

# Master Plan

BENGAL TOWNSHIP, CLINTON COUNTY, MICHIGAN



# Master Plan

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Adopted by the Township Board by Resolution December 14, 2022

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*Prepared with the assistance of:*



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# Acknowledgments

*The participation and cooperation of the numerous community leaders and residents in the preparation of the Bengal Township Master Plan is greatly appreciated. In particular, we would like to acknowledge the efforts of the following individuals:*

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# Table of Contents

<b>1. Introduction and Background .....</b>	<b>3</b>
Regional Context .....	3
Demographic Profile .....	5
Housing Profile .....	6
Economic Profile.....	7
<b>2. Existing Land Use.....</b>	<b>9</b>
Agricultural/Open Space.....	9
Urban/Built Up .....	10
Public and Quasi-Public Land Uses .....	10
Utilities .....	10
Recreational Land Uses .....	10
Natural Areas.....	10
<b>3. Transportation System .....</b>	<b>13</b>
Township Road Network .....	13
Other Modes of Transportation.....	14
<b>4. Natural Features and Resources .....</b>	<b>17</b>
Surface Waters .....	17
Soil Suitability .....	17
Soil Classification Types.....	18
Groundwater .....	19
Agricultural Land.....	19
<b>5. Community Facilities .....</b>	<b>21</b>
Schools .....	21
Recreational Facilities .....	21
Emergency Services.....	21
Other Facilities.....	22
<b>6. Public Participation .....</b>	<b>23</b>
Survey Results.....	23
<b>7. Goals and Objectives .....</b>	<b>25</b>
Goals .....	25
Objectives and Policies .....	25
<b>8. Future Land Use Plan.....</b>	<b>27</b>
Planning Principles .....	27
Land Use Categories.....	28
Community Facilities .....	29
<b>9. Implementation Plan .....</b>	<b>31</b>
Implementation Strategies.....	31
Zoning Plan.....	31
Transportation Plan .....	33
Action Plan.....	33
<b>Solar Energy Addendum.....</b>	<b>35</b>

## LIST OF TABLES

Table 1: Population Comparisons .....	5
Table 2: Age Characteristics .....	5
Table 3: Educational Attainment .....	5
Table 4: Year Structure Built .....	6
Table 5: Housing Values in Bengal Township .....	6
Table 6: Employment by Industry .....	7
Table 7: Travel Time to Work.....	8
Table 8: Existing Land Cover/Use .....	10
Table 9: Functional Classification of Roads.....	13
Table 11: Zoning Plan .....	31
Table 12: Action Plan .....	34

## LIST OF MAPS

Map 1: Existing Land Use .....	11
Map 2: Roadways .....	15
Map 3: Prime Farmland.....	37



# Introduction and Background

*This document is the culmination of the efforts of the Township Planning Commission, Township Board of Trustees, and residents of Bengal Township to develop this update to the comprehensive plan for the community. The Bengal Township Master Plan was developed to establish general policies to guide decision makers in the community as well as provide direction for future land use in the Township for the next ten (10) to fifteen (15) years. The intent of this Plan is to promote the high quality of life in Bengal Township and build upon its history to provide for a bright future.*

To accomplish this goal, the Master Plan will define the issues which are most important to the people of the community. This will be done through resident and community input, including a public hearing for the Plan. In addition, an analysis of the existing features of the Township will illustrate some of the defining characteristics within the Township. The analysis will include a survey of the existing land uses in the Township, population, economic and housing statistics, a description of the physical constraints and natural resources in the Township, and circulation patterns within the community. Based on all of the information collected and with input from residents of the community, goals and objectives will be developed to provide direction for the Township over the next ten (10) to fifteen (15) years. The goals and objectives will help create the Future Land Use Plan and Circulation Plan for Bengal Township.

## Regional Context

### LOCATION

Bengal Township is situated in the northwestern central part of Clinton County in central Michigan, north of the City of Lansing. Bengal Township is bordered on the north by Essex Township, on the west by Dallas Township, on the south by Riley Township and on the east by Bingham Township.

The Township is primarily rural and agricultural in character. M-21, the east-west highway connecting Flint and Grand Rapids, runs directly through the northern portion of the township. M-21, as well as additional roads in the township, provide direct and easy access to urban centers in the City of St. Johns (approximately 2 miles to the east of the border of Bengal Township), City of Ionia (approximately 23 miles to the west), City of Lansing (approximately 26 miles to the southeast), and the City of Grand Ledge (approximately 21 miles to the southwest).



## **REGIONAL INFLUENCES**

Various factors influence the decisions and future developments that will impact Bengal Township. The majority of these influences will be determined from within the Township itself, while others will result from the actions or decisions of those outside the community. It is important to consider those influences located outside of the Township's borders which will affect the community's future.

## **CITY OF ST. JOHNS**

The City of St. Johns is approximately two (2) miles east of Bengal Township, with a population of 7,865, as of the 2010 Census. St. Johns serves as the area's commercial and historical center of activity. The St. Johns School District, which serves the majority of Bengal Township, maintains all of its facilities within the City. The St. Johns Fire Department, which provides fire and emergency services to Bengal Township, also has its facilities in the City. Any portion of Bengal Township not served by the City of St. Johns is serviced by the Village of Fowler, including schools and fire protection. The City of St. Johns has a viable and traditional downtown, and has a significant agricultural base as well. The City of St. Johns Community Development Plan was adopted in 2000 and amended in 2012, and guides land use and development decisions within the limits of the City. This Bengal Township Master Plan will attempt to support the goals and objectives of the City of St. Johns Community Development Plan by suggesting that the City continue to be the residential, educational, commercial and industrial center of the region while Bengal Township will serve to fill important agricultural, residential, and recreational needs within the community in general.

## **CLINTON COUNTY PLANNING COMMISSION**

The Clinton County Planning Commission reviews all new zoning ordinance amendments, master plan amendments, PA 116 agreements, and other various requests brought to it for consideration within the unincorporated areas of Clinton County.

The Clinton County Planning Commission will review the Bengal Township Master Land Use Plan for consistency with the Clinton County Comprehensive Plan, which was most recently updated in 2016. The Clinton County Planning Commission will then be requested to formally approve the Bengal Township Master Land Use Plan as presented.

## **TRI-COUNTY REGIONAL PLANNING COMMISSION**

The Tri-County Regional Planning Commission is one of the fourteen (14) regional planning and development agencies in the State of Michigan. These regional commissions were created by executive order in 1968 by the Governor of Michigan. The Commission is recognized as Region 6 and is responsible for the counties of Clinton, Eaton, and Ingham, serving 75 jurisdictions within the three-county region.

The primary function of the Tri-County Regional Planning Commission, as the region's Metropolitan Planning Organization (MPO) is to coordinate federal funded transportation projects and facilitate federally funded economic development programs. The Commission also serves as an intergovernmental forum to address issues from a regional perspective. The Tri-County Regional Planning Commission is directed by a board of 19 commissioners, and staffed by an Executive Director, Deputy Director, and several Planners.

# Demographic Profile

The comprehensive data source for Bengal Township is from the U.S. Census in 2000, 2010, and from 2013-2017 American Community Survey 5-Year Estimates. The 2013-2017 Community Survey demographic data is estimated yearly based on data compiled from around 295,000 households per month, and as such may not accurately represent current demographics. The following information shows demographic data for Bengal Township, as well as relevant comparisons to the City of St. Johns and Clinton County overall.

## POPULATION TRENDS

**Table 1: Population Comparisons**

	2000	2010	2017 (estimate)	% Change 2000-2017
Bengal Township	1,174	1,188	1,290	+9.88%
City of St. Johns	7,485	7,865	7,894	+5.46%
Clinton County	64,753	75,382	77,321	+19.41%

Source: U.S. Census (2000, 2010); 2013-2017 American Community Survey 5-Year Estimates

## AGE CHARACTERISTICS

The median age of Bengal Township is estimated at 40.1 years as of the 2010 Census. The median age for Bengal has remained relatively stable, with the 2000 census median age of 39.8 years. The median ages of St. Johns and Clinton County were 38.5 years and 40.4 years, respectively.

**Table 2: Age Characteristics**

Age of Resident	Number	% of Population
Under 10 years of age	152	12.8%
10 to 19 years	218	18.4%
20 to 24 years	61	5.1%
25 to 34 years	113	9.5%
35 to 44 years	135	11.4%
45 to 64 years	383	32.2%
65 years and above	126	10.6%
<b>Total</b>	<b>1,188</b>	<b>100.0%</b>

Source: U.S. Census 2010

## EDUCATIONAL ATTAINMENT

The following table shows the educational attainment of Township residents 25 years of age and older.

About 92.8% of the Township's population of those over the age of twenty-five (25) have completed and graduated from high school or an equivalency. This is reflective of the fact that high school graduation rates are significantly higher in more recent decades than in previous decades, thus the percentage of the population with a high school diploma should continue to increase in the future. About 18.3% of the Township's over 25 population has completed a bachelor's degree or higher.

**Table 3: Educational Attainment**

Education Level	% of Population
Less than 9th grade	1.3%
9th to 12th grade, no diploma	5.9%
High school graduate (includes equivalency)	26.4%
Some college, no degree	34.7%
Associate's degree	13.4%
Bachelor's degree	12.2%
Graduate or professional degree	6.1%
<b>Total</b>	<b>100.0%</b>

Source: 2013-2017 American Community Survey 5-Year Estimates

# Housing Profile

It is important to examine the housing stock in Bengal Township because it serves as an indicator of the quality of life for residents living in the community. Furthermore, housing information also acts as an economic gauge for the community and the surrounding area.

## YEAR STRUCTURE BUILT

The Township has experienced various levels of building construction through its history. In addition, the age of the housing stock is very evident as almost half (approximately 47.2%) of all dwellings in the Township were built prior to 1959 and are at least fifty years of age. Very few homes were built in the 60s, however building increased between 1970 and 2000, which makes up about 43.8% of the built homes in the township. Just over 5% of housing units in the Township have been built since 2000, which correlates with the minimal population increase in the Township over this time (approximately 1.2% between 2000 and 2010, Table 1).

**Table 4: Year Structure Built**

	Number of Units	Percent of Total
2014 or later	0	0.0%
2010 to 2013	3	0.7%
2000 to 2009	19	4.5%
1990 to 1999	66	15.7%
1980 to 1989	47	11.2%
1970 to 1979	71	16.9%
1960 to 1969	16	3.8%
1950 to 1959	14	3.3%
1940 to 1949	33	7.8%
1939 or earlier	152	36.1%
<b>Total</b>	<b>421</b>	<b>100.0%</b>

*Source: 2013- 2017 American Community Survey 5-Year Estimates*

## HOUSING VALUES

**Error! Reference source not found.** and the American Community Survey data describe housing values only rather than the value of land or other property. The majority of the housing stock in Bengal Township, 63.1%, has a total value of \$150,000 or less. About 19% of the housing stock is valued at \$300,000 or more.

**Table 5: Housing Values in Bengal Township**

Value	% of Total Units
Less than \$50,000	2.3%
\$50,000 to \$99,999	8.5%
\$100,000 to \$149,999	23.8%
\$150,000 to \$199,999	28.5%
\$200,000 to \$299,999	17.9%
\$300,000 to \$499,999	13.5%
\$500,000 to \$999,999	4.7%
\$1,000,000 or more	0.8%
<b>Total</b>	<b>100.0%</b>

*Source: 2013- 2017 American Community Survey 5-Year Estimates*

# Economic Profile

## LABOR FORCE

According to the 2013-2017 American Community Survey 5-Year Estimates, approximately 628 people over the age of 16 in Bengal Township were in the civilian employed population. It should be noted that because of the lack of significant increases in population, the labor and industry statistics for the Township are very similar between 2010 U.S. Census figures and current estimates, with 633 people in the labor force as of the 2010 census.

## OCCUPATION SUMMARY

**Error! Reference source not found.** provides a synopsis of the occupations for employed Bengal Township residents. The highest percentages of people work in educational services, health care, and social assistance (20.1%) and public administration (14.8%). Reflecting the nature of Bengal Township as a farming community, approximately 10% of people employed work in agriculture and related industries. Throughout the country, only about 2% of the population is involved in farming.

**Table 6: Employment by Industry**

Industry	% of Persons Employed
Agriculture, forestry, fishing and hunting, and mining	10%
Construction	6.2%
Manufacturing	9.6%
Wholesale trade	2.4%
Retail trade	5%
Transportation and warehousing, and utilities	6%
Information	1.3%
Finance and insurance, and real estate and rental leasing	6.7%
Professional, scientific, and management, and administrative and waste management services	2.9%
Educational services, and health care and social assistance	20.1%
Arts, entertainment, and recreation, and accommodation and food services	9.6%
Other services, except public administration	5.4%
Public administration	14.8%
<b>Total</b>	<b>100.0%</b>

Source: 2013-2017 American Community Survey 5-Year Estimates

## INCOME AND POVERTY

The median household income for Bengal Township is \$68,250 according to the 2013-2017 American Community Survey 5-Year Estimates. This means that half of all workers earned more than this amount and half earned less. The median income for the Township was \$63,229 in 2000 according to the U.S. Census.

### TRAVEL TIME TO WORK

An indication of the Township's economic position relative to the surrounding region can be illustrated in travel time to work for residents. The mean travel time to work was 29.9 minutes, according to the 2013-2017 American Community Survey 5-Year Estimates. More than one half (53.3%) of all Township residents drive 30 to 59 minutes to work. This suggests that residents are driving to larger employment centers such as Lansing, Ionia, Grand Rapids or Flint for the employment opportunities but have chosen to live in Bengal Township. The following table further outlines the time residents spend traveling to their place of employment:

**Table 7: Travel Time to Work**

Travel Time to Work	% of Population
Less than 10 minutes	8.1%
10 to 14 minutes	15.3%
15 to 19 minutes	6.4%
20 to 24 minutes	4.5%
25 to 29 minutes	5.0%
30 to 34 minutes	27.0%
35 to 44 minutes	13.2%
45 to 59 minutes	13.1%
60 or more minutes	7.6%
<b>Total</b>	<b>100.0%</b>

*Source: 2013-2017 American Community Survey 5-Year Estimates*

## Existing Land Use

*Knowledge of current land uses allows the Township to consider the compatibility of new land uses and is a valuable tool when considering the day-to-day problems associated with land management and the delivery of key public services. The existing land use survey provides an inventory of land use within the community and is a key source of background information used in developing the Master Plan.*

*The majority of Township land is classified as agricultural. Sparse residential populations exist throughout the Township.*

### Agricultural/Open Space

The predominant land use in Bengal Township is farming. Although some agricultural land has been split and developed for light industrial and residential use, it remains the prevalent land use and occupation in the Township. Approximately 21,265 acres or about 92% percent of the total land area in Bengal Township is devoted to agricultural activities or remains undeveloped open space.

Several characteristics of the land in Bengal Township make it particularly well-suited for agricultural uses. There is little topographic variation or standing water, and the soils are very suitable as crop land. As a result, much of the Township's land has been cleared for agricultural activity.

The Michigan Farmland and Open Space Preservation Act, Public Act 116 of 1974, can be an important tool for preserving farmland for rural communities such as Bengal Township. This Act is designed to relieve the pressures to develop agricultural land. Under this program, owners of farm land receive a credit against their state income tax liability. In return for this credit, the State of Michigan receives the development rights to the property for a specific number of years, but not less than ten (10) years. For undeveloped open space land, the Act also allows for an exemption of the development rights from ad valorem taxation.

## Urban/Built Up

The following land uses comprise the “Urban/Built Up” category. Approximately 1,542 acres or 6.7% of Township land is currently developed.

### LOW DENSITY RURAL RESIDENTIAL

Some single family residential low-density development has and is taking place in the township. These single-family homes are mainly being built on lots split off and created from larger agricultural parcels. They are fairly spread out throughout the Township.

### COMMERCIAL AND INDUSTRIAL ACTIVITIES

Bengal Township has limited industrial activity, with only about 114 acres being dedicated to industrial uses. Commercial and industrial activity is concentrated on the North side of M-21 and ranges from storage to agricultural solutions.

## Public and Quasi-Public Land Uses

Public land uses in the Township include the Township Hall located at 6586 West M-21 and the four Township cemeteries; Frink, Bray, Oak Ridge, and Georgia.

## Utilities

No public water or sanitary sewer facilities currently exist in Bengal Township. Electricity and gas utilities, as well as wireless and telephone services are provided by private industries. The privatization of these industries assures adequate capital to provide increased levels to society, as growth demands.

## Recreational Land Uses

The Fred Meijer Clinton-Ionia-Shiawassee Trail runs through Bengal Township, which is a biking and walking path constructed of both paved segments and crushed limestone, that traces the path of the former Central Michigan Railroad. The trail offers residents of Bengal Township a 41-mile biking and walking recreational opportunity, with a mix of pastoral and wooded landscapes.

## Natural Areas

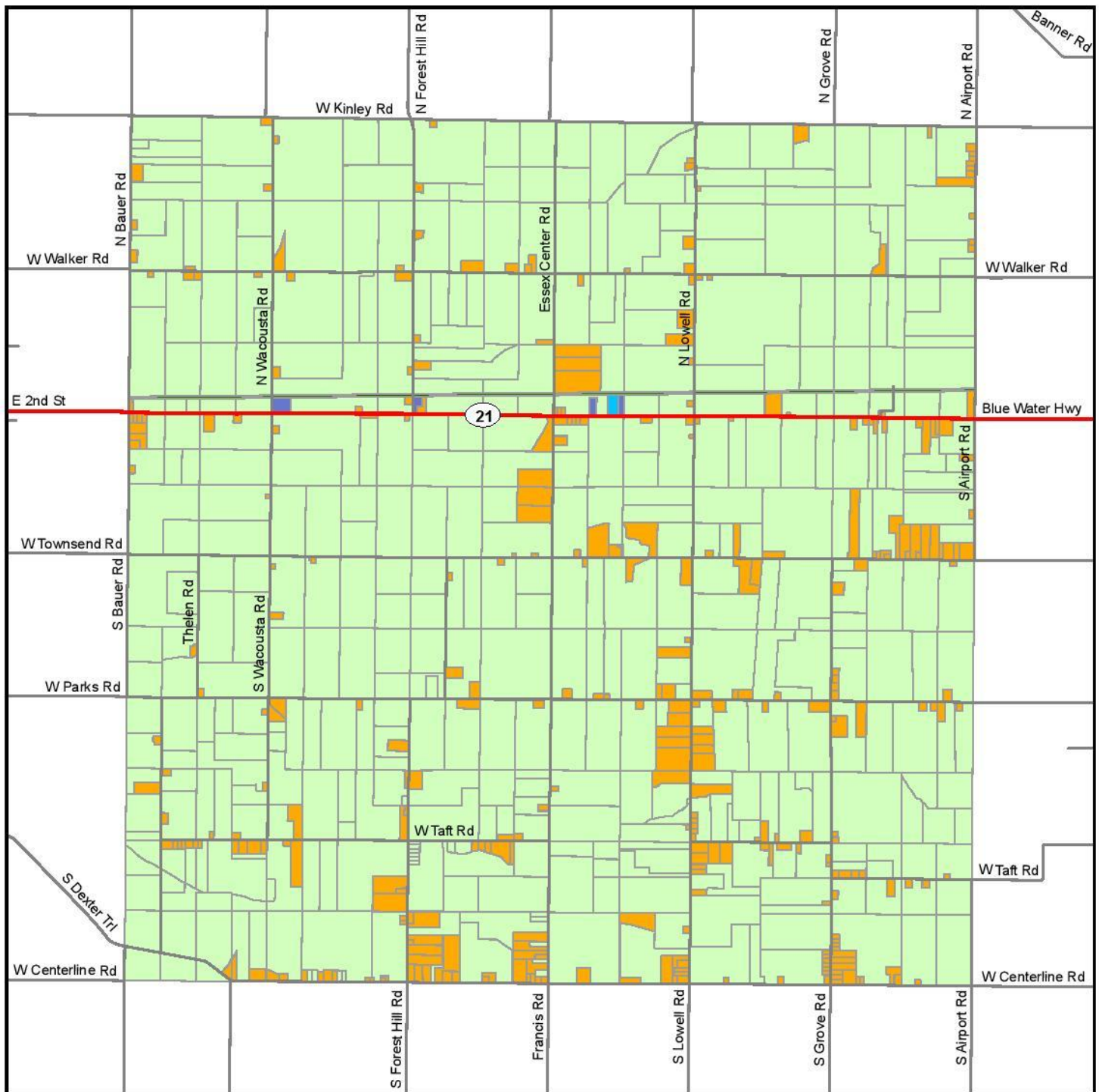
The number of wetlands, surface water, range land and forested areas in the Township comprise about 21,265 acres, or 92.29% percent of the total Township land area.

These categories of various existing land cover are illustrated on Map 1.

**Table 8: Existing Land Cover/Use**

Existing Land Cover/Use Category	Area of Township in Acres	Area of Township in %
Agricultural/Open Space	21,265	92.29%
Urban & Built Up Areas	1,542	6.69%
Water	5	0.02%
<b>Total</b>	<b>23,040</b>	<b>100.00%</b>





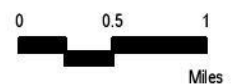
# Existing Land Use Map

Bengal Township, Michigan

July 2, 2019

## Legend

- Residential
- Industrial
- Agricultural/Open Space
- Public/Quasi-Public
- Recreational
- State Highways
- County Roads



**SOURCES**  
 Basemap Source: Michigan Center for Geographic Information, Version 17a.  
 Data Source: Bengal Township 2019. McKenna 2019.



# Transportation System

*The transportation system provides a backbone for accessibility and helps guide how people will travel within a community. The conditions of a road, including whether it is paved or widened, will affect the amount or type of traffic on any particular road.*

## Township Road Network

The existing road network of Bengal Township consists almost entirely of roads under the jurisdiction of the Clinton County Road Commission. M-21, as a State Highway, is under the jurisdiction of the Michigan Department of Transportation. Roads within the Township are generally patterned on a basic “grid” system with roads spaced every one-half mile to one mile apart. In several cases, the roads follow and serve as the definition of the individual section lines in the Township.

### FUNCTIONAL CLASSIFICATION OF ROADS

Roads throughout the country are placed into one of seven classifications based on their function and type of traffic served. The Interstates (classification level 1), other freeways and expressways (level 2), other principal arterials (level 3), and minor arterials (level 4) all serve large volumes of traffic between regions or through urbanized areas. As a rural Township, Bengal Township has mostly major collectors (level 5), minor collectors (level 6), and local roads (level 7), with the exception of M-21, which is a minor arterial highway. Most roads within the Township are local roads with the exception of those in the following table:

**Table 9: Functional Classification of Roads**

Road	Extent	Direction	Classification
M-21	Entire length of the Township	E-W	Highway
Francis	South of M-21	N-S	Major Collector
W. Parks	East of Francis	E-W	Major Collector
N. Forest Hill	North of M-21	N-S	Minor Collector

Source: Michigan Department of Transportation

Of the approximately sixty-two (62) miles of County roads, 6.13 miles are classified as primary roads and are paved. The remaining 55.62 miles of County roads are classified as secondary (local) roads, and only 15.06 miles of these are paved (see **Error! Reference source not found.**). M-21 is a designated State Trunkline Highway and runs directly and entirely through the Township.

### **CIRCULATION PATTERN**

The main north-south roads in the Township are N. Forest Hill Rd. and S Francis Rd. S. Francis provides access to the City of Lansing to the southeast and to the City of Portland to the southwest. N. Forest Hill provides direct access to the village of Maple Rapids to the north. Traffic following S. Francis can enter Interstate 69. S. Francis also connects with W. Price Rd, providing Township residents with access to Interstate 127, heading south to Lansing or north to Mt. Pleasant.

The main east-west roads in the Township are M-21 and W. Parks Rd. M-21 traverses through the entire length of the Township and heads towards the City of Grand Rapids in the west and the City of Flint in the east. Traffic on W. Parks Rd can access the Old U.S. 27 which gives residents access to the commercial and public center to the south of St. Johns and the City of St. Johns itself to the north.

### **PRIVATE ROADS**

At this time, the Township has not approved any private road applications. Private, unimproved roads typically serve as access to home sites. Private roads can be problematic because of the lack of proper maintenance. If private roads are to be permitted in the future, the Township should consider requiring all private roads to meet County road standards or other appropriate standards to protect public safety, and to require assurance of regular maintenance.

### **COMPLETE STREETS**

Bengal Township strives to make its roads safe and attractive for all users. Therefore, the Township will work with the Clinton County Road Commission to implement a rural vision of Complete Streets on key road corridors. The Complete Streets philosophy is that roadways should be safe for all legal users. Complete Streets in Bengal Township would mostly consist of widened paved or unpaved shoulders, which can provide access to slow moving traffic including tractors or snowmobiles. Such upgrades are not expensive or difficult, and can be achieved during any scheduled rebuilding of a roadway by the Road Commission.

### **COUNTY ROAD IMPROVEMENTS**

The basic source of revenue for roadway maintenance and improvement is the state-collected gas and weight tax, and local general fund tax revenues through a road millage. The road millage provides a majority of the local road funding in the Township. The funds for the gas tax are paid by motorists upon purchase of gasoline and diesel fuel, and to the Secretary of State for vehicle registrations. The County Road Commission identifies and carries out the five-year plan for road improvements in the Township.

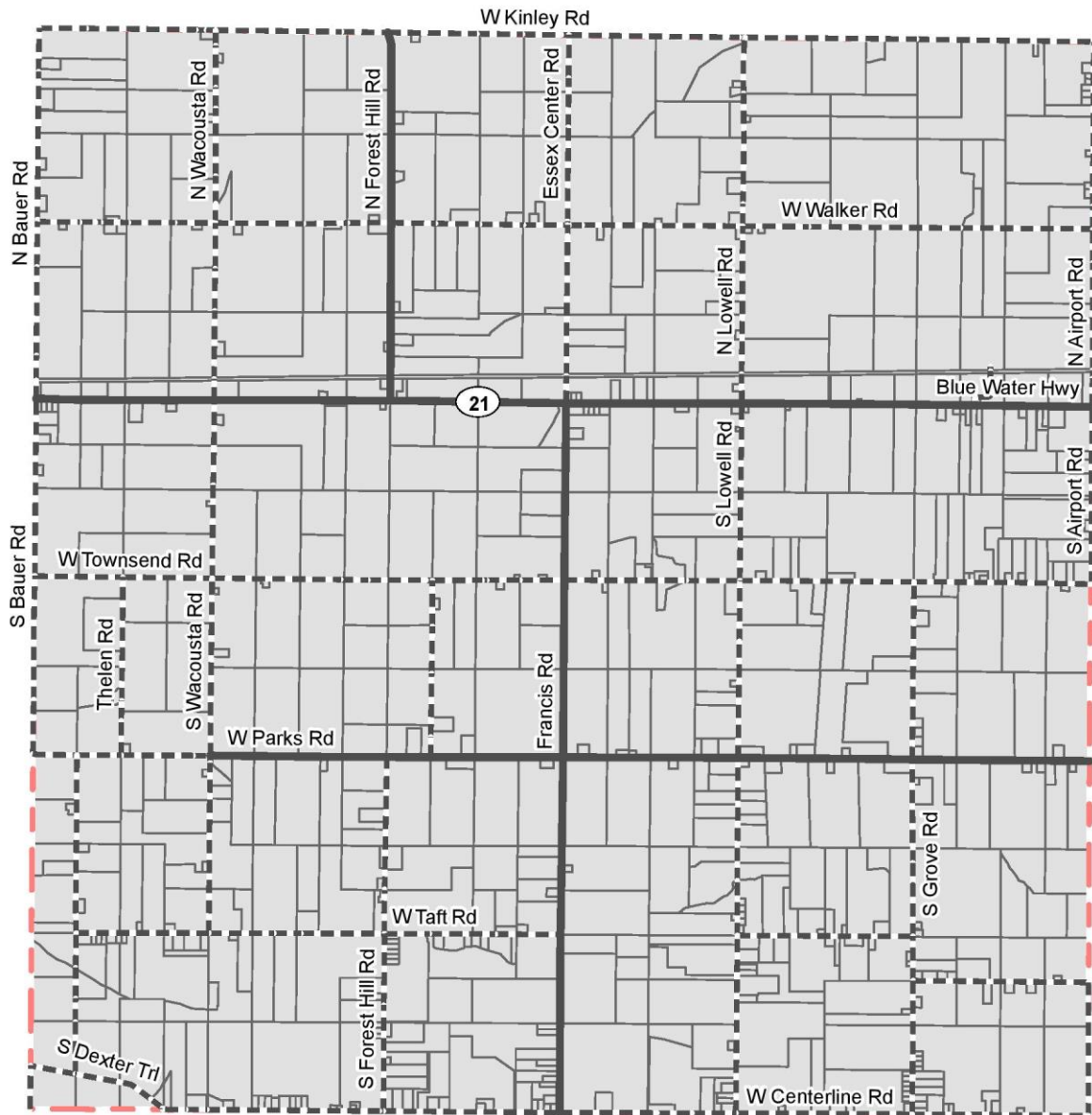
## **Other Modes of Transportation**

### **PUBLIC TRANSPORTATION**

The Clinton Area Transit System, commonly known as the “Blue Bus”, is based in the cities of St. Johns and Dewitt and serves all of Clinton County, with on-demand response service. The system has a fleet of twenty-one (21) buses as well as seven (7) minivans, all of which are equipped with wheelchair lifts. The system runs when people have requested a ride, and more than one trip or recurring trips can be scheduled at a time.

### **RAILROADS AND AIRPORTS**

There are no rail lines, passenger or freight, in the Township. The nearest passenger rail station to the Township is about 27 miles south in East Lansing. The East Lansing Station is an intermodal transportation station that is served by Amtrak’s Blue Water passenger train, which connects Port Huron, Michigan and Chicago, Illinois. Passenger airline service is available at the Capital Region International Airport in Clinton County approximately 19 miles southeast of Bengal Township. Gerald R. Ford or Bishop International Airports are also an option. For more options, including international flights, Bengal residents make use of Detroit Metro Airport.



# Roadway Map

Bengal Township, Michigan

September 11, 2019

## Legend

### Road Pavement Status

— Paved

- - - Unpaved

— Bengal Township Boundary

— Bengal Township Parcels



SOURCES  
 Basemap Source: Michigan Center for Geographic Information, Version 17a.  
 Data Source: Bengal Township 2019, McKenna 2019.





# Natural Features and Resources

*The natural features of the Township, such as hills, rivers, soils, and woodlands are an important resource to the community. Natural resources are valuable to preserve for their aesthetic qualities and importance to human survival. A sound planning process should examine the differences in the natural environment across the landscape of the Township to ensure land uses are compatible with the nearby natural features and to preserve and protect these resources.*

In considering natural resources in the planning process, the environment is evaluated for its suitability to accommodate development. Data on the natural features was assessed based on maps and surveys and is described in terms of capability and suitability for development. The community's needs, in terms of evaluation of existing land use and local goals and objectives are then used to generate the Land Use and Transportation Plan. For analytical purposes, the environment of the Township is divided into the following natural systems: surface water, ground water, agricultural land, drainage patterns, and soils.

## Surface Waters

The surface waters in Bengal Township consist of various creek systems, such as Stoney Creek and South Hayworth Creek. As the land is mainly agricultural, surface waters are susceptible to absorbing runoff.

## Soil Suitability

The safe and proper disposal of sanitary waste is an important factor in providing for the prosperity of Bengal Township now and in the future. Because of the rural character of the Township, the disposal of sanitary waste has been provided by septic systems, which will likely continue into the future. The soils of the Township have been analyzed for their suitability for use with septic systems because:

- The safe and proper use of septic systems requires consideration in development and design
- Unsatisfactory septic performance presents public health concerns, and
- Owners of poorly performing systems can be faced with unanticipated costs

Proper provision for new septic systems and maintenance of existing systems is and will continue to be an issue for the Township in the future.

Bengal Township is comprised of over a dozen different types of soils. Several of these soil types have been determined by the Natural Resources Conservation Service to have a potentially severe limitations



rating for septic systems. The major soil types listed below are those that are seen at levels above 7% of the total soil types represented in Bengal Township.

Those soils conducive to residential development are anticipated to perform the best under reasonable conditions. The severe septic rating indicates the likelihood for poor septic performance because of soil permeability problems, a high-water table, and/or flooding. This rating indicates that soil conditions in some areas may warrant a special design and/or additional maintenance, both of which create additional associated costs. Water is of course not suitable for septic.

## Soil Classification Types

### CONOVER LOAM SOIL

The Conover series soils are generally moderately sloping, anywhere from 0 to 4 percent and somewhat poorly drained. This soil makes up twenty-one (21%) percent of Clinton County and forty-six (46%) of Bengal Township, making it the most readily found soil available in the Township. If drained, this soil is considered prime crop land and most areas of this soil are currently used as such. Most areas with this soil are cultivated, with corn, beans, small grains, and legume-grass hay as the principal crops.

### PARKHILL LOAM SOIL

The Parkhill series consists of very deep, poorly drained, and very poorly drained soils, and are generally nearly level to moderately sloped, anywhere from 0 to 2 percent. This series makes up 10% of the soils in Bengal Township, however only 8.6% of the soils in Clinton County are in the Parkhill series. This soil is also considered prime farm land, if drained. Parkhill soils are not suitable for development or septic tank absorption fields and are primarily utilized for crop land.

### SIM SILTY CLAY LOAM SOIL

The Sims series soils are generally nearly level to moderately sloped, at a grade of 0 to 2 percent, poorly drained or very poorly drained, and are usually formed in clayey till. This series makes up approximately 8% of Bengal Township, while it only makes up about 4% of the overall Clinton County soil composition. If drained, Sims silty clay loam is prime farmland. This soil, however is most suitable and normally utilized for permanent pasture land or forests of aspen, fir, and cedar. This land can be cropped, but is more suitable for pasture.

### COLWOOD LOAM SOIL

The Colwood series consists of very deep, poorly drained, or very poorly drained soils, that are generally level, with a slope of anywhere from 0 to 3 percent. These soils are generally found on lake plains, outwash plains, moraines and deltas. Due to slow permeability and drainage, these soils are most suitable for crop land, and most are utilized in this way. This soil makes up 7.6% of Bengal Township, while it only constitutes 1.6% of all Clinton County soils. This soil is most suitable for crop land and is used as such in Bengal Township. Those areas of Colwood series soils that have very poor drainage are more suitable for pasture or forest.

All soil information has been extracted from the NCRS Web Soil Survey and the NCRS Official Series Descriptions.

## Groundwater

Bengal Township depends entirely on groundwater as its water source for home and agricultural use. Therefore, it is important to plan appropriately for development to protect these water resources from possible contamination.

Contamination of water resources can happen from non-point sources of pollution including chemicals from commerce, industry, and farming; through chemicals filtering into groundwater from septic fields, oil tanks, and waste disposal sites; and through everyday activities. In many instances, these pollutants reach lakes and streams through groundwater supplies. Pollutants might also affect well water located near septic fields.

Groundwater protections must also address operational features of different land uses. Groundwater contamination is most frequently the result of leaking septic systems, improper floor drains, improper storage of hazardous substances, leaking underground storage tanks, above ground spills, overfilling of tanks, condensation from air emissions, and improper waste disposal. Many of these potential avenues of contamination can be addressed in site plan review. A site plan review should require full disclosure of locations of tanks, floor drains, and connections; and should require the best available technology to alleviate potential impact.

An additional concern in Bengal Township, because sanitary sewer service is not available, is locating septic systems on suitable soil. The Township will need to ensure the provision of adequate septic field reserve areas, and limit development on marginal soils to prevent future groundwater contamination.

## Agricultural Land

Agriculture has played a key role in the development of Bengal Township and contributes to the rural character and identity of the community. The preservation of agricultural land provides environmental, aesthetic, recreational, and historic benefits to people in the community. Open farmland also assists in the replenishment and maintenance of groundwater supplies.

Bengal Township has always been a predominantly agricultural community. The overall trend within Michigan is toward fewer acres in agricultural production. The effects of land speculation, increasing property values and taxes, and rural/urban conflicts tend to diminish active agriculture. However, the communities most at risk of losing agricultural lands in the future are located near major employment and population centers. In Clinton County, these include St. Johns and East Lansing, and the communities connected to them along major highways such as M-21 and US-127. Bengal Township is not likely to see major pressures of development on its agricultural land in the near future, but preserving farmland should still be a top priority.



# Community Facilities

## Schools

Three school districts serve the residents of Bengal Township. St. Johns Public School District in Bingham Township serves the majority of the Township, covering more than half of the Township that lies generally east of Forest Hill Rd. Pewamo-Westphalia Community Schools serves a small southwestern corner of the Township. The remainder of the Township is served by the Fowler Public School District, extending generally west of Forest Hill Rd.

## Recreational Facilities

There is one formal recreational facility located in Bengal Township. The Fred-Meijer Clinton-Ionia-Shiawassee bike trail is a 41-mile biking and walking path that runs above M-21 and runs through the entire length of Bengal Township. Utilizing a former railroad, the trail traverses rural and farmland areas as well as encountering a few creeks and streams along the way. Other informal facilities provide recreational opportunities for residents in the Township, such as hunting in the woods.

Residents are able to use public school facilities provided by Fowler, St. Johns, and Pewamo-Westphalia school districts, as well as Clinton County parks in St. Johns, and several urban parks and recreational facilities within the City of St. Johns. Nearby State recreational facilities include the Ionia State Recreation Area, the Maple River State Game Area, and Sleepy Hollow State Park. These parks and recreation areas offer camping, fishing, swimming, and hiking among their activities. Rose Lake State Wildlife Research Area is also in close proximity and is a public hunting reserve that provides areas for shooting and walking/biking.

## Emergency Services

Bengal Township participates with several multi-jurisdictional emergency service providers. Clinton Area Ambulance service provides emergency medical services through Clinton County. Law enforcement is provided by the Clinton County Sheriff's Office located in the City of St. Johns.

Bengal Township is provided fire protection from the City of St. Johns, along with Dallas Township. The City of St. Johns maintains one station, staffed by a fire chief and paid on-call firefighters, which is located in the city approximately two miles east of the Township and covers half of Bengal Township. Additional assistance is available to Bengal Township through the Dallas Township Fire Department which covers areas of Bengal, Essex, Lebanon, and Dallas Townships.

Collaborating with other local governments likely remains the best way to continue to provide emergency services for the Township. Intensive commercial or industrial development would likely generate the need for improved fire protection services and potentially a fire station and public water system. However, this plan does not propose the necessity for these services because of the existing and continued planned agricultural and residential nature of the Township.

# Other Facilities

## **TOWNSHIP HALL**

Bengal Township Hall is located on west M-21 at 6586. The 2010 structure contains a meeting room and a kitchen, both of which are available to rent by the public. Primary offices for Township officials are in the Township Hall. The Township Hall is used as a polling place and for monthly board meetings.

## **BRIGGS DISTRICT LIBRARY**

While there is not a library located in the boundaries of Bengal Township, the St. Johns Briggs District Library is six (6) miles from the township and provides Bengal Township and many others in the area with access to library materials, such as books, videos, computers with Internet access and other programming.

## **CEMETERIES**

There are four cemeteries located in Bengal Township. Frink Cemetery is located on Walker Rd, east of Lowell, Bray Cemetery is located 3 miles south of M-21 on Lowell Rd, Oak Ridge Cemetery is located 3 miles west of Francis, on Taft Rd, and Georgia Cemetery is located on Centerline Rd, east of Lowell.

## Public Participation

*The Bengal Township Master Plan update has been developed with the cooperation of the Bengal Township Planning Commission and the Township Board as representatives of the Township residents. The public was given the opportunity to provide feedback on the future of Bengal Township through a survey distributed to residents. This survey was utilized to shape the goals and objectives of this Master Plan, the results of which can be found below.*

The public can also provide feedback on the Master Plan during the State-required comment period, which gives residents time to read the Plan and to contact their representatives with questions. Furthermore, all Planning Commission meetings have been published and open to residents. Anybody in attendance had opportunity to provide feedback into the planning process and the development of the Plan itself.

Finally, a public hearing will be scheduled at which the final draft of the Master Plan will be presented, discussed and recommended for adoption. This hearing will be open to the public and will provide an opportunity for the Planning Commission to present its findings and layout the proposed future of the Township as well as an excellent opportunity for the community to review the findings of the Planning Commission, ask questions, and propose changes or alternatives prior to final adoption of the Plan.

Even after the Plan is adopted, citizen input and participation is still very important and should not end. The Plan should guide the Township in its future actions, with the public providing input and suggesting changes as future circumstances and conditions warrant.

## Survey Results

The survey distributed to the residents of Bengal Township was separated into eight sections in order to take into consideration the current views of Township residents regarding a variety of growth and development issues. Feedback on growth management, housing, land use and the environment, economy, services, community image, demographics, and township involvement were all captured by this survey.

Farm preservation, as opposed to encouraging the growth of businesses, emerged as main goal of Bengal Township residents. 50.91% of residents who responded to the survey indicated that they would like to see planned and limited growth in Bengal Township, in addition to the 16.36% who stated they would like to see a goal of no growth in the area. This is reinforced by 90.91% of residents responding that in 10 years, they would like to see Bengal Township be primarily a farming community. Many (67.86%) believe that the Township should promote slowing the conversion of farmland to residential uses. 46.5% of residents indicated that they support the decrease of the currently required parcel size of 10 acres in the Agricultural district. Additionally, 64.15% of residents agreed that residential wind turbines should be regulated in the Township.





# Goals and Objectives

*Before a community can actively plan for its future, it must first declare certain goals and objectives to define the boundaries of its needs and aspirations, and thus establish a basis for the development of a Future Land Use Plan. These goals and objectives must reflect the future vision for the community and the kind of lifestyle its residents wish to follow, given realistic economic and social constraints.*

The following chapter represents the goals, objectives, and policies which should be used to guide local decision makers in reviewing future land use proposals. Goals represent the ultimate purpose or intent of the Plan, objectives are the means of obtaining those goals, and policies are specific statements used to guide the actions of the Township.

## Goals

Bengal Township acknowledges the strong rural and agricultural character, as well as the abundance of natural resources, that define the community. In recognizing its role, Bengal Township adopts the following general community goals to guide future land use changes:

- Preserve the current rural and agricultural character of the Township.
- Protect the natural resources in the Township as a way to preserve a high quality of life.
- Minimize the development of scattered land uses which results in inefficient land usage and ultimately increases the costs of providing public services.
- Preserve the rights of property owners while maintaining the character of the Township.

## Objectives and Policies

With the primary goals in mind, the following specific objectives and policies have been formulated to guide action, programs and land use in the Township.

### AGRICULTURAL

Objective: Identify, classify, and provide all possible methods of preserving those areas best suited for agricultural use. Policies to support this objective are as follows:

- Recognize agriculture as the predominant economic activity in Bengal Township.
- Provide means of maintaining very low population densities in all agricultural areas to reduce the influences that encourage encroachment of other, less desirable, or conflicting land uses.

- Regulate the location and impact of wind and/or solar energy conversion facilities in order to protect and preserve agricultural activity and agricultural lands.
- Balance the need to provide resources for agricultural uses with a need to protect neighboring properties and natural resources in the Agricultural district. Respect the rights and responsibilities given to agriculture under the Michigan Right to Farm Act, especially regarding manure management, water quality, air quality, and other financial and environmental impacts.

## RESIDENTIAL

Objective: Provide limited concentrations of residential land uses while preserving the character of the Township and protecting natural resources. Policies to support this objective are as follows:

- Minimize random scattered residential development in the Township.  
Provide all possible means of encouraging the rehabilitation and conservation of the existing housing stock.
- Limit future construction of residential land uses to the density and character of development laid out in the Future Land Use text.
- Preserve the rural character of the Township by discouraging growth, regardless of the land use decisions in neighboring communities.  
Do not allow new residential construction that would have adverse environmental impacts.

## INDUSTRIAL

Objective: Provide limited concentrations of industrial and commercial land uses while preserving the character of the Township and protecting its natural resources. Policies to support this objective are as follows:

- Minimize random scattered industrial development in the Township.
- Limit future construction of industrial land uses to the Industrial future land use area.
- Provide regulations requiring suitable buffering of industrial land uses from residential and agricultural uses.
- Preserve the rural character of the Township by refusing to promote growth, regardless of the land use decisions in neighboring communities.
- Do not allow new industrial construction that would have adverse environmental impacts.

# Future Land Use Plan

*The Future Land Use Plan serves as a guide for the community. The Plan has been constructed to allow for flexibility if future conditions in the Township change, while still executing the goals of the Township as described above. The Future Land Use Plan describes where certain land uses are allowed, while the zoning code reflects the future land use map by regulating development aspects of individual sites.*

## Planning Principles

Land use planning principles are used as a guide to evaluate development alternatives and public policy. The following are general principles that should be applied to all land use categories.

### CONSISTENCY

Development should be reviewed for general consistency with the intent of the Master Plan, as should sub-area or regional plans. Other governing bodies, such as the State or County, should be encouraged to use the Master Plan in considering programming for Bengal Township.

### SUSTAINABILITY OF NATURAL SYSTEMS

Intense scrutiny should be given to development proposed for environmentally sensitive areas.

### COMPATIBILITY OF USES

Special attention should be given to any transitions between uses of greater intensity to those of lower intensity. It should also be noted that agricultural and residential uses are not always compatible land uses. Thus, specific caution should be taken to avoid allowing excessive residential encroachment into agricultural areas in order to preserve the rural and agricultural character of the Township.

# Land Use Categories

The land use categories, as well as the conditions under which they should exist, are defined in this section of the Plan. Due to the limited number of land uses in Bengal Township, this text will replace a traditional Future Land Use Map. The elected Bengal Township officials shall be responsible for the interpretation of the intent of the Future Land Use categories and text. At their discretion, they shall revise the Future Land Use text to facilitate the needs of the Township.

## AGRICULTURAL

The vast majority of the Township's existing land use is included in this category. Agriculture is a major industry and contributor to the overall rural aesthetic of the area that makes it a desirable community. Looking to the future, Bengal Township should maintain an agricultural designation in all areas except those that are already a special land use or whose future land use designation is industrial.

Agricultural land uses are characterized by grain, fruit, and vegetable farming, livestock operation, and rural residential units. Because residential encroachment into agricultural areas can result in a reduction of agricultural lands, as well as a disincentive for property owners to invest time and funds needed to maintain agriculturally productive land, new residential units in agricultural areas should have a maximum density of one unit per five acres. This will serve to maintain parcels of land viable for farming in agricultural areas.

There are many areas in Bengal Township that are suitable for the development of wind energy conversion systems, most of which are currently dedicated to agricultural uses. Considering that wind energy conversion systems are reasonable uses of the land, Bengal Township shall make the goal that this use of land also does not infringe upon the goals of the Township to preserve and foster the use of agricultural lands. Rules and regulations for the consideration of renewable energy resources and facilities to extract that resource should be pursued in order to protect farmland and maintain Bengal Township's rural aesthetic.

## INDUSTRIAL

Industrial uses are designated to provide for resources and services essential to high quality light industrial development, while ensuring against the encroachment of these uses into agricultural districts. Industrial uses are characterized by manufacturing, office/research, warehousing and distribution, commercial uses, and other similar light and low impact industrial uses. Lots may be rezoned to I-1 Industrial only if they meet the following requirements:

- The lot abuts M-21.
- The lot is large enough that the reasonably-sized non-residential building can be constructed, while meeting the required setbacks in the I-1 district OR there is an existing building on the site that could be used for a non-residential use without negatively impacting the neighbors.
- There are no uses in the immediate vicinity of the lot that would be negatively impacted by the presence of a non-residential building or use.

## MANUFACTURED HOUSING DEVELOPMENT

Manufactured housing developments or mobile home parks are common in the rural areas in Michigan. Mobile home parks provide housing alternatives to residents who are unable to afford more permanent housing. From a planning perspective, they must be considered because the density in which they are built provides an economy of scale for the design and construction of on-site water and septic systems. Mobile home parks often provide their own wastewater treatment and well fields in rural areas where public utilities are not generally available, including communities like Bengal Township.

While recognized as a legitimate land use, mobile home parks can significantly increase the population of a community while providing less than a corresponding amount of property tax revenue to the host community from which to provide public services to new residents. Furthermore, though a community can

plan and zone appropriate locations of manufactured housing developments, they cannot regulate the internal design nor the operation of these facilities. Therefore, it is important for the Township to discuss, consider, and plan for possible and appropriate locations for a mobile home park, should one wish to locate in Bengal Township.

Manufactured housing developments may be considered anywhere in the Township. However, when considering the construction of manufactured housing developments in the Township, they must not result in adverse impacts on the environment or in the loss of agriculturally viable land.

## Community Facilities

As a rural community, the Township does not currently have nor will it have in the foreseeable future a high demand for public services or the necessity for more than the basic of public community facilities. The Township's primary community facility is its Township Hall, which was constructed in 2010 and is located at 6586 M-21. The Township should continue to work to maintain this facility to serve as its primary gathering spot within the community. Not only is the Township Hall the site of various governmental functions such as elections, board meetings, and public hearings, it also serves as the principal identifier of the Township. The majority of Township residents are familiar with where the Township Hall is located and what happens there. Therefore, as the Township Board and Planning Commission continue to increase public participation, the Township Hall must keep up with the demands of a modern gathering place.

The Township maintains four public cemeteries which are a historical record and visual reminder of the Township's long history. The Township must budget for the ongoing management and maintenance of these facilities.



# Implementation Plan

## Implementation Strategies

Implementation strategies are a major component of any master plan. They determine how guidelines and recommendations in the Plan become reality. The Bengal Township Master Plan should be seen as a living document. If conditions in the community or the needs of the resident's change, the Plan will need various adjustments or additions. The main goals and objectives in the Plan are not anticipated to require change, but as the Plan is implemented certain aspects will require periodic adjustment.

## Zoning Plan

The following table defines the zoning plan for Bengal Township, with each future land use category corresponding to a future zoning classification.

**Table 10: Zoning Plan**

Future Land Use Categories	Current Zoning	Future Zoning
Agricultural	<b>A-2:</b> General Agricultural	<b>A-1:</b> General Agriculture
Industrial	<b>I-1:</b> Light Industrial	<b>I-1:</b> Light Industrial

### LAND DIVISION REGULATIONS

Land division standards following the Michigan Land Division Act (P.A. 288 of 1967, as amended through P.A. 591 of 1996) are a tool for the implementation of this Plan. Whereas zoning is concerned with land use on a site by site basis and activities in selected areas, land division regulations deal with the process of dividing land and maintaining the quality of individual developments.

Subdivision standards, as permitted under the Land Division Act, can be created in a Subdivision Control Ordinance to protect the needs of citizens by providing site design controls and improvement standards. Design controls provide for the arrangement and location of streets, configuration of lots, the provision of open space, and the sufficiency of easements for utility installations. Improvement standards ensure adequate roads and other physical improvements.

All other land divisions in the Township are also regulated by the Land Division Act. The act permits the Township to establish a Land Division Ordinance with local authority and the responsibility for the legal approval of land divisions. When land is divided outside of subdivisions, this ordinance can ensure that the resulting lots are consistent with Zoning Ordinance minimum requirements. It can also require lots to maintain minimum access standards to assure availability of public or private roads for the lots.

All land division regulations described in this section were recently changed by the Michigan Legislature and Governor. The Planning Commission must remain alert to modifications in this area of regulation in order to assure the Township standards and requirements are consistent with authorizing legislation.

Over the last 15 years, Michigan condominium regulations have been modified to permit the ownership of land by a co-owners association. The Michigan Condominium Act was significantly altered in 1982 to



permit condominium ownership of land. Since then, many developers have created site condominiums as a substitute for land subdivision. Site condominium development is often an attractive alternative to subdivision because the approval process can be much shorter than with subdivision development. The Condominium Act requires condominiums to comply with the local Township ordinances. The Planning Commission should consider establishing standards for site condominium development of land.

Subdivision Regulations under the State Subdivision Control Act (Act 288, P.A. of 1967, as amended) are tools for the implementation of this Plan. Whereas zoning deals with land use on a site by site basis and activities in specific areas, subdivision regulations deal with the process of dividing land and maintaining the quality of individual developments. Subdivision standards protect the needs of citizens by providing both site design controls and improvement standards. Design controls are concerned with the location and arrangement of streets, width and depth of lots, the provision of open space, and the sufficiency of easements for utilities. Improvement standards ensure adequate roads and physical improvements.

Most land divisions in Bengal Township are not under the jurisdiction of the State Subdivision Control Act, but rather are regulated by the land division procedures and standards from the Zoning Ordinance sections dealing with private roads and the division of platted lots and unplatted acreage.

### **PLANNING COMMISSION**

A stable and knowledgeable Planning Commission is essential to the success of the zoning process. The responsibilities of the Commission include long-range plan formulation and the designing of appropriate and reasonable zoning ordinance regulations to implement the goals and objectives of the Master Plan. Adoption of the zoning ordinance by the Township Board then provides the legal basis for enforcement of the zoning ordinance's provisions. The ultimate effectiveness of the various ordinance requirements, however, depends upon the quality of ordinance administration and enforcement. If procedures are lax or handled in a sporadic and inconsistent manner, the results will be unsatisfactory at best.

### **CONTINUOUS PLANNING**

The Planning Commission has the role of providing planning recommendations for the Township Board. This planning function is a continuous process and does not terminate with the completion of this Plan. Rural areas are in constant change and planning is an ongoing process of identification, adjustment, and resolution of problems. In order to sustain the planning process and generate positive results, maintain momentum, and respond to change, the Plan should be reviewed and updated every three to five years to maintain the validity of its data and relevance as a policy document.

# Transportation Plan

## CIRCULATION AND ROAD SYSTEM IMPROVEMENTS

No additional public roads are expected to be built within the foreseeable planning period. The Clinton County Road Commission plans to concentrate on the maintenance and improvement of existing public roads. The condition of existing paved roads should be evaluated each year, and roads with high traffic volume should be considered for repaving. Maintaining existing gravel roads should be a top priority of the Township and the Clinton County Road Commission. Gravel roads promote reduced speeds, a rural atmosphere, and discourage dense development. However, poorly maintained gravel roads result in a variety of conditions from nuisances such as dust to more dangerous conditions resulting in damage to vehicles and difficult driving conditions. The Township and County should evaluate the road conditions and traffic volumes in the Township annually and prioritize improvements based on any findings.

## COMPLETE STREETS

Bengal Township intends to implement a rural vision of Complete Streets with this Plan, and will work with the Clinton County Road Commission on road projects. The Complete Streets philosophy is that the roadways should be safe for all legal users. Complete Streets within the Township will mostly consist of widened paved or unpaved shoulders, which can provide access to slow moving traffic such as tractors, horses and buggies, or snowmobiles. The highest priority for Complete Streets in the Township should be major corridors that connect Bengal Township to markets in nearby communities such as Fowler and St. Johns, as well as roads that provide major connectivity throughout the Township. Major north south roadway corridors include N. Forest Hills and S. Francis Roads, and major east west roadway corridors include M-21 and W. Parks Rd.

# Action Plan

The Bengal Township Master Plan and its goals, objectives, and policies recommend the future vision for the community. The Township desires to enhance its rural character, maintain agricultural viability, and protect natural resources, while accommodating some residential growth.

The goals, objectives, and policies of this Plan should be reviewed often, and should also be considered in decision-making by the Township. Successful implementation of this Plan will be the result of actions taken by elected and appointed officials, Township staff and consultants, the Planning Commission, the Township residents, public agencies, private organizations, and outside government agencies including Clinton County and the State of Michigan.

The table on the following page presents a detailed summary for all the recommended implementation activities, who is responsible for completing the activity, and available funding sources for each activity.

**Table 11: Action Plan**

Project	Priority	Timeframe	Responsibility			Funding		
			Township	Other Gov.	Private	Public	Private	TIF/DDA
Planning and Zoning								
Update the Zoning Ordinance to be compatible with the Master Plan.	A	1	PC TB	TAC		•		
Civic and Transportation								
Work with CCRC to implement a rural vision for a Complete Streets design along M-21.	A	1	TB	CCRC TAC		•		
Work with the CCRC to implement a rural vision for a Complete Streets design along N. Forest Hill.	B	2	TB	CCRC TAC		•		
Work with the CCRC to implement a rural vision for a Complete Streets design along S. Francis.	B	2	TB	CCRC TAC		•		
Work with the CCRC to implement a rural vision for a Complete Streets design along W. Parks.	C	3	TB	CCRC TAC		•		

Priority		Timeframe		Responsibility (Color)	
A	Most Important	1	Within one year		Project Lead
B	Very Important	2	1-3 years		Key Participant
C	Important	3	3+ years		Contributor

RESPONSIBILITY (ABBREVIATION)			
<b>CC</b>	Clinton County	<b>PSD</b>	Public School Districts (St. Johns, Fowler and Pewamo-Westphalia)
<b>CCRC</b>	Clinton County Road Commission	<b>SM</b>	State of Michigan
<b>CM</b>	Community Members	<b>TAC</b>	Township Administration and Consultants
<b>LO</b>	Land Owners	<b>TB</b>	Township Board
<b>PC</b>	Planning Commission	<b>TCRPC</b>	Tri-County Regional Planning Commission
FUNDING			
<b>Public</b>	Includes public funds from the Township operating budget, County, and State funding. May also include local government bonds and grants.		
<b>Private</b>	Includes funds from private sources such as grants, corporate funding, or property owners.		
<b>TIF</b>	Tax increment financing provided by an authorized body. Please refer to the summary of economic development tools.		

# Solar Energy Addendum



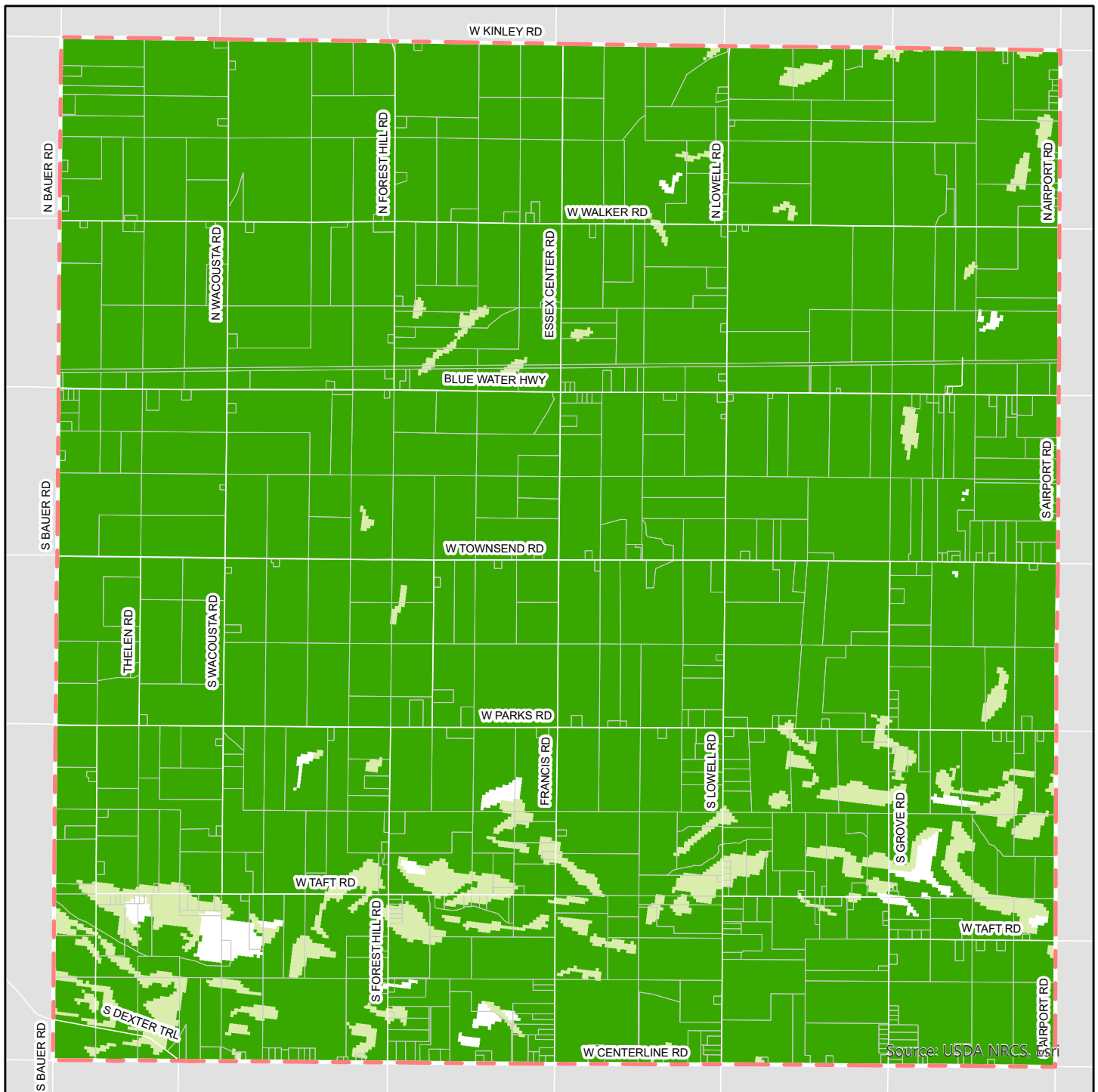
In order to preserve the natural, rural beauty of the Township, the viability of the Township's farmland, the precious ecosystems contained within the Township, and the health, safety, and welfare of the Township's residents, Bengal Township adopts the following policies with regard to the development of solar energy facilities within its borders.

- Renewable energy is important for the sustainability of ecosystems, food systems, economies, and communities. However, the large-scale positive impacts must be weighed against local negative impacts, including the health, safety, and welfare of the residents of Bengal Township.
- On-site solar energy systems provide ecological and economic benefits, at a scale that is desirable in a rural community and with fewer impacts on the immediate surroundings than utility-scale solar energy systems. However, the impacts they do have must be managed through zoning regulations.
- Utility-scale solar energy systems ("solar farms") should be developed with careful consideration of the impacts on local ecosystems, farmland, rural beauty, and the health, safety, and welfare of the Township's residents. Specifically, in determining whether to approve a new solar farm, the Township will take the following into account:
  - **The Township's natural beauty must be preserved**, especially wetlands and woodlands. To the extent possible, existing wetlands and woodlands should not be removed for solar energy development. The Township will also require the provision of pollinator habitat within solar farms, in order to promote a healthy ecosystem.
  - **The Township's agricultural systems must be protected**. While the loss of some farmland to solar energy production is likely, the Township will seek an appropriate balance of land uses to retain the vibrant food production economy that already exists in the community.
  - **Nearby residents** must be protected from noise, flooding, glare and aesthetic degradation, through appropriate setbacks and landscaping along the edges of solar farms.
  - **Solar farms should be located in appropriate locations with regard to transmission infrastructure**. Certain parts of the Township do not have efficient access to long-distance electric transmission lines. Solar farms should not be located in this area, because of the need to erect unsightly and potentially hazardous high-tension power corridors in order to connect the new solar farm to the grid.
  - **Solar development should not exceed transmission capacity**. The region's long-distance electric transmission lines have finite capacity. The Township will limit the size and/or number of approved solar farms within its boundaries if the capacity of the transmission lines becomes insufficient for additional energy production.

- **The Township may, at some point, hit its “solar limit.”** Bengal Township acknowledges the importance of renewable energy, but, as described in this section, other priorities, such as local ecosystems, agricultural production, transmission infrastructure capacity, and rural aesthetics, are also important. Therefore, once solar farms are approved and operational in the Township, the Township may restrict the size of new proposals, or not approve them at all, in order keep balance between the community’s priorities.

**Specifically, the Township’s “solar limit” shall be 695 to 870 acres** of large, freestanding solar arrays. Small “back yard” arrays and rooftop arrays shall not be counted in this limit, but community solar gardens, as defined in the Zoning Ordinance, shall count towards to the solar limit. The Township determined the limit as follows:

- Bengal Township consists of approximately 23,040 acres, 92% of which is used for agriculture or rural preservation uses – and nearly all of which is considered “Prime Farmland,” as shown on the map included with this addendum.
- One of Bengal Township’s most crucial agricultural products is dairy. Currently, according to the Clinton County Agricultural Census, there are 64,037 head of cattle in the County. The generally accepted standard for the number of acres needed to raise healthy cattle is two per head. Therefore, Clinton County needs approximately 128,000 acres of dairy farms to maintain its cattle population.
- Bengal Township occupies approximately 6% of Clinton County. Once developed areas and areas unsuitable for livestock raising are removed, that figure rises to approximately 10%. It is incumbent on Bengal Township to provide its share of land for cattle raising. Therefore, Bengal Township should **maintain at least 12,800 acres of land that is suitable for raising cattle.**
- Additionally, **1,542 acres** in the Township are not available for agriculture, because they are used by businesses, institutions, or residences with insufficient land to cultivate the rest of the property.
- Subtracting out the minimum acreage necessary for cattle raising and the non-agricultural acreage leaves **8,698 acres.** As noted above, almost all of that land is considered “Prime Farmland” that the Township must protect. Therefore, **no more than 8-10% of that land can be dedicated to large scale solar arrays – leaving a Township “solar limit” of 695 to 870 acres.**
- In this context, the Township is trying to prevent land from being removed from the agricultural system. Therefore, land should count against the “solar limit” if it has been rendered unusable for agricultural production. The Township may or may not determine that setbacks, wildlife corridors, and preserved natural spaces within solar farms constitute “land removed from the agricultural system.”
- The limit is presented as a range to give the Township flexibility. But it should be taken into account when reviewing large scale solar arrays, especially as the Township approaches the limit.



# Prime Farmland Analysis

Bengal Township  
Clinton County, Michigan

February 9, 2022

## LEGEND

- Prime Farmland
- Farmland of Local Importance
- Farmland of Statewide Importance
- Farmland of Unique Importance
- Not Prime Farmland
- Bengal Twp Parcels
- Bengal Twp Boundary



0 3,000 6,000  
Feet

Basemap Source: Michigan Center for Geographic Information, v. 17a. Data Source: Clinton County. McKenna 2022.







**MCKENNA**

Communities for real life.

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