2.2
14. Gravel roads not maintained.	53.9	29.8	10.1	6.2
15. Incidence of stray animals.	12.7	34.0	43.8	9.5
16. Lack of public services.	20.6	32.5	39.1	7.8
17. Illegal dumping.	26.5	37.0	17.9	18.6
18. Oil and gas extraction.	4.7	16.03	6.0	42.9
19. Sand and gravel pits.	8.3	21.2	40.4	30.1
20. Destruction of natural environment.	31.7	34.9	19.4	14.0

Section B. Future Planning

Many changes are taking place in the development of Green Oak Township. Because of our location, change is inevitable. We would like to have your thoughts about this development and in which directions you would like it to go. What makes Green Oak Township a desirable place to live. Please answer the following questions with this question in mind.

1. Why did you chose to live in Green Oak Township. (Mark as many as apply to your situation.)

Original homestead.	10.3%
Good schools.	27.4%
Convenience to work.	30.3%
Natural beauty of the area.	69.1%
Desire for rural environment	72.6%
Property on water.	27.3%
Good place to raise a family.	44.2%
Affordable.	44.8%
Other. (See attachment)	

2. What concerns do you feel Green Oak Township should give priority to in its planning? (Check all that apply.)

(Results given in percentages)	Not a Priority	Low Priority	Moderate Priority	High Priority
Air and water pollution control	4.6	11.3	30.1	54.0
Availability of public sewage treatment	20.5	24.3	27.3	27.9
Availability of public water supply	25.3	28.1	21.8	24.8
Quality road system throughout the Township	4.8	9.4	33.4	52.4
Preservation of the natural environment	3.7	4.6	20.1	71.6
Other (See attachment)				

3. The Planning Commission is currently working on a Master Plan for the Township. We need your input. What kinds of development policies would you like to see the Township follow in the future? (Check all that apply.)

(Results given in percentages)	Not a Priority	Low Priority	Moderate Priority	High Priority
Work to keep the rural residential atmosphere with larger lots (one acre and above).	8.7	11.0	23.8	56.5
Encourage the Township to develop primarily as a community of residential subdivisions.	26.1	21.0	30.0	23.9
Provide more subdivisions of smaller lots (one acre and less).	57.3	22.7	12.6	7.4
Provide more multiple and/or lower cost housing.	65.1	17.8	11.1	6.0

Protect the unique natural water features of the Township such as the lakes, wetlands, creeks, rivers, and their watersheds.	1.1	2.7	12.7	83.5
Limit business and industry to planned centers.	3.6	6.2	23.0	67.2
Provide more goods/services locally. Other. (See attachment)	23.1	28.1	30.5	18.3

4. What do you like most about the Green Oak community? (See attachment)
5. What would you like to see changed within the community? (See attachment)
6. What is your vision for the future of the Green Oak community? (See attachment)
7. To what concerns should Green Oak give its planning?

(Results given in percentages)	Not a Priority	Low Priority	Moderate Priority	High Priority
Open space	2.6	8.2	34.7	54.5
Natural rivers	1.2	3.9	20.8	74.1
Roadside trees	3.8	13.6	27.5	55.1
Drainage	3.1	13.5	38.9	44.5
Wetlands	3.3	10.0	29.1	57.6
Groundwater quality	1.3	2.1	16.7	79.9
Scenic vistas	6.1	15.4	33.5	45.0
Quality road system	1.5	5.7	29.1	63.7
Farmlands	6.7	20.2	40.8	32.3
Historical and archaeological sites	9.8	24.7	34.0	31.5
Lakes and streams	1.1	3.6	19.5	75.8
Unique wildlife or habitats	4.1	10.5	26.9	58.5
Large home sites	15.3	23.7	29.5	31.5
Rural atmosphere	2.1	5.9	22.0	70.0
Good schools	4.5	4.6	20.6	70.3
Recreation	9.1	20.6	37.9	32.4
Highway accessibility to regional shopping and employment opportunities	12.9	21.3	34.6	32.2
Police protection	2.5	6.3	29.7	61.5
Sense of community with neighbors	6.5	15.3	37.5	40.7

8. Should the Township develop a community focus which would contain most or all governmental buildings and functions in a central location?

Yes	57.1%
No	18.6%
Undecided	23.0%

9. Would you support a Town Center is it included commercial businesses as well as sit down family restaurants, a hardware store, a bank, or medical/professional offices?

Yes	37.8%
No	42.9%
Undecided	19.3%

10. Please indicate if you would strongly agree, agree, or disagree with the following goal statements.

(Results given in percentages)	Strongly Agree	Agree	Disagree	Undecided
a. The community should try to maintain a low density, rural atmosphere.	61.5	27.9	6.8	3.8
b. Housing regulations should allow developers to cluster houses in one portion of a parcel so that open space, woodlands, wetlands, and other natural features can be preserved on the other portions of the parcel.	35.5	35.3	18.1	11.1
c. Green Oak should attempt to prevent surrounding communities from annexing portions of the Township.	55.0	23.2	6.9	14.9
d. The Township should play a more active role in promoting industrial and commercial development.	9.5	25.5	53.6	11.4
e. The Township should enforce regulations to prohibit the construction of new billboards along U.S. 23 and other major thoroughfares within the community.	45.8	32.9	11.3	10.0
f. Hunting should be prohibited throughout the Township.	35.2	16.8	38.3	9.7
g. Hunting should be prohibited only near residential areas.	30.6	26.6	37.2	5.6

11. Please indicate your preferences for future land use development. (Check all that apply.)

(Results given in percentages)	Strongly Agree	Agree	Disagree	Undecided
Single family residential on lots	44.5	32.4	18.7	4.4
Less than 1/2 acre in size	5.5	14.5	70.7	9.3
Between 1/2 acre and 1 acre	29.3	38.3	27.1	5.3
One acre in size	24.1	43.6	23.4	8.9
Two acres in size	14.8	33.1	39.3	12.8
Five acres or more in size	18.1	21.8	45.5	14.6
Apartments	1.9	19.9	70.0	8.2
Mobile homes	1.9	7.0	85.5	5.6
New, planned neighborhood commercial	5.5	28.2	51.6	14.7
Office development	5.3	38.2	44.9	11.6
Research and development	9.2	41.0	37.4	12.4
Light industrial	4.5	38.3	47.4	9.8
Mineral extractions	4.6	13.2	66.2	18.8

12. Which roadways and intersections within Green Oak Township need to be improved? Please list you top three picks. (See attachment)

13. Where would you like to see improvements to U.S. 23 interchanges?

(Results given in percentages)	Not a Priority	Low Priority	Moderate Priority	High Priority
Lee Road	51.1	21.3	14.3	13.3
Silver Lake Road	46.6	20.9	17.5	15.0
M-36/9 Mile	40.2	18.4	16.8	24.6
8 Mile	43.5	22.5	16.9	17.1
Do not know				

14. We would like to find out what kinds of business you would like to see more of in Green Oak Township. Below is a list of businesses. Please check if you would like to see more of each type of business listed.

a. Major supermarket	269
b. Major department store (i.e. Sears, Hudsons)	222
c. Major discount store (i.e. K-mart)	258
d. Mall-type shopping center	183
e. Clothing store	170
f. Drug store	175
g. Dry cleaners	117
h. Laundromat	75
i. Service (gas) station	184
k. Barber or beauty shop	86
l. Hardware store	215
m. Shoe store	167
n. Restaurant	511
o. Fast food or carry-out establishment	137
p. Variety or dime store	128

q.	Home appliance, video, stereo store	87
r.	Book store	227
s.	Cards and gift store	145
t.	Jewelry store	48
u.	Flowers, plant	144
v.	Movie theater	208
w.	Automobile dealer	67
x.	Bank	194
y.	Medical or dental offices	234
z.	Attorney's offices	99
aa.	Insurance company offices	87
bb.	Day care center	213
cc.	Adult foster care	139
dd.	Other (See attached)	

15. If you own multiple acreage in Green Oak Township, do you intend to develop it in the near future?

Yes	2.4%
No	97.6%

Section Community Services

1. Green Oak Township would like to improve the quality of police services. Below is a list of standard police work activities. For each activity please check if police time and effort should INCREASE, STAY ABOUT THE SAME, or DECREASE.

(Results given in percentages)	Increase	Stay about the same	Decrease	Do not know cannot rate
Patrol of residential areas	52.7	37.1	1.4	8.8
Patrol of commercial and industrial areas	11.5	50.3	6.2	32.0
Crime investigation	25.6	44.2	1.5	28.6
Speed limit enforcement	27.7	54.0	9.4	9.0
Juvenile programs	32.6	34.6	2.5	30.4
Community relations	30.4	43.4	3.3	23.0
Local ordinance enforcement	27.8	46.4	3.8	22.0
Other (See attachment)				

2. Would you be interested in participating in a volunteer "neighborhood watch" program for your neighborhood by being alert and reporting unusual situations to the Township police department?

Yes	62.4%
No	37.6%

3. The current police millage is 1.0 mills for operation only. Would you favor:

Increasing the millage	13.2%
Renewal of the existing millage	61.8%
Not renewing the existing millage	7.4%
Do not know	17.7%

4. Green Oak has a paid volunteer fire department. How would you rate fire protection service in Green Oak?

Excellent	15.2%
Good	35.6%
Fair	7.2%
Poor	2.4%
Undecided	39.7%

5. The current fire department millage of 0.5 mills is for capital outlay (buildings and equipment). Would you favor:

Increasing the millage	11.0%
Renewal of the existing millage	64.2%
Not renewing the existing millage	5.8%
Do not know	19.1%

6. Would you be interested in the development of a Green Oak Township emergency medical services program?

Yes	44.3%
No	26.6%
Undecided	29.1%

7. If Yes, would you be willing to support emergency medical services with a tax increase?

Yes	44.5%
No	55.5%

8. Do you live on a gravel road?

Yes	44.3%
No	55.7%

(See attachment for list of road names)

9. If yes, do you want this road paved?

Yes	46.3%
No	42.0%
Undecided	11.7%

10. Are there any main Township roads you believe should be paved?

Yes	56.4%
No	43.6%

If yes, please specify which road(s) should be paved. (See attachment)

11. Would you favor a special assessment to pay for public road paving?

Yes	24.7%
No	52.5%
Undecided	22.8%

12. Salt brine is currently applied to all public gravel roads to control dust. Should this service be continued?

Yes	63.3%
No	14.8%
Undecided	21.9%

13. Do you live on a private road?

Yes	33.0%
No	67.0%

14. Do you think the Township should continue to permit the installation of private roads?

Yes	48.4%
No	22.3%
Undecided	29.3%

15. How do you dispose of your household trash?

Contract with private hauler	1155
Take it to landfill myself	103
Other (See attachment)	

16. Would you favor a Township-wide weekly household trash pick-up program?

Yes	48.1%
No	33.0%
Undecided	18.9%

17. If yes on question 16, how would you prefer to pay for this program?

Monthly	14.2%
Quarterly	37.7%
On tax statement	28.6%
Undecided	19.5%

18. When recycling becomes mandatory would you prefer:

To separate and pick up at home by yourself	48.0%
To source separation by hauler	20.4%
Undecided	31.6%

19. How would you rate the building code and zoning ordinance enforcement services of the Township?

Excellent	4.7%
Good	27.5%
Fair	22.3%
Poor	17.8%
Undecided	27.7%

20. How would you rate general ordinance enforcement such as junk cars, blight, others.

Excellent	3.5%
Good	24.3%
Fair	28.5%
Poor	28.4%
Undecided	15.4%

21. Livingston County is responsible for providing animal control services in Green Oak Township. How would you rate this service?

Excellent	4.6%
Good	28.1%
Fair	21.1%
Poor	18.5%
Undecided	27.7%

22. Green Oak Township has land reserved for a Township recreation park. For each of the facilities listed below, check one that you would like to see developed in the new park or elsewhere.

Outdoor pool	354
Ball fields	657
Soccer fields	364
Football fields	178
Tennis courts	461
Open space/passive park	714
Outdoor ice rink	422
Playgrounds	689
Jogging and exercise trail	701
Picnic pavilion	691
Basketball courts	300
Other (See attachment)	

23. Should the Township acquire additional land for neighborhood park development?

Yes	28.1%
No	44.2%
Undecided	27.7%

24. Would you favor a millage, for recreational use only, for park land acquisition and expansion of recreation programming and facilities?

Yes	21.7%
No	55.7%
Undecided	22.6%

25a. Do you favor Green Oak Township, joining with a neighboring community to form a district library, bearing in mind that the law requires that the entire township be in one (1) district only?

Yes	35.9%
No	64.1%

25b. Do you favor a millage increase to support a library?

Yes	27.3%
No	72.7%

25c. If a library is built in Green Oak Township, where should it be?

Lee Road/Fieldcrest Area	13.4%
Silver Lake Road/US-23	21.3%
Rushton/10 Mile Road	19.7%
9 Mile/US-23	7.1%
Have no preference	38.4%

25d. Do you use any of the following libraries?

Brighton	44.6%
South Lyon	38.7%
Whitmore Lake	7.3%
Other	9.5%

The increase in population and development of vacant lands often creates a need for public water and sanitary sewer service. We would like to assess the need or desire for these services in Green Oak Township.

26. Have you experienced poor water quality or contamination of your well?

Yes	23.1%
No	69.1%
Do not know	7.8%

27. Should the Township develop a public water system?

Yes	25.9%
No	49.6%
Undecided	24.5%

28. Have you experienced septic system failure or had difficulty finding soil on your property that is suitable for a septic field?

Yes	10.5%
No	84.0%
Do not know	5.5%

29. Should the Township develop a public sanitary sewer system and sewage treatment plant?

Yes	27.5%
No	48.2%
Undecided	24.3%

Section D. Demographics

1. What school district do you live in?

South Lyon	43.6%
Brighton	42.3%
Whitmore Lake	14.1%

2. How long have you and members of your household lived in Green Oak Township?

Less than one year	3.6%
1-3 years	19.7%
4-5 years	13.9%
6-10 years	18.2%
11-20 years	21.6%
More than 20 years	23.0%

3. How many persons presently live in this household?

Mean=3

How many are 17 years of age or younger?

Mean=1 for all households

Mean=2 for households with children

How many are 62 years of age or older?

Mean=2 for households reporting at least one person age 62 or older.