



THORNAPPLE TOWNSHIP

2020 Master Plan

DRAFT



VISION...

Your vibrant and natural community, with a small-town heart.

MISSION...

To maintain effective government contributing to sustainable growth through sound investment while preserving the small-town heritage, recreational spaces, active agriculture and the rural feel of our township.

ACKNOWLEDGMENTS

The 2020 Thornapple Township Master Plan update involved significant effort from citizens, staff, consultants, and members of the Planning Commission and Township Board. Without this support, completion of this plan would not have been possible.

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CHAPTER 1

INTRODUCTION

INTRODUCTION

Legal Authority for the Planning of Thornapple Township

The Thornapple Township Planning Commission is organized under terms of Michigan Public Act 168 of 1959, as amended. This Act is commonly referred to as the “Township Planning Act.” The Township Planning Commission was formed pursuant to the Act by the Thornapple Township Board of Trustees on October 14, 1985. The Commission has functioned continuously since that date. In 2008, Michigan Public Act 168 of 1959 was repealed and replaced with Michigan Public Act 33 of 2008 (Michigan Planning Enabling Act). Planning Commissions and master plans created or adopted under Act 168 could continue under Act 33, subject to certain criteria and new requirements.

Purposes of a Master Plan

Each community has physical characteristics and settlement patterns making it unique from all others. Conversely, communities do share common issues and solutions by way of tried and successful methods. Planning subject matter may vary by community since unique physical characteristics require unique approaches. A rural, farming community may be focused on preservation of prime farmlands whereas a community experiencing a rapid pace of growth may be focused on urban design and quality of life issues.

Above all else, a Master Plan should represent community consensus and a common “future vision” for the natural and man-made environments. Once adopted, the Master Plan serves as the primary basis for zoning districts, zoning change decisions, special land use locations, public improvements and, indirectly, future property valuations.

The authority of government to regulate private activity, including the use of privately owned land, for the protection of the public health and safety is fundamental to the notion of democratic government in a civilized society.

“Property is held subject to the right of government to regulate its use in the exercise of the police power so that it shall not be injurious to the rights of the community or so that it may promote public health, morals, safety, and welfare.”

[Patchak v. Township of Lansing, 361 Mich. 489, 105 N. W.2d 406 (1960)].

Stated simply, the police power afforded Thornapple Township conveys the right and duty to regulate private activity for the protection of the public health, safety and welfare.

Who Should Use the Master Plan?

RESIDENTS: Neighborhoods change. Each resident should make a point of learning about the future land uses and public facilities planned for their neighborhood and nearby areas. The open field next door in which neighborhood children play may belong to someone else. Each parcel has a certain right of use generally set forth in the Master Plan. Proactive participation in assuring change consistent with the Master Plan is the single most effective effort residents can undertake. Simple opposition to a proposed development is not an effective advocacy in this day and age.

PROPERTY OWNERS: The Master Plan significantly impacts “right of use” of land. Future zoning district changes, because they are largely based on tenets of the adopted Master Plan, will not occur when an owner’s objectives conflict with planned future land use. Thus, owners of undeveloped land must look at the Master Plan to obtain parameters for potential land use. Proper planning and

growth management very often cannot co-exist with property owner driven development objectives.

PROSPECTIVE REAL ESTATE PURCHASERS: In the real estate industry, the term “due diligence” means whenever a purchase of land is contemplated, the prospective buyer should research many matters prior to making the purchase. Typically, the purchaser will investigate good and marketable title, environmental questions, land survey and so on. Not typical is research of governmental plans and regulations in place which define land use options. The Master Plan defines type and density of land use. If the purchaser’s land use objectives are different from the Plan, the purchaser will be disappointed.

DEVELOPERS: Would-be developers in the community should never buy vacant land absent thorough analysis of the Master Plan. Planned location, type, and density of land use, utility service areas and growth-management policies of the Plan should be clearly understood. Courts in Michigan have handled literally thousands of zoning cases, many of which involve a property purchaser or developer who disagrees with antecedent plans and zoning. Most often, municipalities win these “differences of opinion.”

PLANNING COMMISSION: Each year, the Township Planning Commission is tasked to make or advise on numerous zoning and development decisions. While each such decision must be decided on its own merits, one compelling area of information is “what does the Master Plan say about this property?” Any property owner seeking a change in zoning contrary to the adopted Plan faces the almost certain prospect of being denied. The Plan, once adopted by the Planning Commission, is the Commission’s “holy grail” regarding land use decisions.

TOWNSHIP BOARD: Some zoning decisions are made final by the Township Board on advice from the Planning Commission. Once again, in a vast majority of cases, the Board will render its decision in a manner consistent with the adopted Plan.

The Township Board administers the Township general fund, fire fund, and enterprise funds. The annual budget can include expenditures for capital projects such as roads, buildings and facilities, fire equipment, parks, sanitary sewer, etc. These capital expenditures are made based on experienced and expected needs.

The Master Plan is used to identify areas expected to develop and, in turn, areas requiring capital investments to provide needed public facilities. For example, as growth takes place, traffic volume increases occur which necessitate a road improvement. If this road is a part of the local road system, the Township general fund must include funds to pay for the local share of road improvement costs.

The Planning Process

Under Michigan law, plans for the community are made and adopted by the Planning Commission with authorization from the Township Board.

A Master Plan should not be prepared absent citizen participation during formative stages of planning. In fact, the Planning Act requires the Commission hold a public hearing on the Plan. However, convening a single public hearing on such an important public concern effectively deprives residents true participation.

The Planning Commission has made significant and conscientious effort to involve the citizens of the Township in preparation of this Master Plan.

Periodic Review of This Adopted Plan

The Michigan Planning Enabling Act requires the Thornapple Township Planning Commission to review this Plan at least every 5 years. This review will consider whether amendments to the Plan or a new Plan are warranted.

Purpose of 2020 Update

As stated prior, the Michigan Planning Enabling Act stipulates that a comprehensive master plan be reviewed at least once every 5 years and revised accordingly as needed. In 2019, the Planning Commission determined that it was necessary and prudent to complete an update of the Township Master Plan in order to align with recent changes in the community and recommendations from the Middleville-Thornapple Joint Planning Area Committee in collaboration with the Village of Middleville. The Middleville-Thornapple Joint Planning Area Committee worked through 2018 and 2019 to complete recommendations for modifications to the Joint Planning Area boundary, future land use changes, public utility extensions, and review and approval processes. The Joint Planning Area Committee engaged the public through a public open house session and open meetings. These recommendations were forwarded to the Village of Middleville and Thornapple Township planning commissions for consideration and incorporation into master plan updates.

The 2019 process focused on existing conditions, updates including the comparison of 2010 Census data to 2017 American Community Survey data, updating economic figures, and confirming natural features and land use inventories. The update also sought to synthesize and streamline the document by removing duplicate or excessive information which can be found or referenced elsewhere.

Finally, the update also sought to update the goals and policies of the Plan, the future land use categories and map, and the implementation strategies.



CHAPTER 2

SOCIAL FEATURES

REGIONAL INFLUENCES

The pace and type of change within any community very often is influenced by external factors. Location, proximity to a metropolitan area, transportation systems, cultural and recreational opportunities and/or employment centers, are all factors influencing change.

Thornapple Township and the Village of Middleville are significantly influenced by their proximity to the Grand Rapids Metropolitan Area. Thornapple and Middleville comprise an “edge community”, meaning they are in close proximity to the urbanizing area and are now, and will be, influenced by expansion of the Metropolitan area.

Life Style (Migration)

Due to housing shortages and population growth, families are migrating from urbanized areas within the greater Grand Rapids areas to “rural areas” on the urban fringe and beyond. Some migrating families are seeking rural character, away from the congestion and hustle of urban places. The irony of this trend will be that, as more families migrate, the small-town flavor of Middleville and the rural ambiance of Thornapple Township may be threatened by growth.

Careful growth management practices may help retain the community character people seek. Cluster housing which retains significant open spaces; ample parkland areas within the developing areas of the Village and Township; emphasis on pedestrian facilities and trails; well-considered site selection; site design and architectural styles for new commercial and industrial development, as well as high-quality public infrastructure can each contribute to the desired community character.

Natural Resources and Characteristics

Natural features influence and in some cases dictate the land uses for specific areas of the community. The predominant natural feature is the Thornapple River. The 100-year floodplain and wetlands will limit development along the Thornapple River to upland areas.

Planning in Contiguous Local Governments

Thornapple Township shares common boundary with eight other Townships. A Master Plan for land use has been adopted by each Township or by the County Planning Commission of the County in which the Township is located. When developing or updating a master plan, it is important to consider the planning efforts and land use policies of adjacent and neighboring communities. As such, the master plans of these communities were reviewed during each consecutive update process of the Thornapple Township Master Plan. Additionally, planning efforts of the Middleville-Thornapple Joint Planning Area Committee between the Village of Middleville and Thornapple Township were incorporated into future master plan updates. However, due to the regularity of master plan updates by neighboring communities, this plan does not include a detailed summary of each neighboring community’s master plan. Changing policies or plan updates of neighboring communities may quickly render such a summary outdated, and ultimately rendering the effort unproductive. This plan contains broad analysis of neighboring land use policies, which is summarized below.

Copies of Master Plans and zoning ordinances in effect were obtained for each township and were reviewed to prepare the following general narrative regarding neighboring land uses.

With the exception of the Village of Middleville, neighboring jurisdictions have planned for low-density residential or agricultural future land use designations bordering Thornapple Township. These policies are not likely to change in the near future and growth will continue to occur where existing utilities and density already exist.

POPULATION, HOUSING, AND ECONOMIC INDICATORS

A clear understanding of population, housing and economic data about the Village of Middleville, Thornapple Township and nearby communities is essential to the Master planning process. Population increase means demand for more housing. Housing value and household income are indicators of housing affordability.

This Chapter brings forth relevant data and suggests likely future trends. Planning for these trends is the essence of preparing a viable Master Plan, one which proves useful.

Understanding the Data

The data contained in this Chapter comes primarily from the U.S. Census Bureau Census of Population for the years 2000 and 2010. Some analysis also references the 1980 and 1990 Census numbers for context. Between Census counts, the U.S. Census Bureau publishes ongoing yearly data through the American Community Survey (ACS) on a

variety of topics such as population, age, and employment. These survey estimates take a sample instead of a full count of a community. As such, the figures are primarily helpful for tracking trends but have larger margins of error in smaller communities. The 2019 Master Plan update utilized 2017 ACS data and it should be noted that ACS data is not available for all datasets. The 2020 Census will reveal the accuracy of the estimates and give a better snapshot of Township demographics and economic indicators.

Population

Middleville and Thornapple Township are experiencing sustained population growth. Growth of the Grand Rapids metropolitan area and outward migration appear as the basic reasons. The Village of Middleville offers a desirable small community setting infrequently found in the metropolitan area. Thornapple Township has a rural character and scenic environments that people find attractive.

Middleville and Thornapple are situated in a general area experiencing population growth. The northwest quadrant of Barry County is influenced by metropolitan area growth expansion of Grand Rapids more than any other area in the County. Table 4-1 presents historical population data for the Village of Middleville and Thornapple Township as well as the comparison of historical population data with nearby communities.

Between 1980 and 2000, the Village population increased from 1,798 to 2,721, a change of 51.3%. The Township population for the same period increased by 1,463 persons or 58.5%. Nearby communities also exhibited significant

population increase during this period. Growth patterns continued between 2000 and 2010 for both the Village and Township, as illustrated in Table 2-1. Between 2010 and 2017, percent growth in both the Township and the Village was much slower than historical growth. This was likely influenced by the Great Recession in the late 2000s during which time there was a decline in the national economy.

Caledonia Township was the only municipality that continued to experience substantial growth between 2010 and 2017.

Table 2-1: Comparative Population Trends 1980-2017

	1980	1990	2000	2010	2017*	2000-2010 % Change	2010-*2017 change
Village of Middleville	1,798	1,966	2,721	3,319	3,362	21.9%	1.3%
Thornapple Township	2,501	3,260	3,964	4,565	4,610	15.2%	1.0%
Combined Village and Township	4,299	5,226	6,685	7,884	7,972	17.9%	1.1%
Caledonia Charter Township	4,205	5,369	7,862	10,821	13,799	37.6%	27.5%
Barry County	45,781	50,057	56,755	59,173	59,607	4.3%	0.7%

Source: U.S. Census of Population

*Estimate from the 2013-2017 American Community Survey Estimates

Age of Population

The median age in Thornapple Township was 33 years in 2000, 36.2 years in 2010, and 39.2 years in 2017. In the Village of Middleville, the median age was 29.7 years in 2000, 32.4 years in 2010, and 29.6 years in 2017. Median age in the Township is continuing to increase, similar to state and national trends; however, the median age in the Village has remained relatively low and decreased overall in recent years. Table 2-2 provides a median age comparison with surrounding communities.

Table 2-2: Median Age Comparison 2000-2017

	2000	2010	2017*
Thornapple Township	33.0	36.2	39.2
Village of Middleville	29.7	32.4	29.6
Barry County	36.9	41.2	42.7
Michigan	35.2	38.9	39.6

Source: Census 2000, 2010

*Estimate from the 2013-2017 American Community Survey Estimates

As can be seen from Table 2-2, the median age in 2017 for Thornapple Township is 0.4 years less than the state median age and 3.5 years less than Barry County. The 2000 median age for Thornapple and Middleville, as compared to other areas, clearly suggests young family formations among new residents to the area. In 2017, this trend has continued in the Village as the median age decreased by 2.8 years. However, the Township median age has continued to increase, which may indicate the future need for additional facilities and services to accommodate an aging population.

Age Distribution

Comparing the distribution of Thornapple Township and the Village of Middleville over a span of time provides a measure of change useful in evaluating housing demand, recreation needs, and future school enrollments.

Table 2-3: Comparative Population Trends 2000-2017

Age Group (years)	MIDDLEVILLE				THORNAPPLE TOWNSHIP			
	2000	2010	2017*	% Change 2000-2010	2000	2010	2017*	% Change 2000-2010
Under 5	250	313	289	25.2	530	614	332	15.8
5 - 19	721	771	946	6.9	1,807	1,845	2,167	2.1
20 - 24	191	170	195	-10.9	340	385	406	13.2
25 - 54	1,159	1,368	1,295	18	2,984	3,280	2,871	9.9
55 - 64	169	293	348	73.3	513	882	1,217	71.9
65+	231	404	289	74.8	511	878	979	71.8

Source: U.S. Census 1990, 2000, 2010

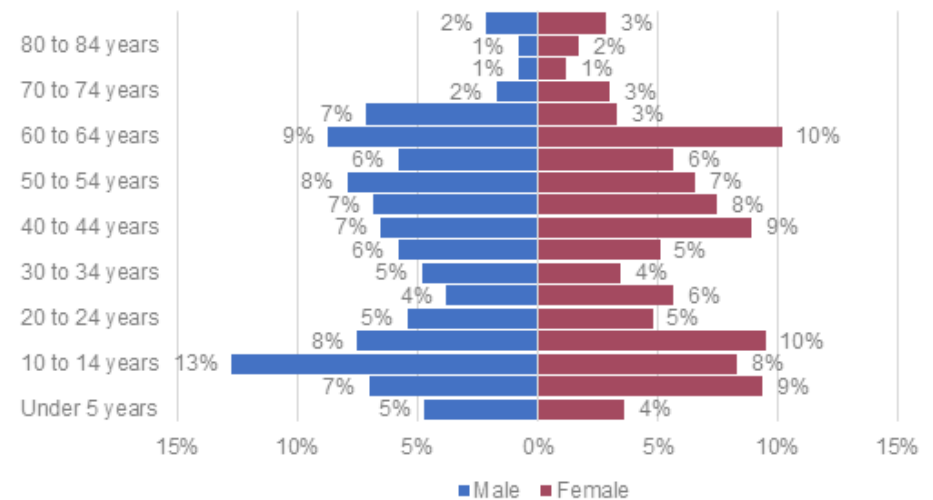
*Estimate from the 2013-2017 American Community Survey Estimates

Between 2000 and 2010, the 20-24 age group slightly declined in the Village; yet, it was estimated to increase again between 2010 and 2017. This corresponds to the lower median age observed in the Village, as residents in the 20-24 age group and 5-19 age group have increased. The Township also experienced increases in these age groups. Ages 55 and above saw the largest percentage increase between 2000 and 2010. All age groups grew in the Township between 2000 and 2010, and like the Village, ages 55 and above grew at the fastest rates. Based on 2017 estimates, the Village has experienced a decline in older populations while the Township has experienced an increase.

These also correlate to a declining median age in the Village and an increasing median age in the Township. The largest percent changes in both the Village and Township occurred in 55-64 and 65+ age groups.

The population pyramid for Thornapple Township in Figure 2-1 indicates that the Township has a relatively large population comprised of ages 10 to 14 years and 60 to 64 years. The largest age group was 10 to 14 years, comprising 10.4% of the total population. The 60 to 64 year age group comprised 9.5% of the population. There is also a relatively large percentage of residents between 40 and 54 years. Together, the distribution of age groups indicates that there is a healthy population of families with children and adults that are recently retired.

Figure 2-1: Population Pyramid for Thornapple Township 2017



Persons Per Household

Type and size of housing is influenced by the number of persons in residence. Table 2-4 provides 1990, 2000 and 2010 information on the number of persons per household. A comparison of data for the Village and Township with Barry County, and the State of Michigan is included. Overall, Thornapple Township and the Village of Middleville experienced a greater percent decline in average persons per household than the County and State. However, both the Township and Village had the highest overall occupancy in households and in 2010 still had a larger average of persons per household than the County and State.

Table 2-4: Average Persons Per Household (dwelling) 1990-2010

	1990	2000	2010	% Change per Household 1990-2010
Village of Middleville	3.07	2.81	2.81	-8.5%
Thornapple Township	3.17	2.91	2.89	-8.8%
Barry County	2.82	2.65	2.65	-6.0%
Michigan	2.80	2.67	2.53	-9.6%

Source: Census 1990, 2000, 2010

Housing Data

Table 2-5 illustrates the number of housing units in the Village and Township. Between 2000 and 2010, there was substantial growth in both the Village and the Township; however, this growth slowed between 2010 and 2017. Although the Township still experienced moderate growth, 2017 estimates indicated that the Village experienced a loss in its number of housing units. The Township has experienced consistent growth since 1980, while the Village has experienced greater variation in its rate of growth.

Table 2-5: Housing Units 1980-2017

	1980	1990	2000	2010	2017*	2000-2010 % Change	2010- *2017 % Change
Village of Middleville	596	702	1,050	1,449	1,265	38.0%	-12.7%
Thornapple Township	828	1,052	1,333	1,637	1,813	18.6%	10.8%

Source: Census 1970-2010

*Estimate from the 2013-2017 American Community Survey Estimates

The percentage of vacant houses in the Village of Middleville was relatively high in 2010, as listed in Table 2-6. Generally, when vacancy rates exceed 5%, there is some concern for neighborhood stability. If vacancy rates exceed 10%, the neighborhood may be experiencing blight. According to the 2010 Census, the majority of these vacancies were associated with homes for rent or sale. The Great Recession during the late 2000s may have significantly contributed to this value, as 2017 estimates place the Village's vacancy rate at 3.1%. Thornapple Township retained a low vacancy during this time. Overall, the Village and Township had lower vacancy rates than both the County and State in 2010, as depicted in Table 2-6.

In 2010, the Village of Middleville had considerably more renter-occupied units (32%) than Thornapple Township (1%). It is typical for cities or villages to contain more rental options than townships, as is indicated by the difference in renter-occupied units in Table 2-6. The Village of Middleville also had a greater percentage of renter-occupied housing units than Barry County (14%) and the State (22%), as depicted in Table 2-6.

Table 2-6: Owner-Occupied/Rental Housing Units 2010

	Total Housing Units	# Units Occupied	Owner-Occupied	Renter-Occupied	Vacant Units
Village of Middleville	1,449	1,268 (88%)	910 (72%)	385 (28%)	181 (12.5%)
Thornapple Township	1,637	1,567 (96%)	1,462 (93%)	78 (5%)	70 (4%)
Barry County	27,010	22,551 (83%)	18,891 (83%)	3,660 (16%)	4,459 (16%)
Michigan	4,532,233	3,872,508 (85%)	2,793,342 (72%)	1,079,166 (28%)	659,725 (15%)

Source: Census 2010

New housing unit starts in the Township have increased considerably in recent years, as indicated in Table 2-7. This is likely attributed to an economic recovery from the Great Recession. Overall, the Township has historically retained a steadier number of new housing units created each year, while the Village of Middleville has experienced more dramatic increases and declines in the number of housing units.

Table 2-7: New Housing Units 2006-2019

	Village	Twp.	Total
2006	11	22	33
2007	11	11	22
2008	2	7	9
2009	4	6	10
2010	1	4	5
2011	5	7	12
2012	10	6	16
2013	5	13	18
2014	14	15	29
2015	24	29	53
2016	27	26	53
2017	26	26	52
2018	20	32	52
2019	50	20	70

From 2000 to 2010, the percent increases in housing units in the Township and Village can be compared to their respective population changes. Both the Village and Township experienced considerable percent increases in population during this time. An increase in population results in an increased demand for housing. Accordingly, the Village and the Township both experienced substantial increases in number of housing units during this time as well, as indicated in Table 2-8.

Table 2-8: Population and Housing Units 2000-2010

	Village of Middleville	Thornapple Township	Total Village and Township
Total 2010 Population	3,319	4,565	7,884
2000-2010 Population Change	598	601	1,199
2000-2010 Percent Change	21.4%	15.5%	17.9%
Total Housing Units	1,449	1,637	3,086
2000-2010 Housing Unit Change	1,399	304	703
2000-2010 Percent Change	38.0%	22.8%	29.5%

Source: Census 2000, 2010

Population Projections

For the purposes of this Plan, statistical averaging techniques were utilized to project Thornapple Township's population growth to the year 2030. These approaches are adequate to give a general sense of growth trends but they have limitations especially in areas of rapid growth or decline that may run counter to statistical trends. Nevertheless, they help to give a sense of scale to land use requirements as well as the demand for various public services and capital improvements. The following summarizes the projection techniques.

The Growth Rate Method projects future population growth or decline based on the rate of growth in the Township in the past. Utilizing the growth rate method, the following assumes that growth in the future will occur at the same average rate as has occurred annually between 1980 and 2010. According to Census data, Thornapple Township grew 2.7% annually between 1980 and 2010.

Table 2-9: Growth Rate Method

	Average Annual Growth Rate 1980-2010	2010	2020	2030
Thornapple Township	2.7%	4,565	5,958	7,778

The Arithmetic Method is similar to the growth rate method in that population projections are based on growth that occurred in preceding decades. This method, however, bases population growth on the overall average increase in the number of persons per year, rather than on growth rates. The following projections are based on the average increase of 69 persons annually between 1980 and 2010 in Thornapple Township.

Table 2-10: Arithmetic Method

	Average Annual Increase (Number of Persons)	2010 Pop.	2020	2030
Thornapple Township	69	4,565	5,255	5,945

The Building Permit Method portrays the new housing trend based on building permit data. It was determined that the Township issued an average of 16 new residential building permits annually between 2010 and 2019. Assuming that building activity will continue at the same rate, this method utilizes Thornapple Township's average household size

of 2.89 persons (2010 U.S. Census data), to calculate the growth in population. In other words, this method projects an additional 46 persons per year. Using this figure, the following projects the Township's population using the building permit method.

Table 2-11: Building Permit Method

	Average No. of Permits/Year	Persons Per Household	2010 Pop.	2020	2030
Thornapple Township	16	2.89	4,565	5,025	5,485

The anticipated population levels for the Township using each of the population techniques are summarized below. By averaging the results of these methods, it is reasonable to predict that the population will approach approximately 5,413 persons by the year 2020 and approximately 6,403 by 2030.

Each of the projection techniques illustrated here assumes the Township will continue historic patterns of growth. It is important to keep in mind that growth in housing and population in the Township will be impacted by many factors. These include the types and quality of housing permitted or encouraged, the image of the Township as a desirable place to live, the public school system, the overall economic health of West Michigan and, of course, the availability of land area suitable for residential development. It is also important to review these trends every few years to monitor the growth that is taking place.

Table 2-12: Population Project Summary

	2010	2020	2030
Growth Rate	4,565	5,958	7,778
Arithmetic	4,565	5,255	5,945
Building Permits	4,565	5,025	5,485
Average	4,565	5,413	6,403

Economic Indicators

There are three major indicators of economic health in an area: (1) property valuations, (2) employment, and (3) household income. The following narrative provides data for each of these indicators. Barry County data is used except where localized data is available.

(1) Equalized Value Change

Using data from the Barry County Equalization Department, changes in State Equalized Value were tabulated for the years 1990, 1995, 2000, 2003, 2011, and 2018. These changes were defined by class code for agriculture, commercial, industrial, residential, and developmental. The latter is defined by the Township Assessor as “vacant land intended for new development”.

As can be seen in Table 2-13, real property valuation increased significantly for all classes during the 1990-2003 period. This pattern of property valuation increase has continued into 2018, with all classes increasing over 2011.

Table 2-13: Change in State Equalized Value by Real Property Class (in millions) 1990-2018

Class Code & Name	1990	1995	2000	2003	2011	2018
101 Agriculture	7,896	8,942	9,674	22,080	24,183	31,411
201 Commercial	3,084	4,395	7,654	13,763	19,554	21,196
301 Industrial	2,640	2,758	4,530	3,706	7,853	23,055
501 Residential	43,173	74,556	106,740	171,134	197,696	265,630
601 Developmental	500	638	516	2,091	1,501	-*
Total SEV	57,295	91,303	129,115	217,777	266,105	341,292

Source: 1990, 1995, 2000, 2003, 2011, 2018 Equalization Reports, Barry County
*Developmental SEV for 2018 not indicated in 2018 Barry County Equalization Report

The 2011-2018 changes in residential (31%), commercial (8%), and industrial (19%) indicates moderate to strong investment activity and market driven increases in land value. An allied indicator of investment is valuation of personal property. Exclusive to business, personal property is taxed just as real property. Table 2-14 provides equalized value of declared personal property for business in the Township, including the Village of Middleville.

Table 2-14: Change in State Equalized Value Business Personal Property (in millions) 1990-2018

	1990	1995	2000	2003	2011	2018
Personal Property Valuation	7,044	10,847	17,501	29,997	15,315	14,486

Source: 1990, 1995, 2000, 2003, 2011, 2018 Equalization Reports, Barry County

Business investment in personal property increased some \$22,953,000 between 1990 and 2003. Much of this investment was in equipment at two major manufacturers located in the Village, Bradford White (water heaters) and Metaldyne (auto parts). Personal property valuation declined after 2003 and has not recovered since. The decline in personal property in the mid-decade may be a reflection of the closure of Metaldyne.

Table 2-15: Major Employment by Industry 2000-2017

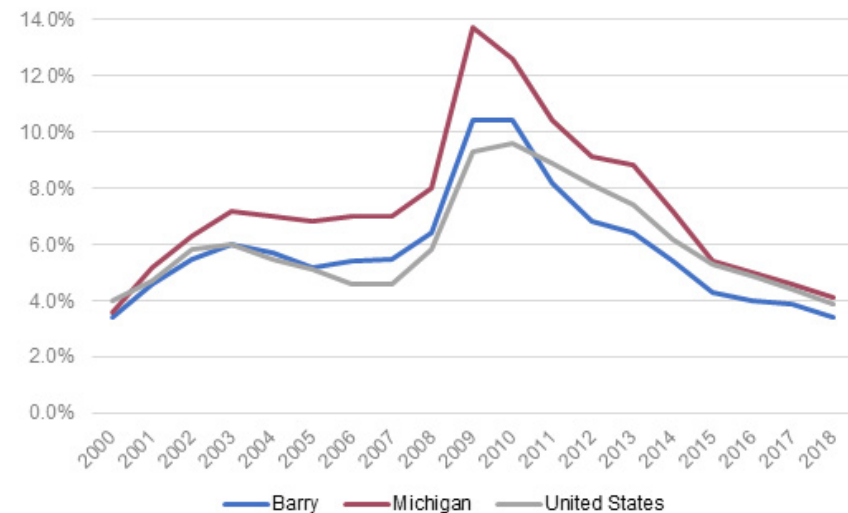
	Percent of Total Employment, 2000	Percent of Total Employment, 2010	Percent of Total Employment, 2017
Agriculture, Forestry, Mining, etc.	2.5%	2.5%	1.0%
Construction	7.9%	7.6%	7.6%
Manufacturing	29.6%	24.7%	24.6%
Wholesale and Retail	13.9%	13.2%	12.9%
Transportation and Warehousing	3.6%	2.9%	4.8%
Information	1.8%	1.4%	1.5%
Finance, Insurance, Real Estate	6.0%	6.2%	5.5%
Professional, Mgmt, Administrative	5.2%	7.4%	9.1%
Education, Health & Social Services	16.7%	19.7%	17.7%
Arts, Entertainment & Hospitality	5.7%	5.5%	5.0%
Other Services	4.3%	5.6%	6.6%
Public Administration	3.0%	3.3%	3.6%

Source: U.S. Census Bureau, DP-3 Profile of Selected Economic Characteristics: 2000 and U.S. Census Bureau, 2008-2010 American Community Survey 3-Year Estimates, 2013 – 2017 American Community Survey Estimates

For the year 2000, the Barry County work force totaled 33,475 persons. By 2010, the total Barry County workforce decreased to 30,390 persons and the American Community Survey indicated a continued decrease in the workforce to 27,877 people in 2017. Between 2000 and 2017, the County's workforce is estimated to have decreased by 16.7%. The U.S. Census categorizes employment in the workforce by industry, which is shown in Table 2-15.

(2) Employment

Figure 2-2 reflects the recent recession and illustrates that the jobless rate increased dramatically in the County and State overall in 2008 and 2009. Unemployment began to decrease, however, in the later part of 2009 and the decline continued in 2010 and 2011. The unemployment rate in the State was almost 4 points higher in Michigan than in the County in 2009. Similarly, the County's jobless rate has remained lower than the State's since 2000. The United States, Michigan, and Barry County have all seen a continuous decrease in the unemployment rate since the Great Recession.

Figure 2-2: Comparative Unemployment Rates 2000-2018

Barry County Employers

While County level economic data is regularly monitored by Census and research firms, localized data is more difficult to discern. However, by reviewing building permit data and in-field contacts with new firms investing in the community, a capsule of data indicative of recent trends was compiled by sector.

According to the Barry County Chamber of Commerce and Economic Development Alliance, the following are the largest employers in Barry County as of 2019.

Table 2-16: Major Employers in Barry County 2019

Company	Location
Bradford White Corp	Middleville
Spectrum Health Pennock	Hastings
Hastings Mutual Insurance Co	Hastings
Flexfab LLC	Hastings
Viking Corporation	Hastings
Thornapple-Kellogg Schools	Middleville
Hastings Area Schools	Hastings
Hastings Manufacturing Co LLC	Hastings
Thornapple Manor	Hastings
Barry County Government	Hastings

Commuting Patterns

The 2000 Census identified resident-county to workplace-county commuting flow for Barry County residents. Of 26,921 commuters identified, 10,973 or 40.8% lived and worked within Barry County.

The American Community Survey provided commuting characteristics during 2010 and 2017. In 2010, 40.0% of residents were estimated to work in Barry County. This value slightly increased to 41.4% according to 2017 estimates. Despite the slight increase in residents working in Barry County, the mean travel time increased between 2010 and 2017 from 27.1 minutes to 28.4 minutes, respectively. It should be noted that up until the 2000 Census, commuting flows were more specifically studied, indicating inbound and outbound commuting to neighboring communities and counties.

(3) Household Income

Table 2-17 presents median household income from 2000, 2010, and 2017. Between 2000 and 2010, Middleville and Thornapple Township experienced greater increases in median household income than the county. In 2010, Thornapple Township had the highest median household income compared to in the County and Village. Between 2010 and 2017, changes in household incomes were less than between 2000 and 2010. Middleville was the only municipality which had a slight decrease in median household income. Thornapple Township experienced minimal growth.

Table 2-17: Median Household Income 2000-2017

	2000	2010	2017*	% Change (2000- 2010)	% Change (2010- 2017)
Village of Middleville	\$41,947	\$51,019	\$50,714	21.6%	-0.6%
Thornapple Township	\$53,333	\$63,220	\$65,704	18.5%	3.9%
Barry County	\$46,820	\$51,395	\$57,312	11.9%	9.4%

Source: U.S. Census 2000, 2010
*Estimate from the 2013-2017 American Community Survey Estimates

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CHAPTER 3 PHYSICAL FEATURES

NATURAL FEATURES

Thornapple Township contains a variety of natural features which will influence location of future man-made development. The predominant resource is the Thornapple River and its local tributaries. In addition, river floodplain and adjacent wetlands afford large areas for wildlife habitat and a large array of flora and fauna.

100-Year Floodplain

The 100-year floodplain has been delineated for all of the Thornapple River throughout the Township. Map 3-1 depicts the 100-year floodplain within the Township, including the Thornapple River, Duncan Creek and Duncan Lake. For each development site, drainage needs to be closely evaluated to avoid future localized flooding. Construction of buildings within a 100-year floodplain is generally prohibited.

Floodplain regulations within the Township zoning ordinance need to provide for (1) minimum building and structure setbacks of 100 feet from the edge of the floodplain, (2) maintenance of a native vegetation strip within the required setback area, and (3) limitations on clearing of native trees within the setback area.

Whenever shoreline involves steep banks (slopes in excess of 12%) and elevation of 20 or more feet above the water elevation, development will be evaluated on a case-by-case basis and may be required to preserve the river's natural environment and views by extending building or structure setbacks beyond the 100-foot setback. In any event, clearing of existing trees and disturbance of vegetation should be limited within the required setbacks.

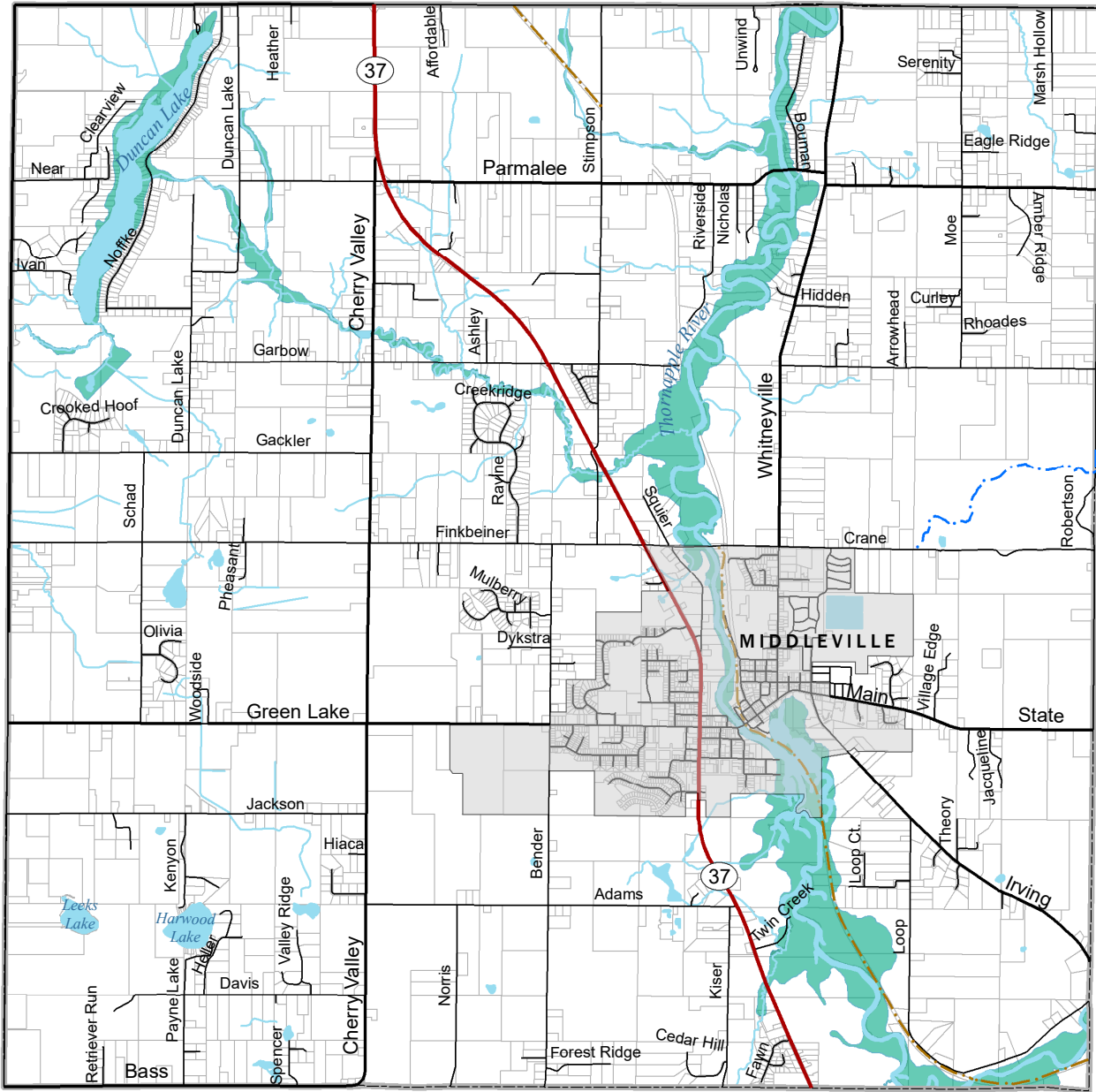
Wetlands

Wetland areas are low-lying lands adjacent to surface waters subject to seasonal inundation. So-called "upland" wetlands are areas also subject to seasonal inundating by water. Often these upland wetlands are spring fed with either limited or no outlet for surface water. Impermeable soils, such as clay, and local terrain may also create parched water conditions in which wetlands emerge.

Because of their sensitive characteristics and limited land areas, wetlands should be aggressively protected by Township regulations. The State of Michigan regulates wetland areas of five contiguous acres or more. Thornapple Township contains numerous regulated wetland areas as depicted in Map 3-2.

Wetland area management and protection measures can be included in the zoning ordinance but are not addressed currently. Such management and protection measures could include:

- Maintaining a building and structure setback from the edge of a wetland.
- Maintaining a natural vegetation strip from the edge of a wetland.
- Limit amount of tree clearing within a reasonable distance of the edge of wetland.
- Prohibit direct discharge of storm water into a wetland. Require "bio-detention" of storm water and discharge via surface swale.
- Require planting of native grasses and low-lying scrubs on exposed land within a reasonable distance to the edge of a wetland.



MAP 3-1

100-Year Floodplain

Legend

- Streams
- Lakes
- 100-Year Floodplain
- County Primary Roads
- Local & Private Roads
- North Country Trail
- Paul Henry Thornapple Trail



Data Sources: MCGI, Barry County GIS, USDA NRCS

MAP 3-2

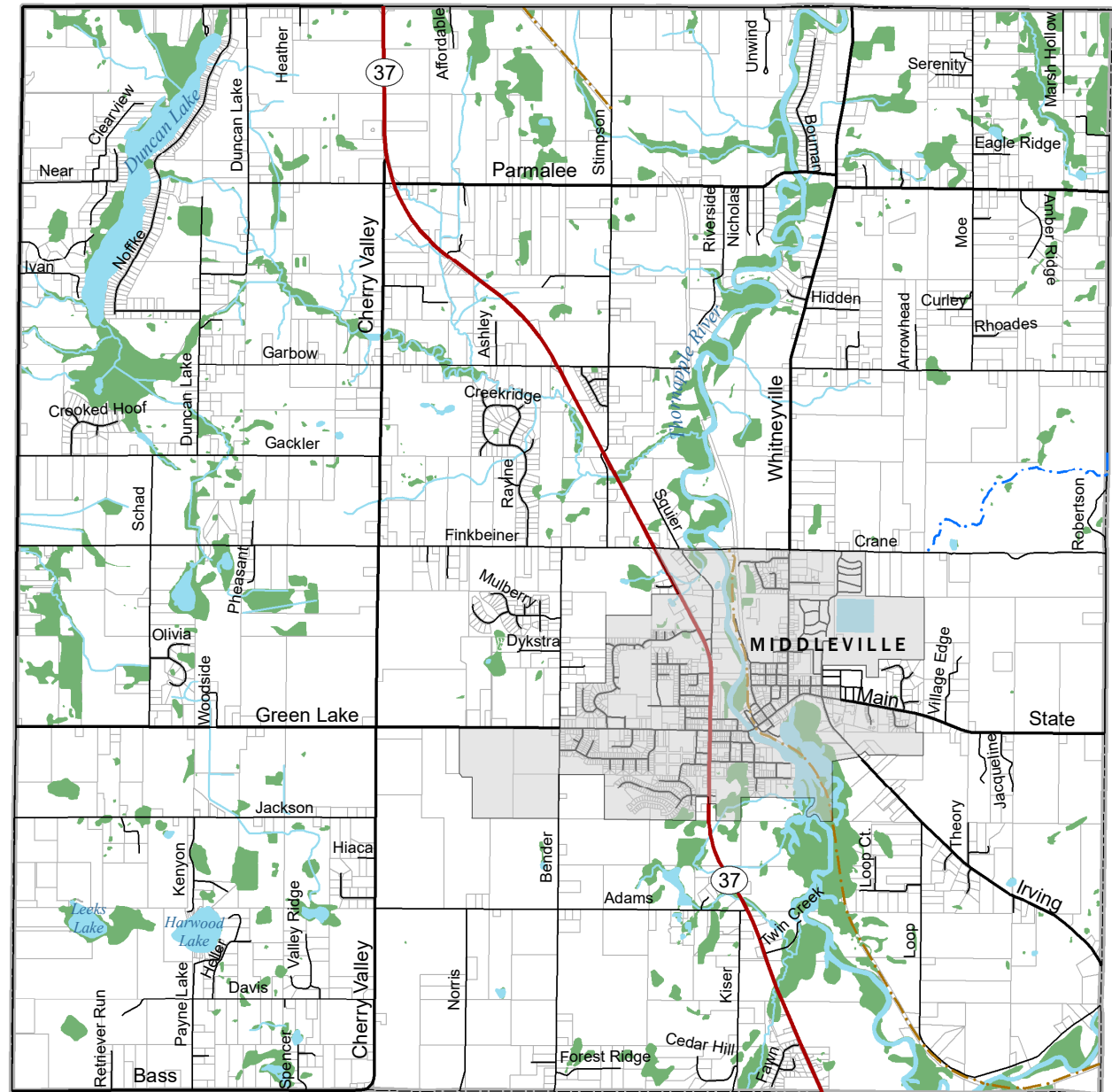
Wetland Inventory

Legend

-  Streams
-  Lakes
-  Wetlands
-  County Primary Roads
-  Local & Private Roads
-  North Country Trail
-  Paul Henry Thornapple Trail



Data Sources: MCGI, Barry County GIS, USDA NRCS



Landforms (Contours)

Thornapple Township has significant relief which enhances visual character. The importance of hills and ridge lines is the views they afford.

Effective view protection involves several elements. These are (1) preservation of mature trees, (2) placement of buildings below the top of ridgeline, (3) avoidance of large buildings or building groupings and (4) use of architecture style and building colors which blend with the surrounding natural environment and buildings.

Soils

Soils play an important role in determining where certain land uses should be located in a community. By respecting the limitations of the soil and locating land uses in areas with appropriate soils, natural resources can be preserved, adverse impacts on the environment minimized and man-made land use can exist in harmony with the natural environment.

The soil information presented in this Plan is taken from the soil survey for Barry County prepared by the United States Soil Conservation Service (SCS). The soil survey is an extremely detailed document providing in-depth information on the limitations of soils in the Township. The soils survey should be consulted whenever a major development is proposed. In preparing this plan, the following three basic soil parameters were mapped using the SCS soils data:

1. Septic System Suitability
2. Agricultural Suitability
3. Steeply Sloped Soils

The sections which follow will describe the significance and predominant location of these soil parameters in the Township.

(1) Soil Suitability - Septic Systems

Except for homes served by the Duncan Lake Sewer System operated by Thornapple Township, all homes and businesses in the Township use on-site septic systems to treat sanitary wastewater. Map 3-3 indicates soils in the Township classified by the U.S. Soil Conservation Service as having severe limitations for septic systems due to slowly permeable soils, wetness, or ponding. Immediately adjacent to the Thornapple River is generally not suited for septic systems. The Barry-Eaton District Health Department is responsible for reviewing and approving on-site sewage and well systems.

(2) Soils - Farmland Suitability

The USDA Natural Resources Conservation Service soils survey lists 19 different soil types in Barry County which are designated as being prime farmland or capable of being prime farmland if properly drained. Map 3-4 depicts the prime farmland soils located in Thornapple Township.

(3) Soils - Land with Steep Slopes

Steeply sloped areas are environmentally sensitive and any development on them needs to be closely monitored to assure that environmental degradation does not occur.

MAP 3-3

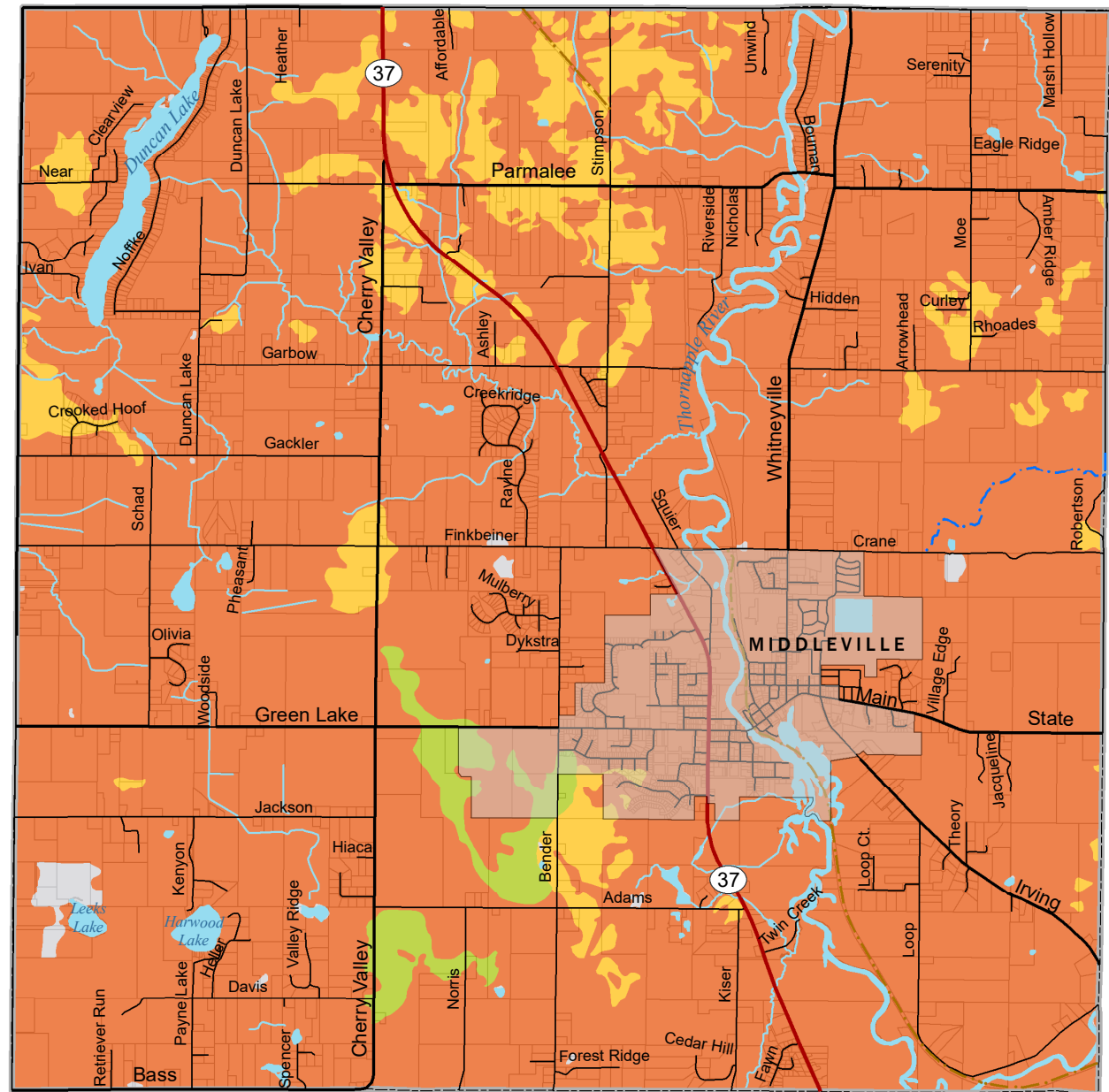
Septic Tank Soil Suitability

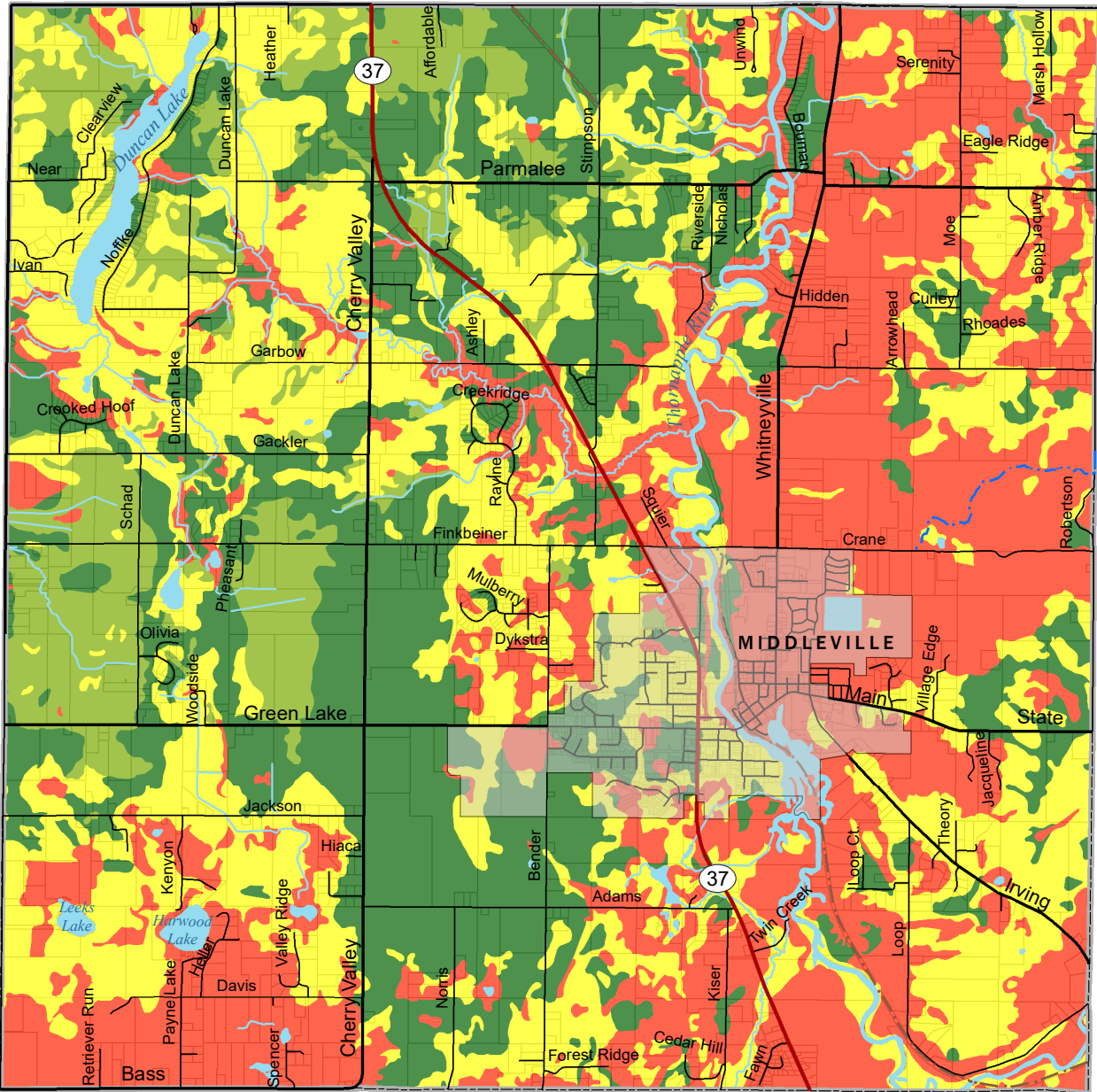
Legend

- Somewhat limited
- Very limited
(somewhat limited for lagoons)
- Very limited
- Not rated
- County Primary Roads
- Local & Private Roads
- North Country Trail
- Paul Henry Thornapple Trail



Data Sources: MCGI, Barry County GIS, USDA NRCS





MAP 3-4

Farmland Suitability

Legend

- All areas are prime farmland
- Prime farmland if drained
- Farmland of local importance
- Farmland of unique importance
- Not prime farmland
- County Primary Roads
- Local & Private Roads
- North Country Trail
- Paul Henry Thornapple Trail



Data Sources: MCGI, Barry County GIS, USDA NRCS

MAP 3-5

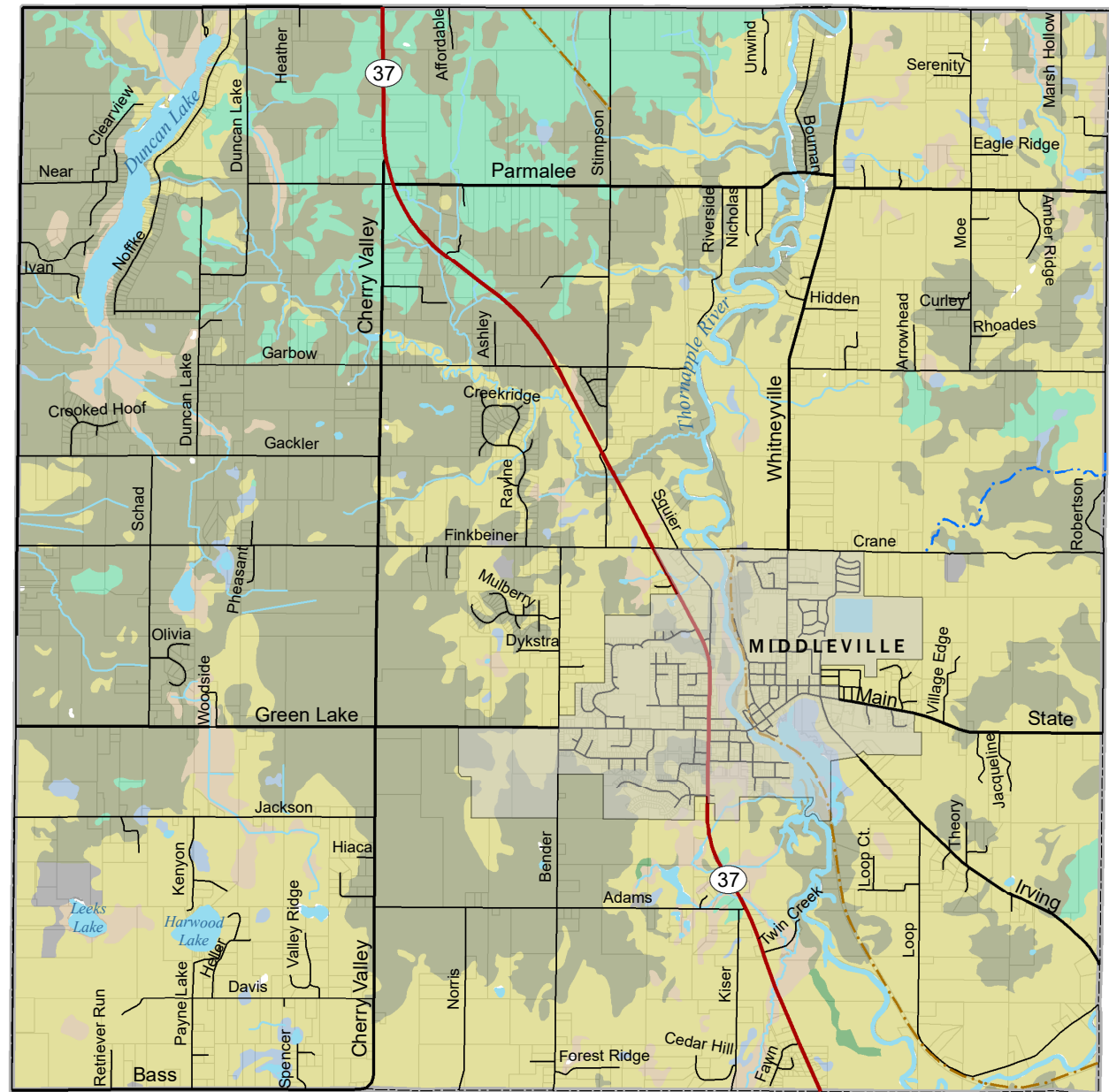
AASHTO Soil Classification

Legend

- Stone fragments, gravel, and sand
- Silty or clayey gravel and sand
- Fine sand
- Silty soil
- Clayey soil
- Organic soil (peat or muck)
- Histosols and Aquents, ponded
- Pits



Data Sources: MCGI, Barry County GIS, USDA NRCS



Mineral Resources

Landforms in the Thornapple Township area contain extensive deposits of sand and gravel minerals. Many of these glacial deposits represent high quality resources. Map 3-5 presents generalized spatial data regarding soil classifications at a depth of five (5) feet.

Whenever a mineral extraction use is proposed or an existing mine proposed to be increased in area, all lands nearby are immediately impacted. Such use, due to its high nuisance value, creates negative conditions and as such, siting issues become significant matters to be addressed during the review process.

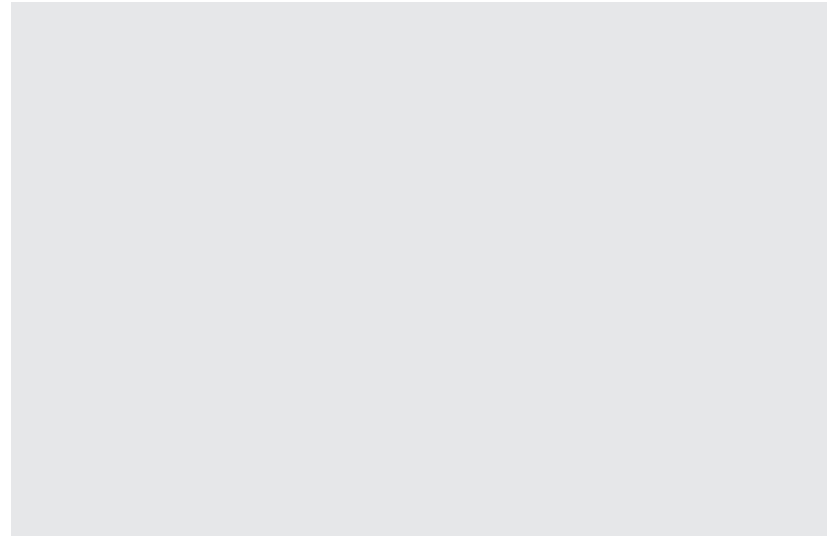
The Thornapple River

The Thornapple River is a high-quality water course. The river is a good fishery, an excellent scenic resource and it affords opportunity for a variety of recreational uses.

Development of home sites on the riverbanks should be discouraged. Tree clearing should also be discouraged to prevent loss of scenic beauty and to control soil erosion. Standards should be developed to (1) limit building in the 100-year floodplain, (2) limit tree clearing within 100 feet of the high water mark (3) limit disturbance of soils within 50 feet of the water's edge.

Areas adjoining the river within the 100-year floodplain possessing regulated wetlands and wildlife habitats, should be considered for public ownership or be subject to conservation easements or restrictive covenants to ensure preservation.

All forms of development will be required to maintain a minimum 100-foot building or structure setback from the established shoreline of the Thornapple River.



Reclaimed mining area



Thornapple River, near Parmelee bridge

Sustainable Development

Man-made development can cause adverse impacts to natural areas if not well planned. Poorly-planned or careless land developments can cause degradation to wildlife habitats, flora and fauna, surface and ground water quality, bio-diversity and wetlands. The most important objective of planning and growth management needs to be a sustainable relationship between the man-made and natural environment. To achieve this balance or harmony between man and nature, development standards must be precise, plans carefully reviewed and development practices monitored. Whenever a sensitive natural environment exists in proximity to a proposed land development, special attention must be given to design of the development, construction practices and of measures needed to assure short-term and long-term protection and preservation of the natural environment.

Unique Habitats

Major areas to address with regard to animal habitat and unique flora and fauna potential are the shorelines, adjacent wetlands and uplands near the Thornapple River. Some locations contain extensive wetland habitats. The Township should encourage inventories for flora/fauna species as well as evidence of important animal habitats. When discovered, such areas need to be protected from development encroachment by site-specific measures.

CHAPTER 4

COMMUNITY FACILITIES & INFRASTRUCTURE



COMMUNITY FACILITIES

The Middleville community is home to numerous public community facilities; however, for the purposes of this Chapter, only Township facilities are discussed in detail. Addressed in this Chapter are (1) local government buildings and grounds, (2) vacant lands owned by local government, (3) land owned by County or State governments, (4) cemetery properties, (5) public library, (6) wastewater treatment, (7) water supply, and (8) public streets and pedestrian facilities.

Thornapple Township Buildings and Land

The Township owns and operates two public buildings, two cemeteries and a tract of land in the Village along the Thornapple River. The Township also owns and operates the Duncan Lake Wastewater Treatment Lagoon.

(1) Township Hall Located at 200 E. Main Street, this building was purchased by the Township in 1991 and completely renovated for office use. The building was previously a grocery store. The Township houses the Supervisor, Clerk, Treasurer, Assessor, and Planning and Zoning Departments.

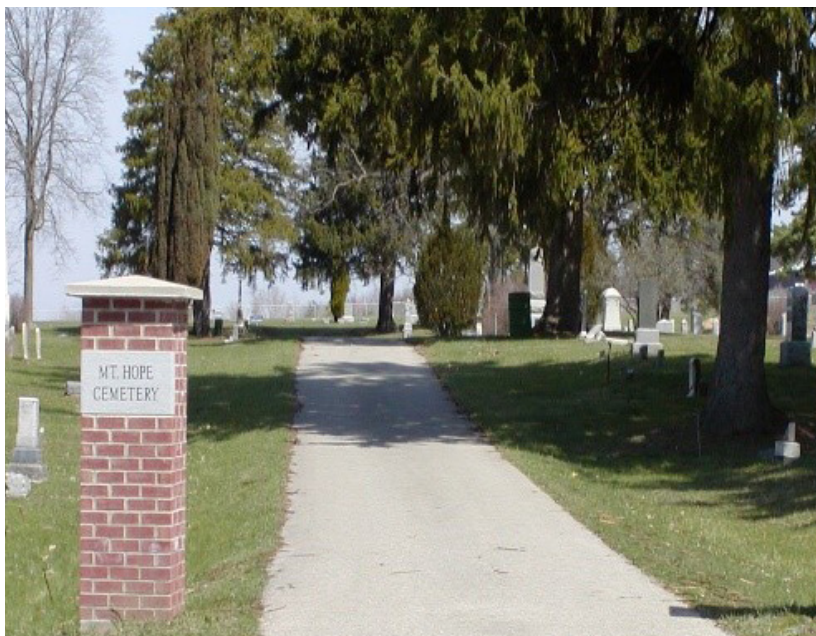
(2) Thornapple Township's Emergency Services Building

This modern structure was built in 2004 and houses the fire and ambulance personnel and equipment. Offices, conference room and training rooms are located on the upper level and are accessed from the High Street parking facility. The lower level contains the equipment garage [5 double bays], as well as kitchen, showers, de-contamination room, laundry, exercise room, sleeping quarters, and mechanical room. This facility services all of the Village, Thornapple Township, and the west one-third of Irving Township.

The Township also owns one acre of land at the east end of Crane Road in Section 24. This parcel is used by the Fire service for so-called "flash-over" training for firefighters. Two large metal structures on site offer intense, contained fires into which fire fighters enter for their first hand experience about the dangerous fire "flash-over". This training gives fire fighters experience in identifying and dealing with flash-overs. Many other fire departments have used this facility.



Emergency Services Building built in 2004



Mt. Hope Cemetery

(3) Township Cemeteries Thornapple Township has two cemeteries named Mt. Hope and Parmelee. The Parmelee Cemetery is located next to 9266 Parmelee Road and is closed to lot sales. The Mt. Hope Cemetery, located along E. Main Street in Section 23, contains approximately 35 acres. During 2018 and 2019, an additional section was developed and named after former trustee Walter R. Eavey. The Walter R. Eavey section will be open for plot sales after the remaining plots are purchased in the New Mt. Hope Section. In addition, water lines were replaced in 2019 in the oldest sections of Mt. Hope Cemetery.



Trail and wetlands

(4) Vacant Riverfront Land The land purchased for the new Thornapple Township Emergency Services building included about 9 acres that were not used. This vacant land has some 1,300 feet of shoreline along the Thornapple River. Much of the vacant land is in the 100-year floodplain or wetland. In 2017, the village extended an additional 1 mile of the Paul Henry Thornapple Trail through this parcel. This land is wooded and extremely valuable for public walking trails, river access and passive enjoyment. The future of this vacant land requires a detailed plan and then implementation to assure long-term public use and enjoyment.



The Scenic River and Township-Owned Shoreline

(5) Barry County Land The only County-owned land in Thornapple Township is that owned and operated by the Barry County Road Commission [BCRC]. Specifically, the BCRC operates a sand and gravel borrow pit on 40 acres of land on the south side of Finkbeiner Road in the NE $\frac{1}{4}$ of Section 21. Given the large land area, this land use may be active through the planning period. The Township should encourage the BCRC to engage in progressive site reclamation so the property can be put to a viable end use.



The Interior of the Township's Library

(6) Public Library The public library serving Thornapple Township is located within the High School building, owned and operated by the Thornapple-Kellogg Public School District.

WASTEWATER COLLECTION AND TREATMENT IN THORNAPPLE TOWNSHIP

With the exception of the homes currently served by the Duncan Lake public sanitary sewer system, all homes within the Township have individual on-site septic tanks and drain fields to provide for disposal of wastewater. The only other public sanitary sewer system is that provided within the Village of Middleville. Currently, the Village system serves only properties located within the village limits.

Expected population growth suggests Thornapple Township must address ways and means to assure wastewater from homes is properly treated before entering groundwater. As the number of homes served by on-site septic tank/drain field systems increase, the question of wastewater treatment and protection of groundwater quality becomes ever more important. These privately owned, individual wastewater disposal systems require regular maintenance to function properly. Even when functioning properly, septic systems release contaminants to the soils and in turn the groundwater.

The Barry Eaton District Health Department regulates installation and replacement of septic tanks and drain fields. Each such installation requires on-site soils evaluation by a registered sanitarian. This process addresses physical conditions of soil types, water table, spacing and so on to avoid placing these systems in unsuitable locations.

As related to long-term management of rural area residential land use, two basic approaches can be viewed as best suited to groundwater protection:

(1) Large Lot Zoning Standards

The use of large lot zoning standards is encouraged for areas that will not be served by public sanitary sewer for the foreseeable future. This approach results in lower density of septic systems, greater spacing between systems and better separation from water wells.

(2) Community Wastewater Systems for Conventional Forms of Residential Development and for Open Space Residential Development

In situations where individual on-site septic systems are not viable and connections cannot be made to the Village of Middleville system within the Joint Planning Area, community wastewater systems may be considered. Provisions for “cluster” type residential development are also currently included within the Township’s zoning ordinance in the form of “Open Space Residential Development (OSRD).”

Certain “density bonuses” are built into the current OSRD regulations for OSRD developments which are connected to public water and sewer. Approval of these systems should be in compliance with the requirements of the State of Michigan and Barry County. General Township policies for these types of systems are outlined on the following page.

The Township and Common Wastewater Collection and Treat Systems...

A POLICY STATEMENT

1. Thornapple Township owns and operates the Duncan Lake Public Sanitary Sewer System. The township has engineering, maintenance and administrative expertise to operate common wastewater systems.
2. Subject to plan approval and administrative details, the Township will assume ownership and operation of each common wastewater system and will bill the users cost of service, including capital replacement. Deed Restrictions will be placed on each common wastewater system notifying all owners the system may be connected to a public sewer system in the future and that the development may become a part of the Village at that time or be subject to a shared service agreement with the Village of Middleville.
3. All collection lines and appurtenances of a common waste-water treatment system will be designed and built to municipal standards adopted by the Township.
4. When public sewer service is available to property on which the common system is located, it may be connected to the public sewer system and on-site treatment will be eliminated.

WASTEWATER TREATMENT AND COLLECTION FOR THE JOINT PLANNING AREA

As of 2018, the Village of Middleville's sanitary sewer system is comprised of a mechanical wastewater treatment plant (WWTP) with capacity to treat 500,000 gallons per day (gpd) of domestic strength wastewater. The current average daily flow to the plant is approximately 395,000 gpd, and increasing.

There are five (5) wastewater lift stations (LS) in the village known as the West Side LS, East Side LS, Grand Rapids LS, Misty Ridge LS, and the State St. LS. The West Side, East Side and Grand Rapids lift stations pump wastewater directly to the WWTP. The Misty Ridge LS and State St. LS pump into the West Side LS. Each lift station is connected to the WWTP or downstream gravity sewer with a dedicated force main. There is a limited amount of additional capacity at the WWTP and lift stations. Gravity collection sewers are located throughout the village, collecting and carrying wastewater from the homes, schools and businesses to the lift stations. The capacity of the gravity sewer lines is mainly dependent on the size and slope or grade of the pipe. There is varying additional capacity in the collection sewers depending on the connection point. Map 4-1 depicts the existing and future sanitary sewer system.

Wastewater Collection

There is limited additional capacity in the Middleville sanitary sewer system. The Joint Planning Area Committee previously identified possible areas of utility expansion into the Joint Planning Area that could be made by simply extending sewer utilities without additional sanitary sewer lift stations. These areas are very limited because extensions must follow

existing grade to function properly. Future expansions with lift stations, force mains, and additional capacity at the Wastewater Treatment Plant could be constructed to provide sanitary sewer service anywhere in the Joint Planning Area. Large-scale expansions such as these are not anticipated during the life of this Plan.

Sanitary Sewer Extensions

The following areas have been identified as possible sanitary sewer extensions within the Joint Planning Area boundary. In other words, these areas envision the extension of pipe without the need for additional capacity, lift stations, or grinder pumps. It should be noted that sanitary sewer extension areas indicated on the existing sanitary sewer extension system are for illustrative purposes only. Exact extension boundaries are dependent upon existing topography, construction grading, and development land use. It should be noted generally that land use and demand will also influence whether or not extensions can be made without significant additional investment.

Sanitary Sewer Extension Area A

Location: This sanitary sewer extension area is located adjacent to M-37 on the southern boundary of the Village of Middletown.

Details: This extension area would extend existing 8" sanitary sewer main up-grade off of M-37. The flows from this extension would end at the Misty Ridge Lift Station.

Limitation: The elevation slightly increases as you continue south on M-37, making extensions along the frontage of M-37 possible without adding an additional lift station. Grades remain relatively flat and extensions will likely require evaluation at the time of application.

Sanitary Sewer Extension Area B

Location: This sanitary sewer extension area is located adjacent to State Road on the eastern boundary of the Village of Middletown.

Details: This extension area would extend existing 8" sanitary sewer main up-grade off of State Road. The flows from this extension would end at the East Side Lift Station.

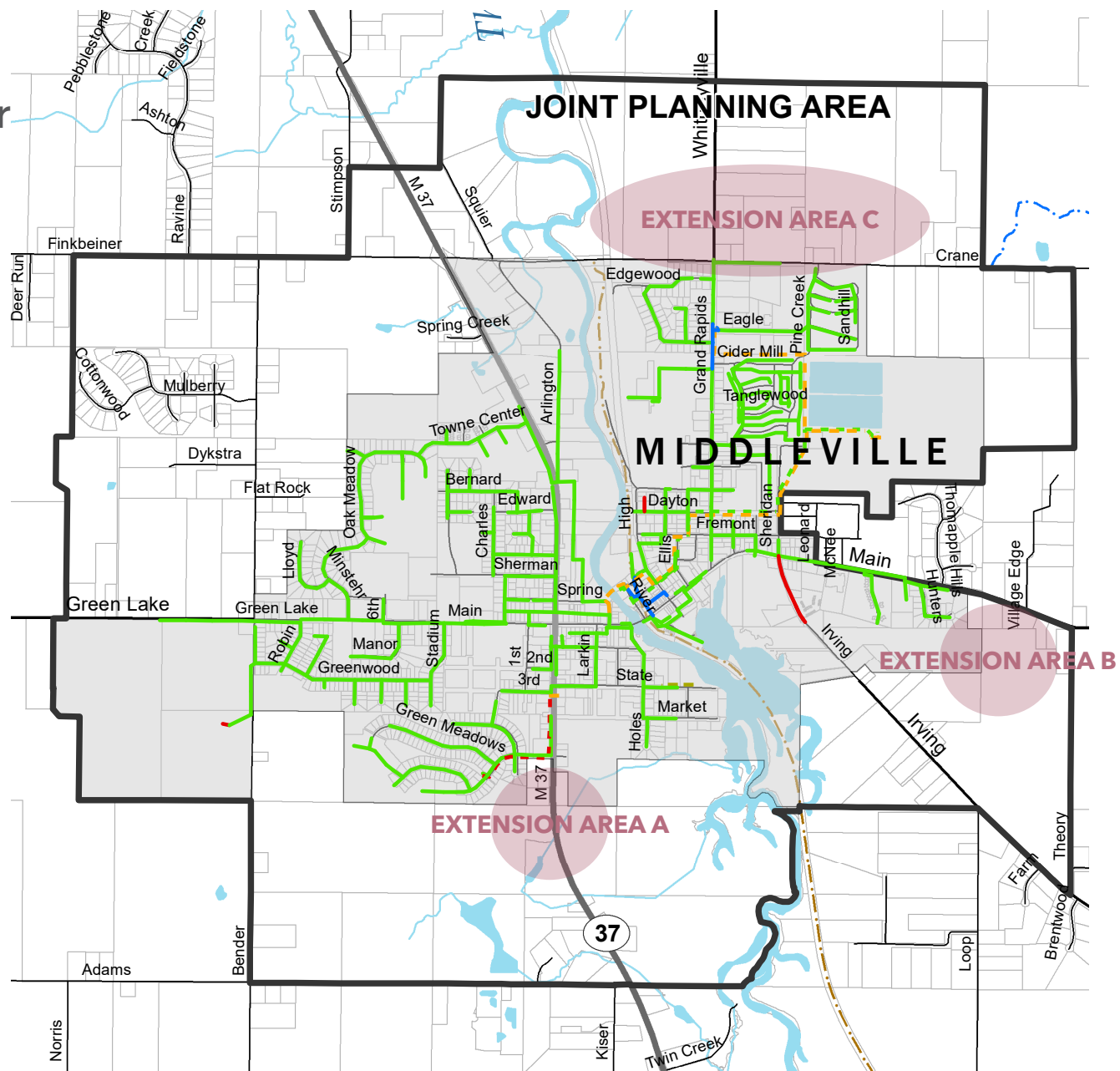
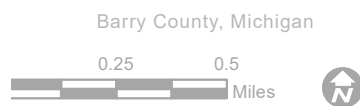
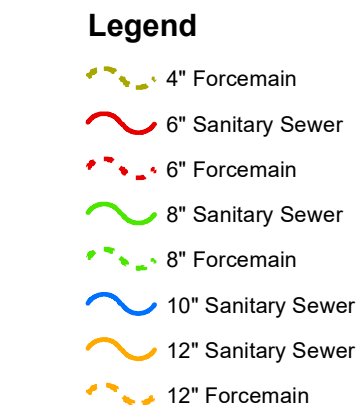
Limitation: The elevation increases east on State Road, making extensions along the frontage of State Road possible without adding an additional lift station. Grades level off just east of Village Edge Drive, limiting extensions to this point. The elevation also increases to the south, making sanitary sewer extensions possible on the properties immediately south of State Road.

Sanitary Sewer Extension Area C

Location: This sanitary sewer extension area is located to the north of Crane Road on the northern boundary of the Village of Middletown.

Details: This extension area would extend existing 8" sanitary sewer main up-grade off of Crane Road. The flows from this extension would end at the Grand Rapids Street Lift Station.

Limitations: The elevation increases as you continue east on Crane Road, making extensions along the frontage of Crane Road possible without adding an additional lift station. Elevations to the north and west remain relatively flat and decrease slightly to the west. Extensions to the north and west will need to be further evaluated on a project by project basis.



WATER SUPPLY SERVICE PLAN

The purposes of this chapter are to provide an overview of water supply in the Township, address methods to protect groundwater quality, and set forth a water supply plan for the Joint Planning Area.

All areas of the Township not serviced by the Village's municipal water system rely on groundwater for drinking, domestic consumption and, commercial use.

Given this fact, groundwater is vital to the health and well-being of all residents in the Township. It is also vital to Village residents since the municipal water system relies on municipal groundwater wells for its supply.

This element of the Master Plan addresses matters essential to a safe, long-term supply of groundwater.

What is Groundwater?

Groundwater is water that exists beneath the surface of the earth. A common misconception about groundwater is that it is a series of underground streams and lakes. Actually, water saturating a sponge more accurately describes groundwater. Just as water fills the void spaces within a sponge, in the ground, water fills the pore spaces between the soil particles.

When precipitation occurs, water may infiltrate into the ground and percolate down through the soil. In the soil's upper layers, water and air share the space between soil particles. This area is called the unsaturated zone. The water here may be utilized by plant roots or pulled down through the soil by gravity.

Deeper in the ground, water completely fills the space between soil particles, saturating the soil. It is here in the saturated zone that groundwater is found. Unlike the unsaturated zone, the saturated zone can provide water to supply wells.

The water table, or top of the saturated zone, fluctuates with water events. In times of heavy rain or snowmelt, the water table rises due to increased percolation and soil saturation. In times of drought, the water table may fall as a result of decreased water infiltration with continued water consumption.

Why is Groundwater Important?

Residents of Thornapple Township, those who do not live within the Village, obtain their water from private groundwater wells. Complete dependency on groundwater for domestic use requires, in the long run, that groundwater supplies remain safe and free of contaminants harmful to humans.

In addition to residential use of groundwater, the Township includes large areas of cropland, much of which is irrigated using groundwater as the water source. Crop irrigation involves use of large diameter water wells capable of producing several hundred gallons of water per minute to supply spray irrigators. Cropland irrigation involves significant rates of groundwater withdrawal during periods without rainfall.

While groundwater supplies appear to be generally abundant within the Township, groundwater quality can be degraded by man-made surface development and active uses of land.

Groundwater can become contaminated in numerous ways.

For example, application of fertilizers on cropland and lawns, private septic tank/drain field systems, improperly closed water wells and uncontrolled storm water run-off can each contribute to diminished groundwater quality.

In general, the closer the aquifer is to the surface, the more vulnerable it is to contamination from the land surface. However, the characteristics of the soil and rock covering the aquifer play an important role in controlling the speed and degradation of contaminants as they infiltrate down to groundwater.

Long Term Protection of Our Groundwater Supply: A Program for Thornapple Township

Vitality of ecosystems, human health and the area's economic base all depend on a safe groundwater supply. For the benefit of current residents and those who will follow, the Township must implement pro-active measures designed for long term protection of existing groundwater aquifers. These measures will require participation of the Village of Middleville, Barry-Eaton District Health Department, farm operators, Thornapple River Watershed Council, homeowners and many others.

What can Agriculture do?

While local control over agricultural practices are preempted by the Right to Farm Act and the Generally Accepted Agricultural Management Practices (GAAMPs), the Township believes that agricultural land owners need to act as stewards of the land. Through practices such as crop rotation, no-till farming, soil testing, the use of filter strips, and programs such as pesticide container recycling and certification for pesticide applicators, negative impacts on our groundwater resources can be reduced.

What Can Residents Do?

There are several active measures that residents and homeowners can undertake to protect groundwater quality. These include:

- 1) Use of Fertilizers and Pesticide. Many people assume that if a little fertilizer or pesticide gives good results, more must be better. Overuse of these chemicals will lead to groundwater contamination. Residents can reduce the use of fertilizers and pesticides by strictly following pesticide and fertilizer directions, employing alternative methods of destroying pests, purchasing natural fertilizers, and controlling weeds with spot treatment.
- 2) Septic Systems. Homes in Thornapple Township rely almost exclusively on wastewater disposal via septic tanks and drain fields, except those served by the Duncan Lake sanitary sewer collection and treatment system operated by the Township. Septic tank/drain field treatment systems can be a safe and efficient method of treating human waste/wastewater if they are properly located, designed, installed and, importantly, regularly maintained.
- 3) Household Hazardous Waste [HHW]. Homes contain many types of hazardous substances. Batteries, motor oil, cleaners, solvents, paint and garden chemicals are but a few substances found in the home that can contaminate groundwater. Residents can reduce the impact of household hazardous waste by recycling or dropping off waste at recycling or hazardous materials receiving stations.

What Can Business and Industry Do?

Environmental clean-up laws and liabilities are requiring businesses and industries to examine their current practices to prevent future contamination. Many management practices that help insure groundwater pollution prevention are inexpensive and easy to implement.

(1) Blocking Floor Drains. Even if they are not used for the un-permitted discharge of process wastewater containing chemicals, employees may be tempted to pour wastewater or chemicals down floor drains. This untreated discharge may infiltrate into the groundwater. Exceptions include if the drain is connected to a sanitary sewer, the drain is connected to a holding tank, or a state groundwater discharge permit has been issued.

(2) Waste Reduction and Recycling. Items such as waste oils, lubricants, battery acids, and used antifreeze if improperly disposed of may leach into groundwater supplies. Even though some businesses have relatively small amounts of these substances, they are still hazardous materials and must be disposed of correctly.

Waste reduction at the workplace requires a commitment from owners, managers, and employees. Assessing the hazardous waste stream, adopting procedures to reduce waste and chemical usage, using non-toxic materials, and modifying processes are a few examples. Also, recycling, rather than disposal, is becoming a more cost effective alternative for businesses to utilize.

Secondary containment spills and leaks of hazardous materials from a drum or tank can contaminate the groundwater. A number of secondary containment designs are available for business and industry to ensure potential pathways for contaminants are reduced or eliminated.

Township and Village Governments: Efforts to Protect Groundwater

The Township established the Wellhead Protection Overlay Zoning District Standards in 2010, but did not show the location of the District on the Zoning Map. The Township has representation on the Village of Middleville's Wellhead Protection Group whose mission is to protect the wellhead protection zones from contamination.

The Village currently has "wellhead protection zoning" in place surrounding each municipal water well. The Township should continue to work with the Joint Planning Area and the Village of Middleville to be sure that land uses in the Joint Planning Area are compatible with the wellhead protection area.

The Township should review its zoning requirements as well as address the following:

1. Require containment for all above ground storage tanks for gas, oil, diesel or ethanol fuels, including fueling area
2. Inspect all garages and commercial buildings for floor drains and ensure they are plugged
3. Engage in a public education program via newsletter, newspapers and public school presentations on both recycling and HHW collection program benefits,
4. Implement "best management practices" for storm water systems
5. Update Zoning Map with Wellhead Protection Overlay
6. Review Wellhead Protection Zoning District regulations

JOINT PLANNING AREA WATER SUPPLY

As of 2018, the Village's water distribution system is comprised of four (4) production wells, three (3) storage tanks, fire hydrants, pressure reducing valves, isolation valves, 20 miles of water main ranging in size from 4" to 12" diameter, and water services to each customer served. The system is comprised of three distinct pressure districts; an east and west high pressure district on either side of the regular pressure district that serves the areas along the river. The most recent water system reliability study indicated adequate supply capacity, and good pressure and fire flow throughout the system at its current limits. A map of the existing water distribution system is provided as Map 4-2.

Water Distribution

There is limited additional capacity in the water distribution system. The Joint Planning Area working group previously identified possible areas of utility expansion that could be made by simply extending water utilities without additional water storage or wells. These areas are very limited because extensions must follow existing grade. Future expansions of production wells and storage tanks could be constructed to provide public water anywhere within the Joint Planning Area. Large-scale expansions such as these are not anticipated during the life of this Plan.

Water System Extensions

The following areas have been identified as potential water extensions within the Joint Planning Area boundary. In other words, these areas envision the extension of pipe instead of additional capacity, pumps, or water towers. It should be noted that water extension areas indicated on the Existing Water Distribution System map are for illustrative purposes only. Exact extension boundaries are dependent upon existing topography, construction grading, and development land use. It should also be noted generally that land use and demand will also influence whether or not extensions can be made without significant additional investment. See Map 4-2, Future Water System within the Joint Planning Area.

Water Extension Area A

Location: This water extension area is located adjacent to Green Lake Road on the western boundary of the Village of Middleville.

Details: This extension area would extend existing 8" water line off of Main Street within the West High Pressure District.

Limitation: Due to the relative close proximity to an elevated storage tank, physical limitations are not currently anticipated.

Water Extension Area B

Location: This water extension area is located adjacent to Bender Road on the southern boundary of the Village of Middleville.

Details: This extension area would extend existing 12" water line off of Bender Road within the West High Pressure District.

Limitation: Due to the close proximity to an elevated storage tank, physical limitations are not currently anticipated.

Water Extension Area C

Location: This water extension area is located adjacent to M-37 on the southern boundary of the Village of Middleville.

Details: This extension area would extend existing 8" water line off of M-37 within the Central Pressure District.

Limitation: The elevation slightly increases as you continue south on M-37, making extensions along the frontage of M-37 possible without adding significant infrastructure. Grades in the area stay below 790' which is the approximate elevation limitation of the Central Pressure District.

Water Extension Area D

Location: This water extension area is located adjacent to West State Road on the eastern boundary of the Village of Middleville.

Details: This extension area would extend existing 8" water line off of State Road within the East High Pressure District.

Limitation: This water extension is limited by the elevation of the Ground Water Storage Tank. Extensions will need to be further evaluated on a project-by-project basis.

Water Extension Area E

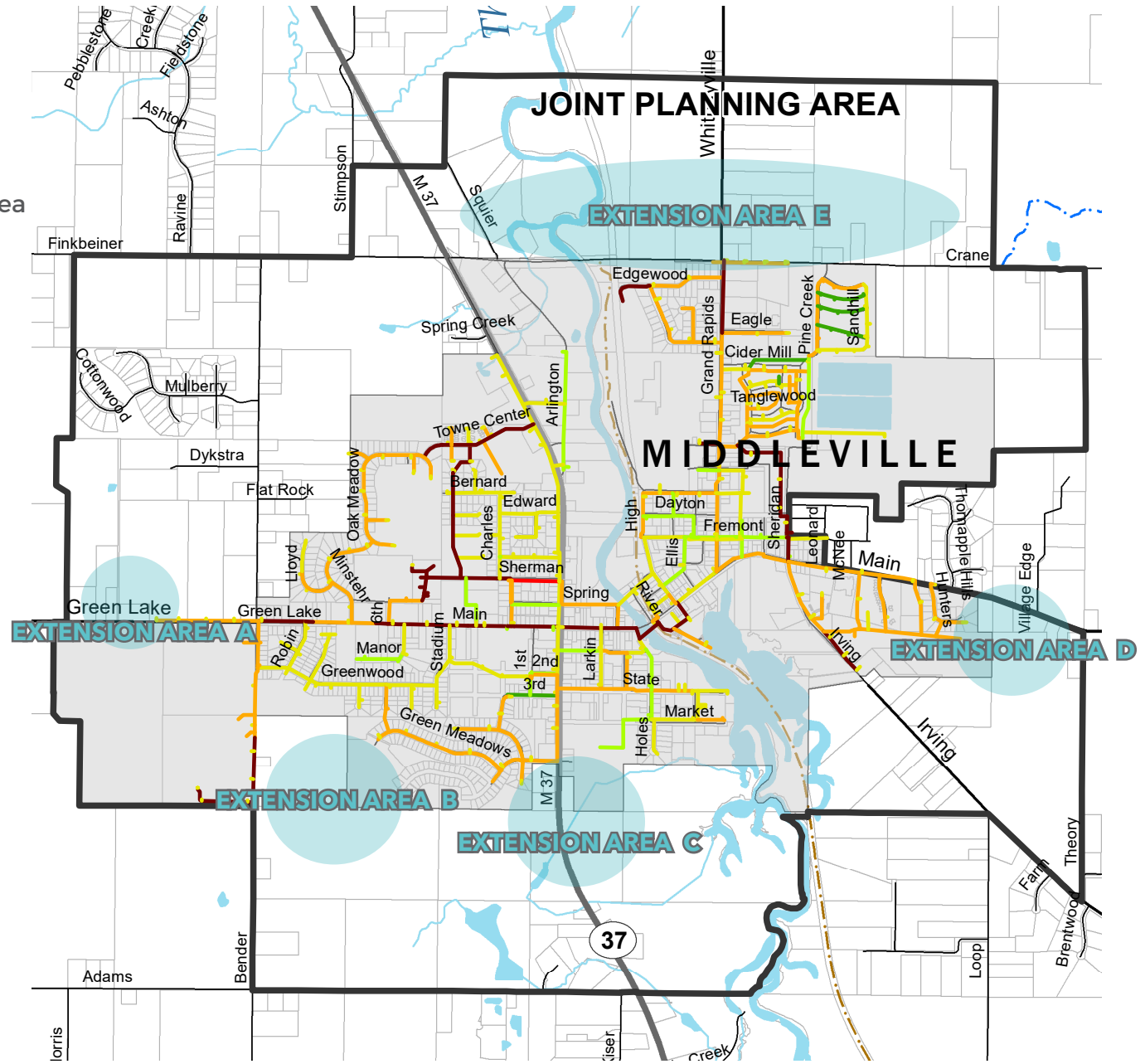
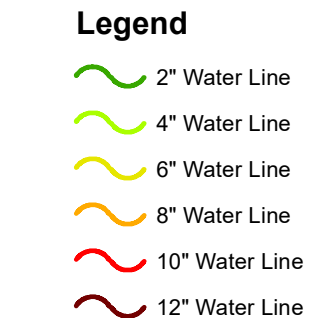
Location: This water extension area is located to the north of Crane Road on the northern boundary of the Village of Middleville.

Details: This extension area would extend existing 8" water line off of Crane Road within the Central Pressure District.

Limitation: Physical limitations are not expected for this extension area.

MAP 4-2 Future Water System

within the Joint Planning Area



Thornapple Township
Barry County, Michigan

0.25 0.5
Miles



Data Sources: MCGI, Barry County GIS

STORM WATER MANAGEMENT PLAN

Within all general law townships, Michigan statutes give the County Drain Commissioner jurisdiction over public drainage districts.

The Barry County Drain Commissioner has exclusive jurisdiction to establish and maintain public County drainage districts within Thornapple Township. Improvements to and maintenance of county drainage districts are funded by assessing benefiting land within each drainage district.

Storm drainage facilities serving public areas [parking lots, streets, etc.] and private areas represent significant capital investment. Storm drainage facilities that are improperly designed or installed create significant long lasting problems. Flooding of land or buildings is an obvious result. Less obvious is the impact on the natural environment such as wildlife habitats and surface waters. Stormwater runoff from vehicle parking areas, gasoline stations or industrial outdoor storage areas often carries with it hydrocarbons, oils, chemicals or other compounds toxic to wildlife or which cause degradation of surface water quality. Stormwater also carries sediment, pesticides, heavy metals and pet waste to name a few other substances. Absent mechanisms to reduce or eliminate these substances from stormwater, ecosystems and water quality are significantly impaired.

Existing Storm Drainage Facilities

A network of open ditches and closed storm drains serve the Township. This is a network of manholes, curb inlets, pipes and outfalls designed to collect, carry and discharge rain water. Barry County maintains a map depicting established County Drainage Districts in the Township. These drains serve about one-quarter of the total land area in the Township. All other areas are not in a drainage district and

either are served by private drains or are not served.

Any land development occurring within an established drainage district must have drainage plans reviewed and approved by the Drain Commissioner. Land development within areas not served by an established drainage district are either reviewed and approved by the Township Planning Commission or are required to petition the Drain Commissioner to establish a new drainage district, depending on the scope of the private land development and landforms in the immediate vicinity.

Private Land Development

Land development involves additional roof area, streets, parking areas and drives. These new impervious surfaces cause storm water run off during rainfall events and snowmelt. The best practices included here are intended to address environmentally friendly management of stormwater, protect wetlands and surface waters and promote groundwater recharge in all new development areas. With these practices, storm water would not leave a site unless it receives some form of biological or mechanical treatment.

Residential Land Development

The preferred method of managing stormwater runoff in new residential developments is to direct stormwater to open, grassed swales and from the swale to a retention facility designed to accept all stormwater and permit the water to percolate into the ground. Where land is insufficient or when the land does not lend itself to use this method, stormwater detention should be required prior to discharge of storm water off site.

Best Management Practices for Residential Land Development

Best Management Practices for all forms of residential development should include the following:

- Retention of stormwater generated on the development site will be given preference when reviewing site development plans, thus encouraging groundwater recharge or establishment of permanent surface water features.
- The full array of so-called bio-retention techniques will be required for stormwater management in whole or in part for each residential development site.
- Closed pipe storm drains within public streets will be allowed so long as the point of discharge [a detention or retention basin] has sufficient capacity to retain or detain storm water flows for a 50 year storm event. Closed drains can also be used to address potential impoundment of water near homes or in rear yard areas based on site grade conditions.
- For all residential development, release of stormwater from the development site will be permitted but will be limited to the pre-development rate of discharge.
- A storm event frequency of 50 years will be used for all residential development site stormwater engineering.

Best Management Practices for Commercial/Industrial and other Non-Residential Development Sites

Storm water generated by surface parking lots, fueling areas and outdoor areas used for equipment parking or materials storage will be collected at a central point on site. At that point, silt, grease, oil, other hydrocarbons and industrial

solvents will be removed prior to discharge onto land, surface water or into a closed storm drain.

Pre-discharge treatment of storm water for such areas may employ any generally accepted technology such as sand filters, mechanical removal, settling basins and so on.

The site plan review of these development sites will include consideration of long-term maintenance of the stormwater treatment facility.

Best Management Practices for Special Situations

It is acknowledged there are special landform and environmental situations requiring unique approaches to stormwater management. Whenever these situations arise, it will be necessary to consider alternative best management practices for these sites. The special situations to be considered include:

- Land areas with slopes in excess of 10 percent.
- Land areas that include or are abutting regulated wetlands [i.e., contiguous wetlands in excess of five acres are regulated wetlands].
- Land areas that are within or directly abut an established 100-year flood plain as established by the State of Michigan.

For each of these special situations, the objective when using alternative best management practices will be to protect the existing natural environment from direct discharge of storm water into these areas.

PUBLIC STREETS

The existing land development pattern in the Township is largely dependent on access via public streets or private roads. Automobiles are the sole means of transportation from place to place and there is limited transit service available from Barry County Transit.

Streets in the Township occur in four categories. These are: (1) state highway, (2) county primary, (3) county local and (4) private. This chapter gives focus to county primary and local streets and provides a brief discussion about private roads.

Existing Streets and Highways

Map 4-3 illustrates all public streets by type as well as existing private roads. The Barry County Road Commission owns all county primary and county local road rights-of-way and performs annual summer/winter maintenance on all such roads. Thornapple Township allocates money each year for dust control on county local gravel roads. The Township also pays a share of county local road improvement costs.

County Local Roads in Thornapple Township

There are a considerable amount of gravel roads in the Township. Land along most of these roads is in large tracts used for farming and few homes exist. However, many large tracts of land in these areas do not contain prime or important soils. As such, the likelihood of dividing these tracts into future home sites is quite high. If land along existing gravel roads is converted from crop land or fallow to housing developments, the gravel road may need to be paved from the development site to the nearest paved road intersection. This determination would be made by the Barry County Road Commission depending upon the existing condition of the road and the proposed development.

In situations where land development is not proposed, property owners along a gravel road may petition the Township Board to make a pavement improvement. Fifty-one (51%) percent of abutting owners must sign the petition. The Board then obtains an estimate of the cost to improve the road from the Barry County Road Commission.

After receiving the cost estimate, the Board may convene a public hearing on a proposed special assessment to improve the road. The method of assessing the improvement cost to benefiting land owners is at the discretion of the Board of Trustees, though it should reflect the level of actual benefit. Following the hearing, the Board may elect to proceed with the project and special assessment.

Complete Streets

This Plan supports complete streets policy. Complete streets are thoroughfares that are planned, designed and constructed to allow access to all legal users safely and efficiently, without any one user taking priority over another. Users in Middleville and Thornapple Township include pedestrians, bicyclists, motorists, users of assistive devices, and truck-drivers. Complete streets can result in increased safety for non-motorized users, improved public health, a cleaner environment, mobility equity and enhanced quality of life through increased modal choices and more inviting streets. The popularity of the Paul Henry Thornapple Trail in the community further reinforces the need for policy.

Another key motivation to enact complete streets policies is that Michigan law may encourage MDOT to give additional consideration to enhancement and other grant applicants with such policies. The Michigan Planning Enabling Act has also been amended to stipulate that transportation improvements be respectful of the surrounding context,

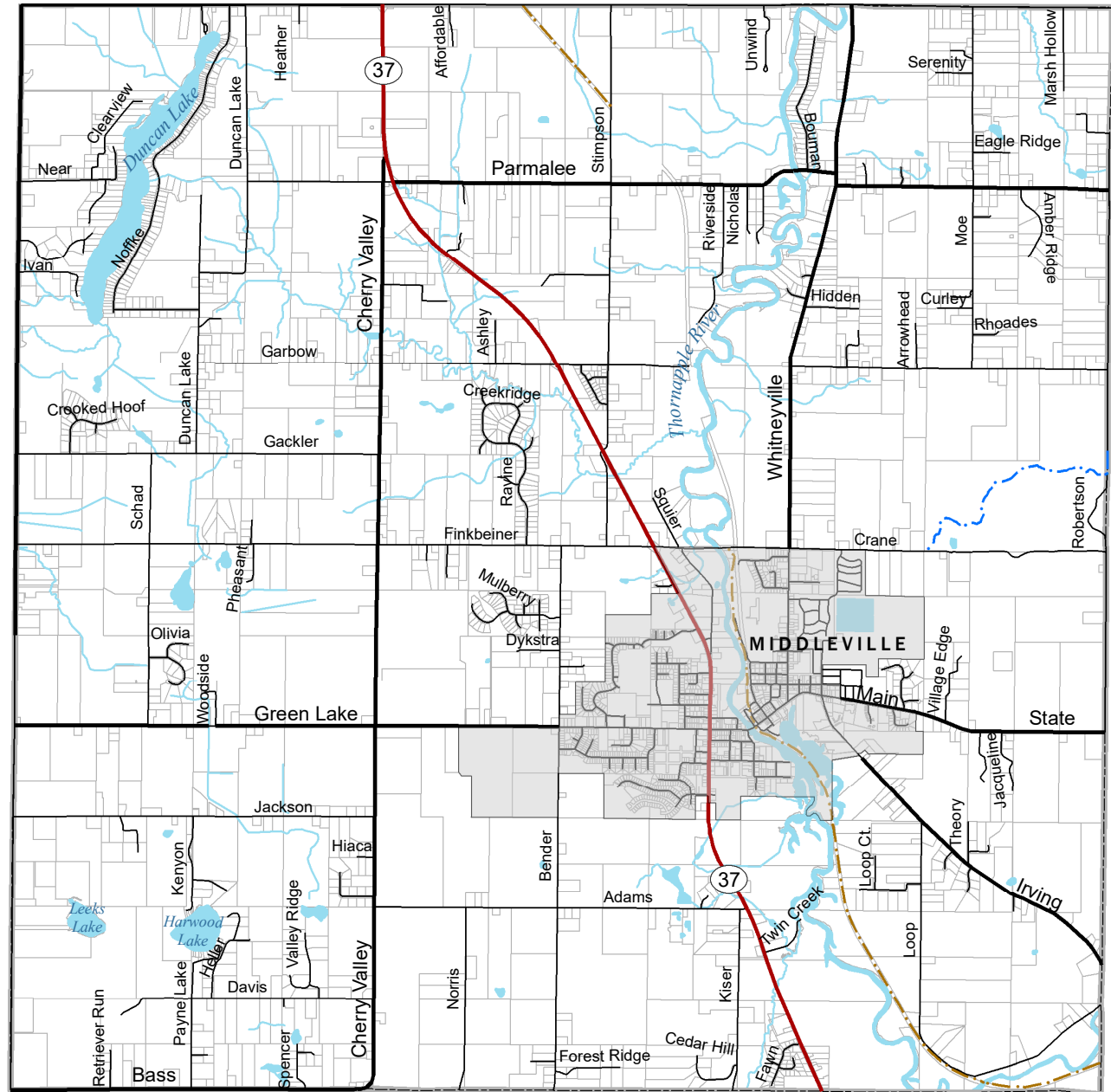
MAP 4-3 Streets

Legend

- County Primary Roads
- Local & Private Roads
- North Country Trail
- Paul Henry Thornapple Trail



Data Sources: MCGI, Barry County GIS, USDA NRCS



further ensuring that more equitable and attractive streets become reality.

Private Roads

Many private roads within Thornapple Township are non-conforming when compared to private road minimum construction standards currently in effect. Issues associated with non-conforming private roads include (a) difficult access to homes during rainy seasons due to typically poor drainage, (b) lack of regular maintenance, (c) access following heavy snowfall, and (d) the potential that law enforcement, fire and ambulance equipment cannot respond to an emergency at a home located on a private road due to poor physical condition.

Private roads conforming to current standards typically do not have such issues and recorded road maintenance agreements are in place.

Private Road Development Policies

The Planning Commission finds there is a need to adopt a policy statement as to the use, location, and design of private roads in the Township. The Commission's private road policy statement is set forth to the right.

Policy Statements Regarding the Use, Location, and Design for Private Roads in Thornapple Township

- Private roads will be allowed on lands planned for and zoned for agricultural-residential and rural-residential use.
- Where allowed, private roads will be required to extend to a property line for future connection with adjoining land whenever, in the opinion of the Planning Commission, future connection will be necessary.
- New land divisions, subdivisions or site condominiums on land served by a non-conforming private road will not be allowed unless and until the non-conforming private road is made conforming.
- The Barry County Road Commission is not taking over jurisdiction/responsibility for any new roads in Barry County. All new development must be served by new private roads built to Township Standards.

TRAILS AND PEDESTRIAN FACILITIES PLAN

Sustainable development practices include walkability as a key element of planning and design. Historically, development within rural portions of the Township has not incorporated any type of pedestrian facilities. Even some more intensively developed areas, such as Duncan Lake, have not included sidewalks or pedestrian walk-ways.

The Township's Master Plan includes an area of more intensive land development that is now called the Joint Planning Area. It is within this area that the Planning Commission concludes pedestrian facilities are necessary. All forms of land development within the Joint Planning Area hereafter will be required to address pedestrian facilities in various forms.

Within the outlying areas, a multiple use trail system is planned. Land development next to or near these trail routes should include direct connections to the established or planned trail, whenever possible.

Trail History and local efforts for Trail Development

The Middleville/Thornapple community once had railroad service. The railroad was discontinued during the 1970s. Based on changes to Federal and State law, railroad companies gained title to all formerly used railroad right-of-way. During the 1990s, the railroad companies sold off unused right-of-ways to abutting land owners and others.

During the 1995-2000 period, the Village of Middleville acquired several segments of former right-of-way extending 5 miles south along the Thornapple River from Main Street in Downtown. In 2001, the Village developed 3.5 miles of this trail with a 10 foot wide paved pathway. The remaining 1.5 miles between McCann Road and Irving Road is an

unpaved, grass and gravel trail. During 2006, the Village also constructed a new 900 foot trail segment east from Grand Rapids Street along Crane Road and in 2016 a trail segment from Main Street north to Crane Road. The ultimate objective is to connect all sections of the Paul Henry Thornapple Trail with sections in Hastings, Nashville, and Caledonia, as well as to the North Country Trail.

Planned Major Trail Routes

Map 4-4 depicts existing and proposed future trail routes for the Township, including the area within the Village of Middleville. The major routes will be the northward extension of the Paul Henry-Thornapple Trail from Crane Road to Stimson Road. This proposed segment would link the existing trail to the trail in Caledonia Township south to 108th Street, thereby creating a trail system connection within the Kent County regional trail system.

A second trail connection is shown running east from the Paul Henry Trail along Crane Road to the Middleville State Game Area. This 1-mile trail segment would link the main trail with the national North County Hiking Trail.

The Barry County Parks and Recreation Commission is working with the Paul Henry-Thornapple Trail Association as well as municipalities on the extension of the Paul Henry-Thornapple Trail through Barry County to the City of Hastings and Nashville.

Future Land Development and Pedestrian Links

Once the major trails are developed, existing and new neighborhoods within the Township should be encouraged to provide pedestrian links to the main trail network, fostering walking and healthy life experience.

Discussion has occurred regarding participation in the safe routes to school program. If implemented, connecting these pedestrian routes with the established trail system would be beneficial.

Future trail links with new residential developments, commercial nodes or employment centers near or adjoining the trail routes, should become a mandatory standard, particularly within the Joint Planning Area.

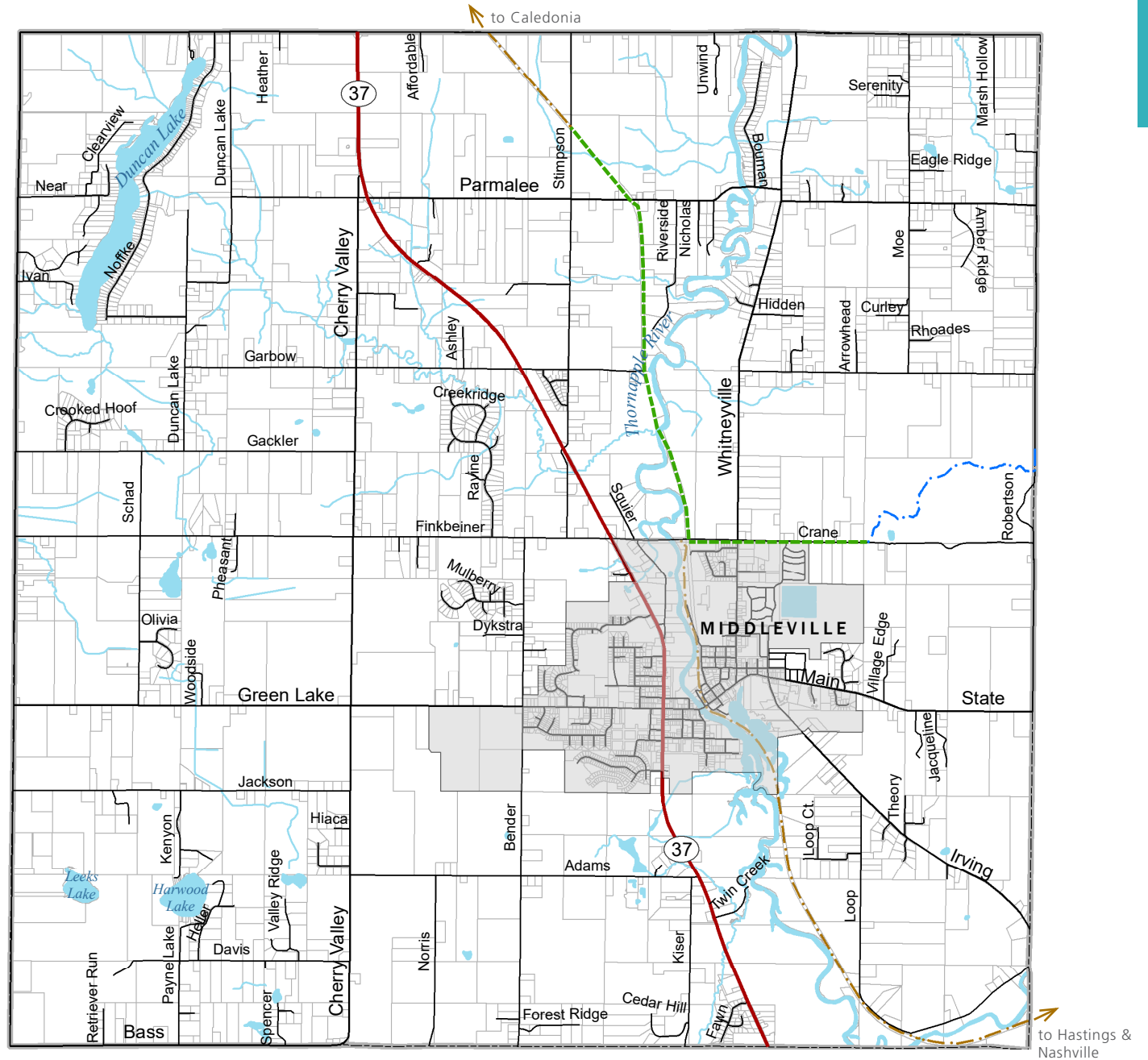
MAP 4-4 Existing and Proposed Future Trail Routes

Legend

- County Primary Roads
- Local & Private Roads
- North Country Trail
- Paul Henry Thornapple Trail
- Future Trail Connections



Data Sources: MCGI, Barry County GIS, USDA NRCS



M-37 CORRIDOR ACCESS MANAGEMENT

This section addresses the ways and means of managing access points from frontage lands along M-37 onto the highway.

About 10.8 miles of frontage lands exist along M-37 within Thornapple Township [both sides of the highway included], excluding the segment through the Village of Middleville.

M-37 is a non-freeway state trunk line that functions as an arterial highway through Barry County, Thornapple Township, and the Village of Middleville.

According to 2018 traffic count data from the Michigan Department of Transportation [MDOT], average daily traffic [ADT] counts on M-37 north of the Village are 15,531 vehicles and south of the Village about 10,570 vehicles.

Beginning in 2003, local and county governments in Barry County initiated a corridor study of M-37 through the county, based on concerns relating to land development pressures, ever increasing traffic volumes and traffic safety. Funded by MDOT, a corridor plan was completed in 2004 and adopted by the "M-37 Corridor Committee". The corridor plan evaluated each segment of M-37 in the county and provided recommended access management standards. The plan included 10 maps depicting M-37 through Thornapple Township and the Village of Middleville.

As a result of the 2004 Corridor Plan, an M-37 Technical Advisory Committee was established. The purpose of this group is to review proposed new or modified access to M-37 in the County and advise local governments as to recommended design geometrics and location. The review

process applies to new driveways, new street intersections and modifications of existing access points occasioned by redevelopment.

In general terms, managing vehicle access points to highway M-37 will preserve the volume carrying capacity of the highway, improve safety for drivers as well as pedestrians and prevent increased congestion and crashes. Maintaining safe traffic operations on M-37 is the primary goal of access management.

Traffic studies by the Institute of Traffic Engineers, MDOT and others have clearly documented that closely spaced driveways increase traffic accidents, reduce roadway capacity, increase travel times and add significantly to the cost of future roadway improvements.

Thornapple Township adopted an Access Management (AM) Overlay District in 2010 to implement the policies of the M-37 Corridor Plan.

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CHAPTER 5

EXISTING LAND USE

EXISTING LAND USE

Map 5-1 depicts existing land use by type within Thornapple Township. The information in this chapter is based on property tax classification data and verification using Barry County GIS aerial photography in 2019.

The pattern and types of existing land use significantly influences planning for future land uses. To plan future uses which are clearly incompatible with established use of land is both unfair and improper. Current owners and occupiers of land have an expectation the Township will protect them from intrusive, nuisance uses and maintain their quiet enjoyment of their premises.

Existing Land Use Definitions

AGRICULTURE: Active agriculture includes intensive animal production grazing pasture lands, cash crop production (corn, beans, wheat, etc.) and specialty agriculture such as sod, onions and vegetable production and wood lots. Fallow lands observed were noted as vacant.

SINGLE FAMILY RESIDENTIAL: This category includes all property primarily used for one or two-family dwellings located in recorded subdivisions, site condominium subdivisions, lots divided under the Land Division Act and upon large acreage parcels.

ATTACHED RESIDENTIAL: A parcel on which a building including three or more separate dwelling units is located.

COMMERCIAL: Included in this category are lands occupied by retail, office, and other mercantile and commercial service establishments.

PUBLIC/QUASI-PUBLIC: Vacant land or occupied land/buildings under government ownership, including park lands, schools, and cemeteries. Also includes land owned by non-profit institutions such as churches and places of worship.

VACANT LAND: Land area not in active use, which has no buildings.

Table 5-1 represents total acreage in use within Thornapple Township by land use category, based on the physical inventory of land use.

Table 5-1: Existing Land Use - Thornapple Township

Category	Total Acres
Agricultural	9,521
One or Two Family Residential	8,617
Attached Residential	0
Commercial	154
Industrial	0
Vacant	1,935
Water	448
Public/Quasi-Public	744

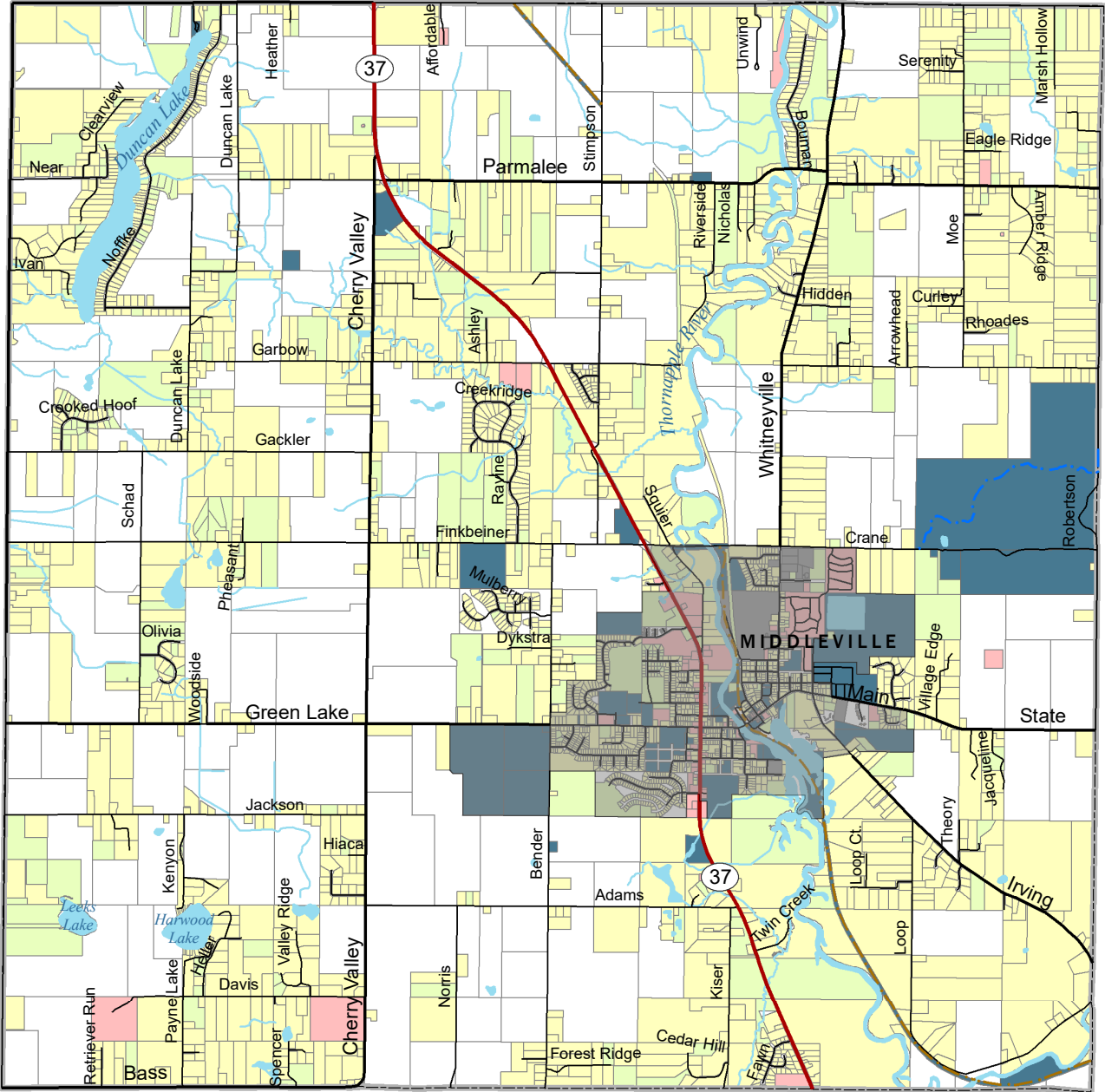
MAP 5-1 Existing Land Use

Legend

- Streams
- Water
- Agricultural
- One or Two Family Resident
- Attached Residential
- Commercial
- Industrial
- Vacant
- Public/Quasi-Public



Data Sources: MCGI, Barry County GIS, USDA NRCS



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CHAPTER 6

FUTURE LAND USE



FUTURE LAND USE PLAN FOR THORNAPPLE TOWNSHIP

Management of development in a community such as Thornapple Township requires a well-defined future land use plan supported by sound planning rationale. The Township has unique features that influence the Future Land Use Plan including: (1) the Thornapple River valley, (2) prime and important farmland, (3) pockets of suburban development (e.g. Duncan Lake area, Hilltop Subdivision, Mulberry Hills and Boulder Creek), and (4) the existing highway M-37 traversing north/south through the Township.

In preparing this Future Land Use Plan, the Township Planning Commission has drawn on considerable data resources including history of the area, natural resource inventory, population, economic information and a pattern of existing land use.

The Plan is based on conclusions from the Commission's review of data and knowledge of present day Thornapple Township. Map 6-1 presents the physical plan for land use by location and density.

This Future Land Use Plan addresses the various unique locales within the Township. In addition, the Planning Commission has engaged in close collaboration with the Village of Middleville Planning Commission to detail future land use for the so-called Middleville-Thornapple "Joint Planning Area."

FUTURE LAND USE CATEGORIES

The Future Land Use Plan is a compilation of descriptions and recommendations for future development in the Township.

AGRICULTURAL (1.5 ACRE/DU): This land use category includes areas of prime and important farmland soils on which active crop, animal production (including intensive livestock operations) or specialty farming is currently evident. One and one-half acre minimum lot areas. Subdivisions, site condominiums, or open space residential developments will be allowed in these areas, but only if served with existing public roads. Private interior roads are not permitted.

AGRICULTURAL - RESIDENTIAL (1.5 ACRE/DU): This land use category includes mixed uses in which crop, animal production and specialty farming would occur as well as homes on 1.5 acre minimum parcel size. Subdivisions, site condominiums, and open space residential developments will be permitted in these areas. Private roads may be permitted.

RURAL RESIDENTIAL (1.5 ACRE/DU) : An exclusively single-family residential land use category with a minimum parcel size of 1.5 acres or equivalent average density. Subdivisions, site condominiums and open space residential developments will be permitted in this area. Private roads may be permitted.

VERY LOW DENSITY RESIDENTIAL (1-2 DU/ACRE) : A single-family detached residential land use category permitting 1-2 dwelling units per acre. Public water and sanitary sewer may be required for this category depending upon soil conditions and natural features.

LOW DENSITY RESIDENTIAL (3-4 DU/ACRE) : This land use category includes detached single-family, two-family dwellings, and cluster residential at a density of 3-4 dwellings per acre of land. Public water and sanitary sewer are required.

MEDIUM DENSITY RESIDENTIAL (4-8 DU/ACRE): This land use category includes a variety of attached and detached dwelling types at a density range of 4-8 dwellings per acre. Public water and sanitary sewer services are required for all medium density residential sites. Medium density residential locations will be developed with respect to existing natural environments, take advantage of view sheds, be pedestrian friendly, and will have a full complement of site amenities.

OFFICE: This land use category will function as a transition use between commercial use categories and residential categories. Typically, this category would be applied in locations of small parcel size or that are in close proximity to existing residential uses.

HIGHWAY COMMERCIAL: The most generous of commercial land use categories incorporating a broad array of office, retail and personal service uses. Examples of uses included in this category include business and professional offices, all types of retail sales and may include retail business with outdoor merchandise display, depending on site conditions. "Big Box" retail businesses occupying more than 40,000 square feet of contiguous floor area should not be allowed in this land use category.

INDUSTRIAL: This land use category is intended to provide employment opportunities for area residents as well as provide manufactured goods and scientific and technological research for Greater Barry County and beyond. Facilities will be developed with appropriate utility and transportation connections and will be developed in harmony with surrounding uses and natural features.

PUBLIC FACILITY: This land use category includes all publicly owned and operated institutions including local government offices, public safety facilities, public schools, colleges, county, state or federal facilities and the companion property.

NATURAL AREAS: This land use category includes the Thornapple River shoreline within 50 feet of the rivers edge, 100-year floodplain, regulated wetlands (5 or more contiguous acres), areas with significant relief (slopes of 12% or greater) and areas containing rare or endangered fauna, flora or habitat for wildlife species. The objective for this category is to identify areas that require long-term preservation and protect these natural areas from disturbance. Lands could be conveyed to public ownership when practical. When not in public ownership, these lands may see low intensity development that incorporates careful measures to limit the impact on the natural features such as conservation easements.

PUBLIC OPEN SPACE: This land use category is intended to indicate existing/planned parks and open space in the Township.

WELLHEAD PROTECTION AREA: This land use category is intended as an overlay to help protect the public water supply in the community.

Duncan Lake Area Future Land Use

Based on evaluation of existing land use, soil conditions, road pattern and current sanitary sewer service capacity, the Planning Commission concluded the following:

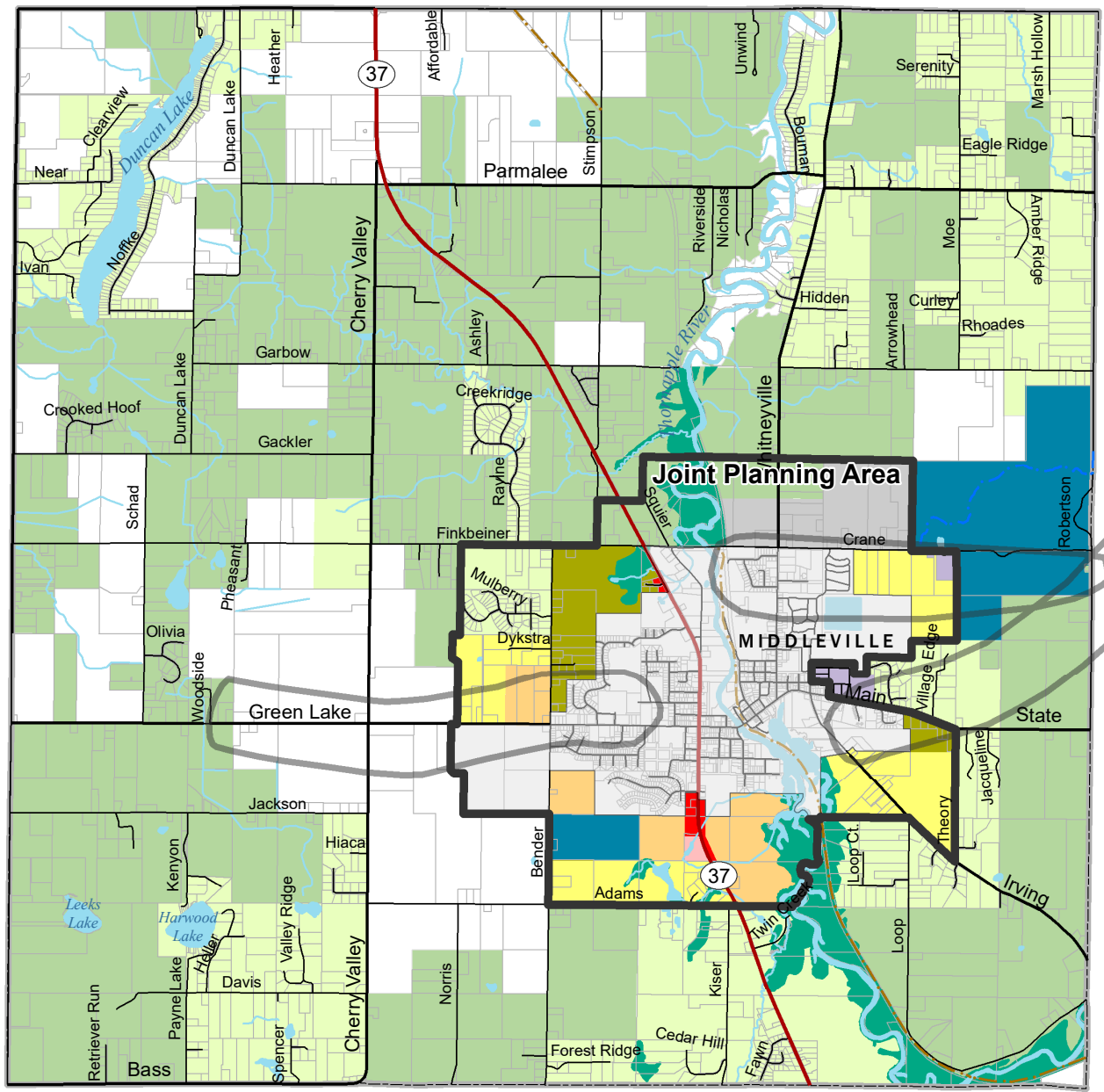
- Soils immediate to the lake and vicinity are not typically suited for individual on-site wastewater disposal systems.
- Except for lakefront plats, back lots and a scattering of nearby rural large lots, most lands in this area are used for cash crop and animal feed production. Some of these lands have prime and important farmland soils.
- Current service capacity of the sewer collection/treatment system is very limited.

Analysis of Area

Given physical conditions of soils limiting individual site wastewater disposal in this area and limited capacity of the existing public waste water treatment system, the plan for future land use should not encourage significant increase in housing, other than large lot rural home sites at locations on which on-site wastewater disposal is approved by the Barry-Eaton Health Department.

Future Land Use Plan

Beyond the existing sanitary sewer service area, agriculture will be the predominant land use with limited development of large lot homes sites. Expansion of the Township's wastewater collection and treatment system is not anticipated during the planning period.



MAP 6-1
Future Land
Use Plan

Legend

- Wellhead Protection Areas
- Future Land Use**
 - A - Agriculture (1.5 acre/du)
 - AR - Agriculture Residential (1.5 acre/du)
 - RR - Rural Residential (1.5 acre/du)
 - VR - Very Low Density Residential (1-2 du/acre)
 - LR - Low Density Residential (3-4 du/acre)
 - MR - Med Density Residential (4-8 du/acre)
 - HC - Highway Commercial
 - O - Office
 - I - Industrial
 - NA - Natural Area
 - OS - Public Open Space
 - PF - Public Facility



Data Sources: MCGI, Barry County GIS, USDA NRCS

ZONING PLAN

Section 33, (2), (d), of the Michigan Planning Enabling Act (Act 33 of 2008) requires that Master Plans adopted after September 1, 2008 include a Zoning Plan to explain how the future land use categories in this Plan relate to the zoning districts incorporated in the Township's Zoning Ordinance. The following table relates the more general future land use categories with the zoning districts and discusses features and factors to be considered in reviewing requests to rezone lands in the Township consistent with this plan.

Future Land Use Categories	Supporting and Compatible Zoning Districts	Additional Potentially Compatible Zoning Districts	Evaluation Factors and Features to Determine Eligibility for Additional Potentially Compatible Zoning Districts
Agricultural	A, Agricultural		
Agriculture-Residential	AR, Agriculture-Residential		
Rural Residential	RR, Rural Residential		
Very Low Density Residential	RE, Residential Estates		
Low Density Residential	R-1, Low Density Single Family		
Medium Density Residential	R-1, Low Density Single Family	R-2, Medium Density, Single Family	If development is compatible with adjacent land uses, supports the intended character of the proposed district and will be served with public water and sanitary sewer facilities
		R-3, Multiple Family Residential	If public sewer is provided and new development includes open space and pedestrian amenities and is formed into a walkable community; and if adjacent to land already zoned R-3
		R-4, Manufactured Home Community Residential	If public sewer is provided and new development includes open space and pedestrian amenities and is formed into a walkable community; and if adjacent to land already zoned R-4
Office	O, Office		
Highway Commercial	C, General Commercial		
Industrial	I-1, Light Industrial		
Public Facility	Develop new district	The intent is that land remain in public use; however, if land were to become developed for other purposes, it should be developed under the AR district, the predominant zoning district surrounding lands designated Public Facility. Otherwise, the Township may develop a new zoning district	
National Wetlands Inventory	None	This is not a future land use designation, and is only illustrated as an informational overlay to show approximate and potential wetland conditions	
Natural Areas	Develop new district	The intent is that sensitive natural lands be protected from the encroachment of development; however, if land were to become developed for other purposes, it should meet the requirements of the NR, Natural River and Shorelands Overlay, if applicable, and the predominant zoning district surrounding the property. Otherwise, the Township may develop a new zoning district	
Public Open Space	Any Agricultural or Residential District	This future land use designation is intended to show where public parks and recreation facilities are or are planned to be located and should be zoned to be compatible with neighboring uses	
Wellhead Protection Area	None	This is not a future land use designation, and is only illustrated as an informational overlay to show where the wellhead protection area is located; however, zoning and land use decisions should take into account groundwater resources	

In considering a request to rezone property in Thornapple Township, the Planning Commission must consider the future land use map and the future land use descriptive narrative of this plan. The foregoing table should be used to evaluate the degree to which the proposed rezoning is, or may be, consistent with this plan together with an evaluation of the specific request. The proposed rezoning decision should also consider whether the proposed site may be reasonably used as it is currently zoned, whether the proposed site is an appropriate location for any and all of the land uses that might be permitted within the requested zoning district, whether there may be other locations in the community that are better suited to accommodate such uses and any potential detrimental impact on the surrounding property that could result from the proposed rezoning.

In all cases, this Zoning Plan should be applied as a guideline for the Planning Commission subject to the appropriate application of the discretionary authority permitted to the Planning Commission and Township Board by statute, case law and good planning practice. Nothing in this Zoning Plan will preclude the Planning Commission and Township Board from considering amendments to this Master Plan to better serve the public interests of the community.

MIDDLEVILLE-THORNAPPLE JOINT PLANNING AREA

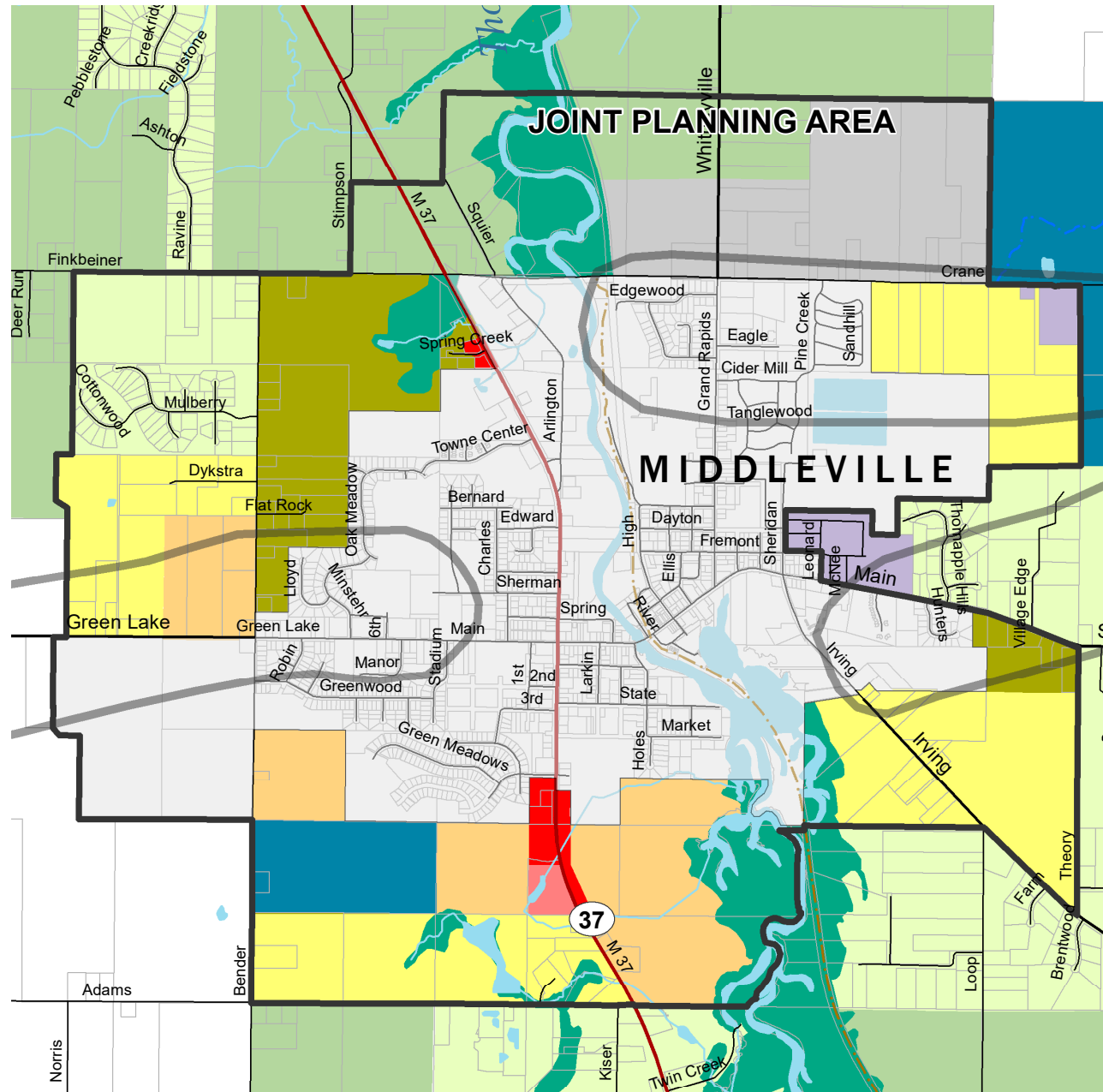
Other than limited large lot rural residential and cluster-type “open space residential development” in the rural areas of the Township, most of the future changes in land use during the 2020-2025 period are anticipated in the Joint Planning Area.

The Middleville-Thornapple Joint Planning Area is a cooperative planning effort between the Village of Middleville and Thornapple Township. The Joint Planning Area Committee is an advisory body that reviews and considers (has no formal approval authority) applicable development requests within the Joint Planning Area boundaries. The Joint Planning Area, according to the Township and Village Planning Commissions, is the area in which urban and suburban density land uses are likely to occur. The reasons for creating the Joint Planning Area are several, including:

1. Collective desire to contain sprawl in favor of a more compact growth pattern,
2. A common plan permits setting of an urban growth boundary (Joint Planning Area limits) in which new development can be authorized concurrent with extension of public water and sewer services,
3. The Township has ample undeveloped land in the Joint Planning Area whereas the Village owns and operates public water and sewer utilities to serve areas in the Joint Planning Area (the Village has little remaining undeveloped land),
4. The Village and Township are equally influenced by M-37 and the proposed east/west arterial roadway connecting with US 131,
5. A common land use plan for the Joint Planning Area forms the basis for cooperative decision-making and orderly expansion of the Village into the Joint Planning Area.

The results of this collaboration is the future land use plan for the Middleville-Thornapple Joint Planning Area, a utility plan for the Joint Planning Area (see Chapter 4) and a management/development review process for the Joint Planning Area.

Map 6-2 depicts the preferred land use plan for areas within the Joint Planning Area. Shown are land use types as well as residential categories and densities. The Village Master Plan includes identical land use categories, land use plan and densities.



MAP 6-2 Future Land Use Plan

For Joint Planning Area

Legend

- Wellhead Protection Areas
- Future Land Use**
- A - Agriculture (1.5 acre/du)
- AR - Agriculture Residential (1.5 acre/du)
- RR - Rural Residential (1.5 acre/du)
- VR - Very Low Density Residential (1-2 du/acre)
- LR - Low Density Residential (3-4 du/acre)
- MR - Med Density Residential (4-8 du/acre)
- HC - Highway Commercial
- O - Office
- I - Industrial
- NA - Natural Area
- OS - Public Open Space
- PF - Public Facility



Data Sources: MCGI, Barry County GIS

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CHAPTER 7

GOALS AND OBJECTIVES

A VISION FOR THORNAPPLE TOWNSHIP

Planning goals are general, across the board statements concerning the future. They create the future vision of Thornapple Township. Development policies present the ways and approaches for management of future change. Policies may address programming, geographic areas, public investment and community design.

The goals and policy statements offered in this chapter afford guidance for today's decision-makers and for the future. For each planning or land use decision, the Township should determine whether or not the development, as presented, conforms to established goals and policies of the Township. The Planning Commission hereby establishes the following goals and policies:

Community Character, Aesthetics, and Design

GOAL: Rural Character and natural features of the Township will be sustained via careful growth management and insistence on high quality design for all types of new development.

POLICIES:

1. Rural character in significant portions of the township will be maintained by preserving farmland, requiring low density, low impact housing development in outlying areas and directing more intensive forms of land use to the Village and Joint Planning Area.

2. High quality design and aesthetic standards will be encouraged of all new development or redevelopment to enhance community character. Zoning and related land development ordinances will be modified to heighten design and aesthetic standards.

Managing Change

GOAL: The Planning Commission, in collaboration with the Board of Trustees, Village Planning Commission and other government agencies, will carefully manage future change and development.

POLICIES:

1. The Planning Commission will be proactive in recommending changes to the Township Code of Ordinances intended to address land use issues and assure sound development practices.
2. Public notice to residents will be given for each new development requiring a zoning change or special land use consideration. With regard to site plan review, notice will be given where the proposed use may create serious, negative impacts or is large scale.
3. The Planning Commission will work on an on-going basis with the Village Planning Commission, especially growth in close proximity to the Village.
4. On at least 5-year intervals, the Planning Commission will convene public workshops to review tenets of the Master Plan and consider needed adjustments.

Land Use

GOAL: As physical change occurs, assure each new use of land is compatible with the neighborhood and does not over-burden community infrastructure.

POLICIES:

1. The Planning Commission does not believe lands fronting highway M-37 should be distinguished from other lands fronting county primary roads which also experience high traffic volumes. Future land uses planned for M-37 frontage lands will be consistent with uses planned on adjacent, non-frontage lands.
2. Residential development density should respect existing land divisions for residential use density. Residential development in prime agricultural areas should be limited to those permitted by the Land Division Act (PA 591 of 1996, as Amended).
3. The Township should continue collaboration and support for the Barry County Economic Alliance with emphasis given to growth of firms already doing business in the County. Small lot and multiple family residential land uses will be planned within the Village and joint planning area.
4. Retail and service uses will be planned for areas now served, or easily served, by public sanitary sewer and water supply primarily within and near the Village of Middleville.
5. Land for future industrial and heavy commercial land uses will be planned in location(s) served by public utilities, class A, all-weather roadways and high capability fire protection.

Farmland

GOAL: Thornapple Township has large and significant areas containing prime farmland. These lands should be reserved for continuing agricultural use during the planning period.

POLICIES:

1. Consistent with law, zoning standards employed by the Township will limit non-agricultural use of prime farmland.
2. Farmland retention incentive programs, such as use of PA 116 of 1974, as amended will be actively encouraged.
3. All areas of prime and important farm land soils should be preserved by encouraging cluster development with open space preservation.
4. Private roads will not be permitted within parcels of prime farmland.

Natural Environment

GOAL: A central purpose of the Township plan is to protect and conserve the Township's abundant natural features and resources.

POLICIES:

1. In collaboration with the Barry-Eaton Health Department, the Township will implement specific standards to protect and maintain groundwater quality. Specific topics, such as areas of elevated nitrates and arsenic, will be studied and collaborative measures implemented.

2. Management of soil erosion, point and non-point sources, elimination of improperly functioning private wastewater disposal systems and other measures intended to prevent degradation of surface water quality will be studied and implemented.
3. Along the Thornapple River and tributaries, shoreland disturbance will be discouraged. Removal of trees, natural shoreland vegetation and soil disturbance diminishes wildlife habitats and prompts soil erosion into the surface water. The Lower Grand River Organization of Watersheds will be consulted for which best management practices that should be implemented for these areas.
4. Permanent and ephemeral wetlands shall not be disturbed or removed by earth fill. Defined 100 year flood plain areas shall not be diminished by volume. These areas provide unique natural settings for human enjoyment and habitat for mammals, amphibians and invertebrates.
5. Residential and other types of development that occur on wooded sites will be required to engage in minimal tree clearance to conserve woodlot amenities.
6. The impact of proposed development on existing wildlife habitat should be evaluated when rendering land use decisions. Whenever a tract of land has documented habitat areas, the design and layout of any development on that tract should respect habitat areas and migration routes.

Sanitary Sewer and Water Supply

GOAL: Safe, healthful disposal of sanitary wastewater and water supply for domestic use and fire protection will be required for all new land uses.

POLICIES:

1. Public sanitary sewer and treatment will be considered, whenever feasible but mandatory for new multiple family, office, commercial, industrial and institutional use of land.
2. In situations where individual on-site septic tank/ drainfield systems are not viable, engineered common service systems may be considered, provided that (a) wastewater collection lines are designed to municipal standards, (b) collection system is designed for eventual connection to public sanitary sewer when available to the parcel and, (c) the treatment system is maintained by the Township and the cost of operation is fully assessed to users of the system. All such systems will require approval of the Barry-Eaton Health Department or Michigan Department of Environmental Quality and the Thornapple Township Board of Trustees.
3. In situations where individual well water sources are not permitted, a common water supply system, built to municipal standards, will be required including fire protection. These water systems will be operated and maintained under agreement with the Township with full costs assessed to system users. They will also be designed to connect with a public water supply or adjacent similar system if and when available.

4. Existing residential subdivisions, site condominiums or other uses of land experiencing issues with wastewater disposal may be served with public sewer during the planning period, but only in the Joint Planning Area.
5. This system, operated by the Township, may be improved and expanded to serve all properties on and adjacent to the lake. Nearby large tracts of land are not intended to be served during the planning period

Economic Base

GOAL: Thornapple Township, in collaboration with the Village will vigorously pursue a diverse economic base and full employment.

POLICIES:

1. Land for diverse industrial use will be identified in the future land use element to accommodate growth of industrial investment, provide local employment and a stable tax base.
2. The Township should continue collaboration and support for the Barry County Economic Alliance with emphasis given to growth of firms already doing business in the County.

Recreation Lands, Passive Open Spaces, and Trails

GOAL: Create a network of passive open spaces with trail links and active recreation facilities.

POLICIES:

1. The Township, Village of Middleville and the Thornapple-Kellogg Public School District have collaborated in establishing the Thornapple Area Parks and Recreation Commission, (TAPRC). This organization should continue to spearhead youth and adult active recreation opportunities.
2. The Township, in collaboration with the Village and the Barry County Parks and Recreation Commission, should acquire strategically located sites for active recreation facilities within the next decade. As population growth and development occurs, acquiring such land will become increasingly more expensive and difficult.
3. The Paul Henry Thornapple Trail should be extended northward from Crane Road to the north Township boundary, along the route of the former Michigan Central Railroad.
4. Trail and pedestrian links should be extended from the Paul Henry Thornapple Trail to residential developments in the Township and in the Village of Middleville, thus creating a useful network of pedestrian trails.
5. Public park and conservation land along the Thornapple River linked to the Paul Henry Trail should be acquired and include boat and canoe access, family picnicking, nature study and wildlife protection area.

Transportation

GOAL: Provide the best possible primary and local road system.

POLICIES:

1. Continue regular liaison with the Barry County Road Commission to establish road maintenance and improvement priorities.
2. Access to all state highway and county primary roads from frontage lands should be strictly controlled to assure minimal side friction, points of traffic conflicts and to preserve roadway safety.

Community Facilities

GOAL: As the community changes, community facilities will be improved to provide optimum service for all residents.

POLICIES:

1. Maintain and improve fire protection and life safety services at high service levels.
2. K-12 education facilities progress in the Thornapple - Kellogg school district should be maintained to foster high academic achievement.
3. As the Middleville/Thornapple community grows, emergency service demands will increase. A consolidated Village/Township emergency services facility offers cost savings for delivery of local government services. This approach should be given serious study and consideration.

An aerial photograph of a construction site on a street. Two workers in high-visibility blue and yellow gear and hard hats are standing near a large, rectangular concrete pit. A green hose runs from a pump unit on the ground into the pit. Various tools, including shovels and a bucket, are scattered nearby. A silver car and a white car are parked on the street to the right. Three orange and yellow traffic cones are placed around the pit. The entire image has a teal overlay.

CHAPTER 8 IMPLEMENTATION

IMPLEMENTATION STRATEGIES AND ACTIONS

Implementing the 2020-2025 Master Plan will require numerous short-term and long-term actions on the part of the Township. This chapter provides a full review of these actions including a) a description of each action, b) when the action should occur and c) follow-up measures required.

Because the Township and Village of Middleville Planning Commissions have closely collaborated in preparing policy and land use recommendations in the Middleville-Thornapple Joint Planning Area, some actions reviewed in this chapter require further collaboration and agreement for successful implementation.

This chapter establishes the “work program” for the Planning Commission including various actions required to implement provisions of this plan. Changes to the zoning ordinances, strategies for the Joint Planning Area and maintaining this plan are matters discussed in this chapter.

1. Township Zoning Ordinance

The 2020-2025 Master Plan updated the concepts and approaches for managing growth introduced in the 2007-2020 Master Plan.

The foregoing concepts and other elements of this 2020-2025 Master Plan will require amendments to the Township’s zoning ordinance. Topics to be addressed in the zoning ordinance include, but are not limited to:

1. Add zoning districts in the text that reflect and implement the Joint Planning Area future land use element.

2. Require private road connectivity when possible.
3. Address design, construction, inspection and operation of private common wastewater collection and treatment systems and private common water supply and distribution systems.
4. Continue to review and introduce amendments to the zoning ordinance that ensure compliance with the Michigan Zoning Enabling Act [110 PA 2007, as amended].
5. Address the sign ordinance within the Joint Planning Area so that it more closely aligns with the Village sign ordinance as applied within the Joint Planning Area.
6. Revisit Open Space Residential Development [OSRD] regulations to make sure they properly reflect new zoning districts and the future land use plan.
7. Regulations addressing lands with shoreline on the Thornapple River regarding setbacks, soil disturbance and tree clearing.
8. Review Wellhead Protection Overlay District for consistency with the Master Plan.
9. Regulations related to the protection of wetlands, including, but not limited to: setbacks, buffer strips, clearing limitations, discharge limitations, and native plantings.
10. Develop Capital Improvement Plan for Township facilities.
11. Other topics the Planning Commission deems necessary to implement provisions of the Master Plan.

2. Growth Management in the Middleville-Thornapple Joint Planning Area

Implementing the future land use plan for the Middleville-Thornapple Joint Planning Area requires close and continued collaboration between the Township and Village. Lands in the Joint Planning Area are within Thornapple Township and subject to its zoning and related ordinances. However, future development and infill within the Joint Planning Area may require public sewer and water supply services only available from the Village. As such, the Township and Village Planning Commissions have concluded that successful growth management in the Joint Planning Area requires the following actions:

1. The Township and Village Planning Commissions will prepare and recommend enactment of common zoning provisions to be applied within the Joint Planning Area that mirror future land use categories, density and related site development standards. The Township zoning ordinance will apply in the Joint Planning Area until a development site is annexed. At the time formal annexation is concluded, the common zoning ordinance language of the Village will apply. The Village Council will, at the time of annexation, enact appropriate zoning on the development parcel such that applicable regulations are the same as those in effect prior to the annexation.
2. A permanent 6-person Joint Planning Area Committee will be maintained with 3 members from each Planning Commission. The Joint Planning Area Committee will meet and give initial consideration and advisory review to all new land developments proposed within the Joint Planning Area as determined by the Township/Village

Zoning Administrator/Planner. The Joint Planning Area Committee will convene as needed based on information provided by the Village/Township Zoning Administrator/Planner.

3. The Joint Planning Area Committee will determine whether the proposed application conforms with the future land use plan and/or utility plan for the Joint Planning Area. As such, the Joint Planning Area Committee will primarily be concerned with rezoning requests and requests for utility extensions as part of a development request.
4. If the development proposal does conform to the future land use plan and/or utility plan, the Joint Planning Area Committee may proceed to consider the following matters as part of its advisory review, if determined necessary:
 - a. Preliminary site plan comments
 - b. Compatibility with adjoining land uses and future land uses in the Joint Planning Area
 - c. Roadway access location(s) and non-motorized transportation connections
 - d. Sufficiency of public sewer and water infrastructure to serve the proposed land use
 - e. Proposed storm drainage method
5. If the development proposed does not conform to the future land use plan and/or utility plan, the Joint Planning Area Committee will advise the applicant to revise plans in accordance with the future land use plan and/or utility plan, or recommend denial of the request to the Township Planning Commission. The Joint Planning

Area Committee will prepare a written report to the Township Planning Commission outlining a reason for the recommendation of denial.

6. If the application conforms to the future land use plan and/or utility plan the Joint Planning Area Committee will prepare a written report explaining their findings to the Township Planning Commission and may address the matters considered in items 4(a-e) above.
7. Formal application and companion information is then forwarded to the Township Planning Commission with the Joint Planning Area Committee recommendation and comments.
8. Township Planning Commission receives application and schedules public hearing, if required. At this time, the application materials may be copied to the Village Planning Commission (if determined applicable) with a request for review and comment.
9. The Thornapple Township Planning Commission review of the proposed application may include a decision on when the land owner will petition the Village for annexation as a condition of development approval if utility extensions are required.
10. If a development is granted approval or conditional approval by the Planning Commission and requires utility extensions, site grading or other construction activity may not occur unless and until a shared services agreement has been executed or a petition to annex real property has been filed by the owner of the property with the Middleville Village Council and that petition has been approved by the Council and the Barry County Board of Commissioners.

11. If the development property is formally annexed, the Village Council will acknowledge and enact zoning district standards identical to those in effect within the Township prior to annexation. If a shared services agreement has been executed between the Village and Township, Township zoning standards will remain.
12. If the development property is formally annexed, all documents relating to the approved land development will be transferred from the Township to the Village. If a shared services agreement has been executed between the Village and Township, the Township and Village will share documents related to the approved land development.

3. Subdivision and Site Condominium Control Ordinance

This ordinance would replace existing zoning ordinance provisions. The objective is to put subdivisions under the Land Division Act and site condominiums under the Condominium Act on equal footing. This Ordinance would include common standards for site improvements, limits on cul-de-sac length, connectivity requirements between properties, land developments, and related standards.

4. Storm Water Management Standards

Enacted under general ordinance authority, this ordinance would implement Chapter 4 of the plan by creating so-called “best management practices” and apply to land development within those portions of the Township that are not served by an established public county drainage district.

The ordinance would include storm drainage design standards, storm event frequency, preferences for on-site stormwater filtration and retention, groundwater recharge

and landscape requirements for permanent water features or basins that are part of the site storm water management facilities.

5. Township Capital Improvements Program.

Public infrastructure investments by the Township directly impact physical development.

It is the intent of the Planning Commission, working with the Board of Trustees, to maintain a public capital improvements program.

6. Master Plan Maintenance

Following enactment of the 2020-2025 Master plan for Thornapple Township, the Planning Commission will periodically undertake full evaluation of content and relevancy of the Plan.

Consistent with the Michigan Planning Enabling Act, the Planning Commission will conduct full review of the Master Plan not less than every five years. Whenever the Commission concludes amendments to the Master Plan are needed, it will draft such changes, confer with adjacent local governments and the County, hold public hearings, and consider adoption of such amendments to the 2020-2025 Master Plan.

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