

# CITY OF WEST BRANCH

OGEMAW COUNTY, MICHIGAN



DRINKING WATER

STATE REVOLVING FUND (DWSRF)

PROJECT PLANNING DOCUMENT

WATER SYSTEM IMPROVEMENTS

**DRAFT: FOR REVIEW & COMMENT**

DATE: June 2023  
PROJECT No.: 859960



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## 1.0 INTRODUCTION

The purpose of the City of West Branch Drinking Water Revolving Fund Project Plan is to fulfill the project planning requirements under the States' Safe Drinking Water Act 399 and to provide the basis for ranking of the City's proposed waterworks improvements under a Project Priority List for a low-interest Drinking Water Revolving Fund Loan.

The scope of the project plan includes a summary of the existing water quality and reliability issues within the City's service area, projection of the population served within the next 20 years, identification of principal alternatives to meet the future water needs of the service area, and evaluation of environmental impacts resulting from completion of a selected alternative in both the long and the short term.

The project plan also presents projected user costs for financing the selected alternative and a review of the public participation and public comments solicited by the City on the selected alternative.

The format of the report follows the January 2023 project planning guidelines for Drinking Water Revolving Fund Projects issued by the Michigan Department of Environmental Quality (MDEQ), now referred to as the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

## 2.0 PROJECT BACKGROUND

### 2.1 DELINEATION OF SERVICE AREA

The study and service area includes all of City of West Branch. The City resides in both, West Branch and Ogemaw Township, Ogemaw County, Michigan. The study and service area can be seen in Appendix E as the City limits on the Proposed Improvements Map.

The City of West Branch is located at the junction of M-55 and M-30 in Ogemaw County and is the largest city in the county. It is the county seat and encompasses approximately 1.3 square miles. The north edge of City is bounded by Willow Street, Court Street runs along the western city limits, and Fairview Street along the east. The southern boundaries are irregular. A detailed of the city is shown below:

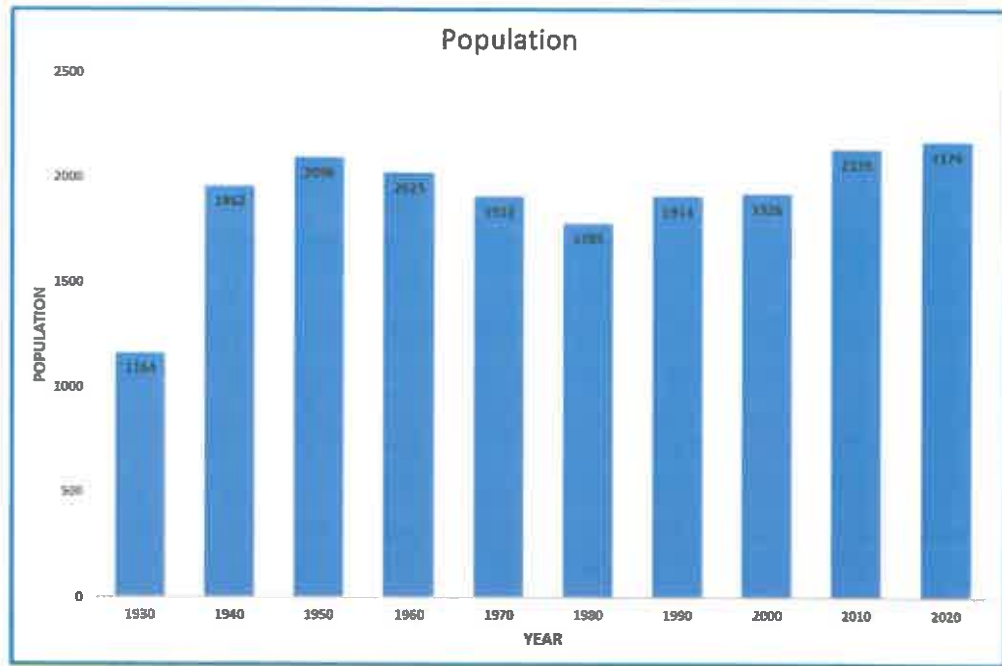
### 2.2 LAND USE

The land uses in City of West Branch are classified into 7 categories for the purposes of chart below. The city occupies an area of approximately 943 acres. The chart below shows the proportionate land uses currently allocated in the city. At 27%, Single-family residential is the largest single land use present in city, followed by Commercial at 23% and Multi-family residential at 15%. The Existing Zoning Map is shown in Appendix E.

Existing Land Use Table		
Land Use	Acres	Percent
Residential Single Family	208	26.9%
Residential Multi Family	117	15.1%
Commercial	180	23.3%
Industrial	74	9.6%
Institutional/Governmental Utility	92	11.9%
Recreational	29	3.7%
Vacant/Undeveloped	74	9.6%
<b>Total (not including rights of way)</b>	<b>774</b>	<b>--</b>
Right-of-Way	169	--
<b>Total (including rights-of-way)</b>	<b>943</b>	<b>100%</b>

### 2.3 POPULATION PROJECTIONS

City of West Branch population grew dramatically from 1930 to 1940 and since that time it has remained relatively stable. The graph below shows the overall change in population in city since 1930.



Source: U.S. Census Bureau

From year 2010 to 2020 the population increased by 1.7 % from 2,139 to 2,176 as shown on the bar chart above. In addition, the chart below shows how City of West Branch population trends compares to the regional area. In addition, it indicates that the population is projected to increase to 2647 by year 2040.

Ogemaw County Population Projections		
	2020	2040
<b>OGEMAW COUNTY</b>	22,533	24,189
<b>Townships</b>		
Churchill	1,816	2,021
Cumming	701	706
Edwards	1,459	1,549
Foster	873	934
Goodar	394	386
Hill	1,358	1,350
Horton	940	966
Klacking	628	656
Logan	560	577
Mills	4,554	5,076
Ogemaw	1,317	1,506
Richland	658	677
Rose	656	660
West Branch	2,648	2,756
<b>Villages</b>		
Prescott	270	278
<b>Cities</b>		
Rose City	656	660
West Branch	2,309	2,647

Source: EMCOG

Method: Linear Trend Extrapolation



## 2.4 EXISTING ENVIRONMENT EVALUATION

### Cultural Resources

The National Historic Preservation Act, as amended, mandates the protection of historic sites, buildings, structures, districts, and objects of national, state, regional, or local significance listed in the National Register of Historic Places and requires that the effect of a federally assisted project upon properties included in or eligible for inclusion in the National Register must be taken into account during project planning.

There are no sites within the city that are listed on the National Register of Historic Places.

A letter requesting review with respect to impacts to known historical and archeological sites will be sent to the State Historic Preservation Office (SHPO).

Letters requesting review with respect to impacts on tribally important cultural or religious sites will be sent to all of the Native American tribes associated with Ogemaw County.

### The Natural Environment

#### Climate

Climatological data for the area is based on information from the U.S. Climate Data. The average January climatic conditions include average minimum temperatures of 9 degrees F and average maximum temperatures of 27 degrees F. The average July climatic conditions include average minimum temperatures of 80 degrees F and average maximum temperatures of 56 degrees F. The average annual rainfall is 31 inches, and the average annual snowfall is 50 inches.

These climate conditions, specifically the winter conditions and design frost levels, would have equal design and construction impacts on all the principal alternatives and equally affect the length of construction seasons for all alternatives.

#### Air Quality

The Clean Air Act requires an analysis of whether air pollutant emissions will result from the construction or operation of a federally assisted project.

Air quality within the service area complies with Federal Clean Air Act Standards for attainment for all air quality standards.

The impacts in air quality from dust and emissions in the area due to typical construction operations would be temporary and similar for all principal alternatives.

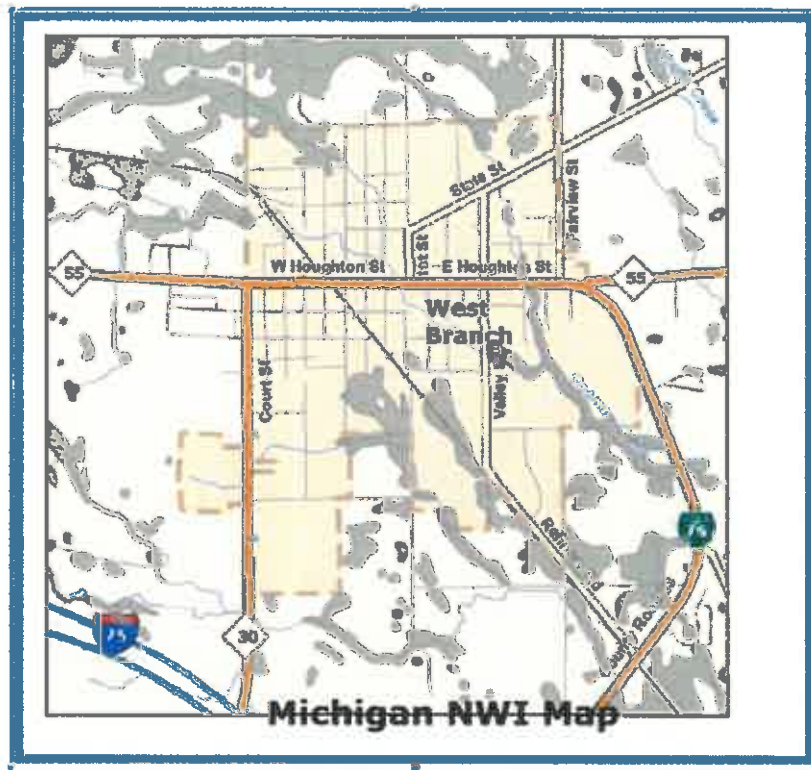
#### Wetlands

Natural features are important to the City for several reasons: their scenic quality, their recreation potential, and the habitat they provide for fish and wildlife. Perhaps most importantly, however, are the functions provided by these natural features that are imperative to the health of the community. Wetlands, for example serve to filter out pollutants from run-off and therefore promote better water quality, as well as provide valuable habitat for wildlife and waterfowl.

Wetlands serve an important purpose in an ecosystem by providing wildlife habitat, erosion control, floodwater storage, ground water recharger and water purification. They are also used for recreation purposes such as hiking, bird watching, photography and hunting. Wetlands that are five acres in size or larger and wetlands that are contiguous to a water body are protected in Michigan by the Goemaere-Anderson Wetland Protection Act.

The National Wetland Inventory classifies several areas in the City as wetlands. These areas are designated on the map below. Most of these wetlands are categorized as Freshwater Forested Shrub and are predominately along the riverbanks toward the edges of the City, most notably in the southeast, northwest, and northeast corners. (Note, not all of the river/creek banks in the City are considered to be wetlands.)

Additionally, there are wetlands.) Additionally, there are wetlands close to the southeastern section of the railroad tracks and a large area just north of Griffin Road bounded by First and Fourth Streets.



Source: City of West Branch Master Plan

A review of the mapping available from the US Fish and Wildlife indicated that the project does not impact any state or federally identified wetlands. This map is shown in Appendix E.

#### Great Lakes Shorelands, Coastal Zones, and Coastal Management Areas

No sections of the City of West Branch are located within a Coastal Management Area so there will be no impact on any coastal zones.

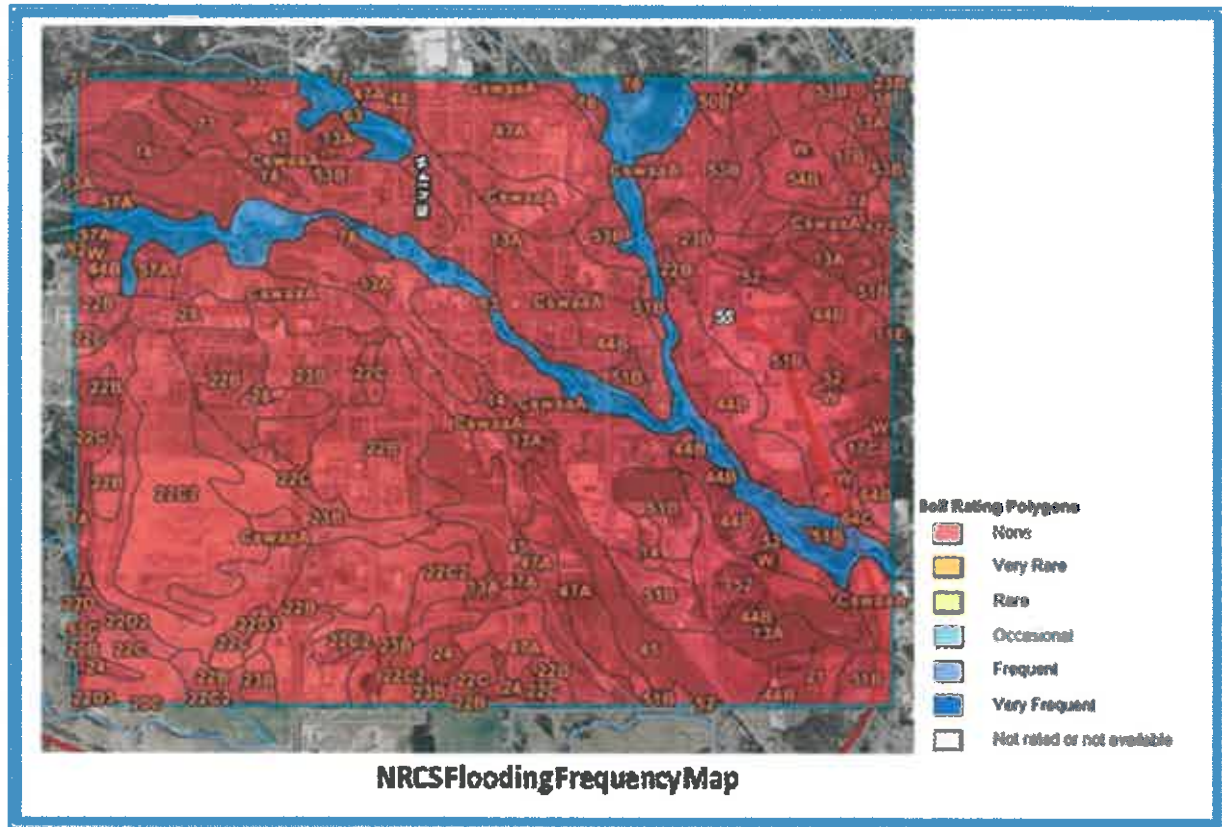
#### Floodplains and Major Surface Waters

A review of the project by the EGLE Land and Management Division has been requested. The flood insurance rate maps for the city indicate that the project is located outside of the 100-year floodplain, except for one location. Directional drilling will be used at the Industrial Road looping, and it will not affect the existing floodplain. The mains are located outside of the floodplain and the proposed work does not include earth moving or ground disrupting activities. This floodplain is regulated under the Floodplain Regulatory Authority of Part 31, Water Resources, of the Natural Resources and Environmental Protection Act.

The Flood Insurance Rate Map (FIRM) are not available as shown in Appendix E. The 100-year flood plain elevation along the rivers and creeks has not been determined.

The river and creeks are banked by Evert sand and are areas of frequent flooding. According to the Natural Resources Conservation Service (NRCS) "frequent" means that flooding is likely to occur often under normal weather conditions. This means the chance of flooding is more than 50% in any year but less than 50% in all months of the year.

The rest of the areas in the City are not considered to be flood prone. The chance of flooding in these areas is nearly 0 percent in any year, with flooding occurring less than once in 500 years. The following map shows the flood frequency in the city.



*Source: City of West Branch Master Plan*

During design, an application for a joint permit with the EGLE and USACE (United States Army Corp of Engineers) will be submitted pursuant to state and federal rules and regulations for construction activities in the land/water interface. The selected alternative will have no impact on flood plains.

#### National Wild and Scenic Rivers

The Wild and Scenic Rivers Act as amended by the Michigan Scenic Rivers Act of 1991, prohibits federal assistance to a project which will have a direct and adverse effect on the values for which a river segment listed in the National Wild and Scenic Rivers System or designated for study on the National Rivers Inventory was established.

There are no rivers in the city that are listed on the National Wild and Scenic Rivers System website, administered by the National Park System, or on the Michigan Natural Rivers System found on the Michigan Department of Environmental Quality website. Based on this, the selected alternative will have no impact on natural, wild, or scenic rivers.

#### Land Use

The proposed project will not cause any long-term impacts on land use in the City.

#### Agricultural Resources

According to the United States Department of Agriculture's Web Soil Survey, most of the land in the Township (approximately 46%) is considered "not farmland." Large portions of land are also considered "farmland of

local importance" and "prime farmland if drained" (approximately 32% and 15%, respectively). The remaining land (approximately 7%) is considered "prime farmland in all areas". A map showing the USDA's Farmland Classification for land throughout the Township can be found in Appendix E.

Since the proposed project is entirely within road right-of-ways, easements, and City property, it is not anticipated to have any impacts on agricultural resources in the City.

#### Endangered Species

Information provided by Michigan Natural Features Inventory, US EPA Endangered Species Protection Project and US Fish and Wildlife service revealed the following species in Ogemaw County:

- Kirtland's Warbler: *Dendroica kirtlandii* (Bird)

More detailed information from the Michigan Natural Features Inventory database is provided in Appendix F.

#### Contamination Sites

No contaminated sites with immediate risks are located in the project area.

## 2.5 WATER DEMAND AND EXISTING FACILITIES

### **Condition of Source Facilities**

The city water supply comes from 2 groundwater wells, each over 180 feet deep. The wells produce an average of 251,750 gallons per day. With a firm capacity of 704 gpm, the wells have a capability of producing 1,013,760 gallon per day. The only source of drinking water throughout the city are the municipal wells. One of the wells has been increasing in Arsenic concentration since its origin. The Arsenic levels are approaching the maximum allowable levels of 10 ppb. Recent samples indicate Arsenic levels of 9 ppb. A letter from EGLE dated January 20, 2020 supports the need for a new Water Treatment Plant (WTP). The City is drilling a new well in FY 2024 as part of another project. Firm capacity will remain the same. In addition, a letter dated January 8, 2019 from DEQ (now EGLE), shows the results of a Water System Sanitary Survey performed on December 20, 2018. Both letters are in Appendix B.

### **Current Water Treatment Methods**

The water treatment from the well water consists of chlorine for disinfection, and fluoride treatment. The city uses LMI pumps for chemical addition to the water system. A new water treatment plant will be built in FY 2024 as part of another project.

### **Existing Storage Facilities**

The city has one water tower with a total storage capacity of 500,000 gallons. An inspection of the existing tower was done on May 5, 2021. The exterior coating is a urethane system and the wet and dry interior coating are an epoxy system. It was concluded that the exterior coating, wet interior, and dry interior were in good condition overall. There were spot failures of coating deterioration for all coatings.

Recommendations included:

- Annually inspecting the roof vent, hatches and any other health or security items on the structure
- Schedule cleanings and inspections every five years
- A handrail, pressure vacuum vent, 24" mesh screen, sample tap, threaded coupling, and deflector bars should be installed
- The overflow bar should be pointed downward
- Remove the perforated section of wet interior roof hatch neck and reinstall the cover to meet EGLE requirements

Other recommendations including more extensive cleanings, repairs, replacements, coatings and installations were also given for the more distant future.

### **Condition of Service Lines**

The city has total 977 service lines. Of the 977 service lines 713 (73%) of those have a material that is currently unknown. The City is completing a DSMI investigation to verify number of lead service lines. The DSMI will be completed by the end of FY 2023. Approximately 100 services will be replaced where new watermain will be installed.

### **Existing Distribution and Transmission System**

The city water distribution system is composed of cast iron (20%), ductile iron (78%), and PVC (2%). The distribution system consists of approximately 86,238 feet of watermain varying in size from 4-inch to 14-inch in diameter. Approximately 12% of watermain is 4" in diameter and 50% is 6" in diameter. These watermain are undersized and need to be replaced.

### **Methods of Residual Handling and Disposal**

There are no existing residuals handling and disposal requirements for the City's water supply system.

### **Condition of Water Meters**

The water meters are in new to good condition. The City has been changing out water meters. There are approximately 100 meters left to replace.

### **Operation and Maintenance**

As recommended in the EGLE Water System Evaluation in Appendix B, the city DPW routinely exercises valves throughout the distribution system and conducts regular flushing programs once per year.

The city has decreased the loss of treated water, by making a few minor repairs throughout the distribution system. The city has been working on a mass meter replacement with new cellular read meters.

The city also has been using a computer software (Silversmith) to track information and locate all valves, hydrants, and meters.

All these actions have increased the operation and maintenance costs for the system.

### **Design Capacity of Existing Waterworks System**

The rated design capacities of the system are outlined above in report Section D1.

In Appendix A, the water usage trends table is an analysis of the annual well pumpage for 2019 and summarizes the total annual pumpage, the maximum day and annual average day demands, along with the service population and average per capital water use (gpcd).

Between the years 2017 and 2020 the average annual pumpage was 91.2 million gallons (MG). The maximum day demand was recorded in 2018 was 1.085 million gallons per day (mgd) and the average day demand for the four-year reporting period was 0.174 mgd. The average per capita use for the four-year reporting period was 81.2 gpcd.

The average peaking factor over the last nine years of the reporting period is 2.4 as calculated in Appendix A.

Based on the service area population projections and the projected needs of commercial/industrial facilities over the next 20 years, the projected maximum day demand for the year 2041 is as follows:

2041 Average Day Demand	$(2,647 \times 81.2 \text{ gpcd}) = 0.215 \text{ MGD} = 149 \text{ GPM}$
2041 Maximum Day Demand	$(0.215 \times 2.6) = 0.516 \text{ MGD} = 358 \text{ GPM}$



## **Climate Resiliency of System**

Changes resulting from Climate factors will not influence this project and are not applicable.

## **2.6 SUMMARY OF PROJECT NEEDS**

The proposed project consists of:

- Replacement of approximately 22,700 feet of undersized 4" to 6" watermain with 8" and 12" watermain.
- Watermain looping in 5 locations within the system. By adding these loops, water reliability and water quality will be improved.
- Watermain loop connecting the system to Ogemaw Township.
- Replacement of approximately 100 lead service lines
- Installation of a new 250,000 gallon water tower, which will be used for a regional water system with Ogemaw Township

## **Compliance with Drinking Water Standards**

The service area for the DWSRF Project Plan includes the entire city limits. The service area was developed in a meeting with the City of West Branch and Fleis & VandenBrink Engineering, Inc.

The City of West Branch water supply system currently consists of two wells producing an average of 249,747 gallons per day (gpd), with water treatment at the wells consisting of chlorine for disinfection, and fluoride treatment. The system has one water tower with a total storage capacity of 500,000 gallons, one standby generator for the wells, over 86,200 feet of watermain ranging from 4-inches to 14-inches in diameter, 133 fire hydrants and valves, and 250 watermain valves. The water system infrastructure supplies water to 977 water customers in the city. Appendix E shows location of the following:

- Water Lines Locations
- Water Wells and Pump House Location
- Fire Hydrant Locations
- Water Storage Tower Location
- Water Valve Locations

Of the 977 total service connections, 713 (73%) water service lines have a material that is currently unknown. The city is concerned that many of these unknown service line materials may or may not contain lead material.

A letter dated January 22, 2020, from EGLE in Appendix B, shows that a city well has been increasing Arsenic concentration since its origin. A new WTP will be constructed in FY 2024.

The most recent EGLE site visit of the city water system was conducted December 20, 2018. A follow up letter dated January 8, 2019, from the DEQ (now EGLE), shows the results of the Water System Sanitary Survey as shown in Appendix B.

## **Orders / Enforcement Actions**

There are no orders or enforcement actions in place.

## **Drinking Water Quality**

The susceptibility rating assessment by the State of Michigan on source water supply is on a seven-tiered scale from "very-low" to "very-high" based on geologic sensitivity, well construction, water chemistry and contamination sources. The susceptibility of city water supply source can be obtained at West Branch City Hall.

Based on the 2021 Water Quality Report for the City of West Branch, there are no significant sources of contamination in the water supply.

The annual Water Quality Report for the city public water system for 2021 is included in Appendix G. As stated in the annual report, there were no significant sources of contamination in the water supply.

In 2021, there was a violation for levels of arsenic in the water. This is currently being addressed with the WTP that will be constructed in FY 2024 as part of another project.

## **2.7 PROJECTED FUTURE NEEDS**

The City of West Branch includes an estimated 1,393 Residential Equivalent Units (REUs). With an estimated 250 gallons of flow per day per REU the projected maximum daily flow this project will be 348,250 gallons per day. Future increase from Ogemaw Township could be up to 50,000 to 60,000 gallons per day.

## 3.0 ANALYSIS OF ALTERNATIVES

The EGLE Project Plan preparation guidance document requires that the alternatives evaluation process examine the objectives of the project, including the needs, technical constraints and applicable drinking water standard requirements to be met. The widest variety of potential alternatives for both the entire system and the various functional subsystems must be identified, evaluated, and screened. All the alternatives evaluated must serve the same service area population with demonstrated drinking water needs. The rationale for rejecting any of these alternatives must be provided in the Plan. In-depth analysis will only be performed for the principal alternatives. The in-depth analysis must be based on a cost-effective analysis, potential environmental impacts, implement ability, and technical issues.

The following alternatives were considered for the City DWSRF Project and service area:

- Alternative 1 – No Action
- Alternative 2 – Optimum Performance of Existing Facilities
- Alternative 3 – Regionalization
- Alternative 4 – Water System Improvements

### 3.1 ALTERNATIVE 1 - NO ACTION

In this alternative, there would be continued use of undersized and leaking cast iron watermain. Lead water services connected to these mains have excessive interior corrosion causing excessive water loss and poor water quality. The mains were installed over 75 years ago. The system would continue to age, causing increased water loss, increased frequency of watermain and service breaks. These upgrades are needed to maintain compliance with Safe Drinking Water Standards. This work is included in the Water AMP issued in 2022.

The aging water meters and water tower will not be replaced. The lead service lines would continue to be used by potentially approximately 100 users. These service lines are aging, and the material can lead to water quality issues.

This alternative will not be further evaluated as a principal alternative.

### 3.2 ALTERNATIVE 2 - OPTIMUM PERFORMANCE OF THE EXISTING FACILITIES

From a performance-based viewpoint, the watermain system is typically meeting the demands put on it by users. The current issues are the physical condition and size of certain components rather than the performance of them. All improvements made to the system will involve using updated materials and equipment that will help the facilities run more efficiently and effectively. Due to the nature of the issues the system experiences, optimization of the facilities alone will not meet the City's needs; upgrading and replacement of the aging infrastructure is necessary. Therefore, Alternative 2 will not be evaluated further as a principal alternative.

### 3.3 ALTERNATIVE 3 - REGIONALIZATION

There is no major municipal systems near West Branch. The closest municipal water system is in Rose City, which is approximately 13 miles away. Rose City currently does not have the capacity to supply their own needs, therefore this option is not feasible. The next closest is the City of Tawas City. This is over 35 miles away and is not feasible.

### 3.4 ALTERNATIVE 4 - WATER SYSTEM IMPROVEMENTS

In this alternative, approximately 22,700 feet of existing watermain would be replaced. These sections of watermain are undersized and old. The watermain being replaced is approximately 65 to 80 years old. These sections are subject to frequent breaks and leaking. Many of the sections are 4" and 6". Increasing the size will help system reliability, water quality, and improved water pressure throughout the system.



There will also be approximately 3,900 feet of looping that will be added to the existing watermain system. This will help water quality by eliminating dead ends that result in stagnant water. In the future, there will be less of an impact if sections of watermain need to be shut off because these areas can now receive water from both directions. This increases the system's reliability.

A watermain loop will be installed that will connect the City of West Branch to Ogemaw Township. This will allow both communities to use the WTP soon to be constructed in the City of West Branch. This connection is currently being negotiated between the two communities.

Under this alternative, approximately 100 service lines may be replaced after determination of line material is completed. The project will replace the existing lead services lines where the watermain is being replaced. The new service line will go all the way into the home.

The City would receive a new water tower. The new and existing water storage tower will receive a mixing system to prevent stagnation of water in the tower.

The City of West Branch also serves as a backup supply source to the West Branch Township. The master meter for this connection would also be replaced as part of this project.

### 3.5 WATER MAIN CONSTRUCTION METHOD ALTERNATIVES

The City has two water main construction method alternatives to evaluate for water main replacement and looping.

#### **Construction Method Alternative #1: Open Cut**

The open-cut trench method involves excavating a trench down to the appropriate line and grade and placing the pipe. The trench is then backfilled with appropriate material, and a paving course is placed on the surface. Driveways will need to be replaced. Ditches and pavement will have to be restored.

#### **Construction Method Alternative #2: Directional Drilling**

Directional drilling (commonly referred to simply as *drilling*) is the process of using a small, steer-able steel pipe that is guided under the soil to create a pilot hole. The pipe is guided by above-grade monitoring equipment that tracks the depth and location. Once the guided head reaches its location, the host pipe is attached and pulled back through the pilot hole. This alternative eliminates costly restoration for driveways, ditches, and lawn areas that is required for the open cut method.

### 3.6 DELIVERY METHODS

The City has reviewed various methods for delivering the construction of their project. EGLE has published the State Revolving Fund and Drinking Water Revolving Fund Project Delivery Methods Guidance Document in March 2015. The various delivery methods allowed include Design Bid Build (DBB), Construction Management at Risk (CMAR), Fixed-Price Design-Build (FPDB), and Progressive Design-Build (PDB).

The City has reviewed all four methods. Summarized comparisons of these methods are outlined below.

#### **Design-Bid-Build (DBB)**

Many public infrastructure projects are delivered using the DBB method. In the DBB method, an engineer works closely with the City and prepares the project bidding documents, including the construction drawings and specifications.

General contractors submit bids based on the plans and specifications, and the lowest, responsible bidder is awarded the project. The general contractor pricing includes their subcontractors, or trade contractors, to perform specialized work such as electrical/controls, mechanical work, concrete work, etc. Typically, the engineering firm that developed the design provides construction observation and construction administration services during the construction phase. In this alternative, there are three parties: the Owner, the engineer, and the general contractor.

The DBB method offers the following advantages:

- Well understood and accepted.
- Independent oversight of Builder.
- Open to Owner involvement during design.

On the other hand, the DBB method has the following disadvantages:

- Pricing is not known until the design process is complete.
- Contractor selected based on low bid not on value, knowledge, and experience brought to the team.

### **Construction Management At-Risk (CMAR)**

CMAR is similar to DBB in that the engineering/design contract is separate from the construction contract. However, in the CMAR method, a construction management firm (CM) is hired independently by the City before or early on in the design process. An engineer works closely with the City and the CM during the entire design process. The CM provides input to the engineer and Owner through the entire design process. The engineer prepares the construction drawings and specifications while the CM prepares the bidding documents and obtains pricing from their subcontractors and suppliers.

The CM develops a Guaranteed Maximum Price (GMP). In this alternative, there are three parties: the Owner, the engineer, and the independently contracted CM firm.

The CMAR method offers the following advantages:

- Open to Owner involvement during design.
- Early integration of Builder.
- Provides early and continuous constructability review.
- Provides early certainty of costs.
- Pricing and design may be conducted in parallel.
- Reduced likelihood of claims compared to the DBB alternative.
- Project can be ready for construction quickly.

On the other hand, the CMAR method has the following disadvantages:

- Not a single source of responsibility.
- No legal obligation linking Designer to Builder.
- Potential for disputes, claims and change orders.

### **Fixed Price Design Build (FPDB)**

FPDB is a delivery method where the Owner designates one firm, a design-builder (DB), under one contract for the design and construction of the project. The DB provides a fixed price based on a defined scope, requirements, and schedule but before complete preparation of detailed design documents.

Owner involvement during the design process is typically very limited after the fixed price is accepted. The "book is closed" on pricing around the 30% mark of the design process.

This City is increasing rates dramatically for this project and has indicated they want to be heavily involved in the design process to provide direction on design options to reduce overall cost. They will be involved throughout the entire design and construction process. Therefore, FPDB was not considered further for this project.

### **Progressive Design Build (PDB)**

The PDB delivery method is similar to the CMAR method but with one major distinction – the design-builder (DB) is under one contract for design and construction of the project. Therefore, the City has one single firm responsible for the design, schedule, construction, and warrantee of the project. If issues arise during or after construction, the City only has one entity it would need to address them with.

During the latter part of the design phase, the DB prepares the bidding documents and obtains pricing from its subcontractors and suppliers on an open-book basis.

If an agreement is reached on the pricing, the City will move forward collaboratively to construction. With such flexibility, the PDB method allows the Owner to improve the project outcome by participating directly in design decisions. In this alternative, there are two parties: the Owner and the DB firm.

The PBD delivery method offers the following advantages:

- The Owner can transfer more risk to the DB, since there is a single point of responsibility for the design, permitting, construction, and performance warrantee of the project.
- Owner is involved during the entire design and construction.
- Early integration of Builder.
- Provides early and continuous constructability review.
- Provides early certainty of costs.
- Pricing and design may be conducted in parallel.
- Project can be ready for construction quickly.

## 4.0 PRINCIPAL ALTERNATIVES

The principal alternatives to be evaluated address the improvement needs of the system through the construction of new assets or the replacement of existing assets. As presented above, the no action, optimum performance and regionalization alternatives are not considered reasonable as they do not fully address the needs of the system and objectives of the project. The regional alternative is not feasible due to the distance and lack of capacity of the regional system. To address the critical needs of the water system, principal alternatives for replacement and new construction will need to be evaluated.

### 4.1 MONETARY EVALUATION

A monetary evaluation includes a present worth analysis. This analysis does not identify the source of funds but compares cost uniformly for each alternative over the 20-year planning period. The present worth is the sum which, if invested now at a given interest rate, would provide the equivalent amount of funding required to pay all present and future costs. The total present worth, used to compare the principal alternatives, is the sum of the initial capital cost, plus the present worth of operation, maintenance, and replacement (OM&R) costs, minus the present worth of the salvage value at the end of the 20-year planning period. The discount rate used in computing the present worth cost is established by EGLE and has not yet been set for FY2024 SRF Projects. The discount rate of 2.0%, obtained from OMB Circular No. A-94 per SRF guidance, was used for the financial calculations.

The salvage value is calculated at the end of 20 years where portions of the project structures or equipment may have a salvage value, which is determined by using a straight-line depreciation. The present worth of the 20-year salvage value is then computed using the discount rate of 2.0%. The EGLE guidance document establishes the estimated life for the project structures and equipment to assess salvage values at the 20-year planning period.

The cost of labor, equipment and materials is not escalated over the 20-year life since it assumes any increase in these costs will apply equally to all alternatives. Energy prices, however, are escalated at a uniform rate of 3% per year over the 20-year planning period with O&M costs.

Since the total estimated construction costs are similar between the principal alternatives, the interest charge during construction (capitalized interest) would not influence the comparison of alternatives and was not included in the cost-effective analysis.

To ensure uniformity of the cost comparisons, the EGLE guidance indicates that the following cost comparison details should be specifically addressed and were applied in the present worth analysis:

- Capital costs were included for all identified improvements.
- Sunk costs were excluded from the present worth cost. Sunk costs for the project include existing land, existing waterworks facilities, and outstanding bond indebtedness.
- Operations, maintenance, and replacement, (OM&R) costs were included in the present worth cost.
- The economic comparison is based on a 20-year project planning period in accordance with EGLE guidance and a discount interest rate of 2.0%
- Salvage values were included in the present worth cost.
- Escalation of energy values was applicable to the principal alternatives, but the cost differences between alternatives were limited.
- Land purchase/acquisition costs were not applicable to the principal alternatives.

- Mitigation costs are included in the project costs, which was included in the present worth cost.
- Total existing and projected user costs for the project are presented.
- Equivalent alternatives were compared, where no principal alternative was substantially more effective in terms of population served, design life of facilities and level of service provided.

For the purposes of this report, no comparison of monetary value and present worth was performed. This is because there was only one alternative that was feasible and met the project objectives.

## 4.2 ENVIRONMENTAL IMPACTS

An analysis of the potential environmental and public health impacts of the principal alternatives is also an important part of the Project Plan analysis.

The following aspects of the environmental setting along with appropriate narrative discussion and maps are presented as follows:

### Cultural Resources

None of the alternatives discussed are expected to have any impact upon historical or archeological sites.

### The Natural Environment

None of the alternatives are expected to have a significant impact on wetlands, flood plains, surface water, prime farmlands, air quality and plant / animal communities. No alternative will impact wild or scenic rivers designated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

Alternative 4 could include some road replacement as required to install the watermain. During construction, the potential would exist for site runoff and soil erosion, however soil erosion control measures will be enforced. No trees are proposed to be removed due to this alternative.

The primary potential environmental impacts identified for this project (regardless of the selected construction method alternative) include temporary decreased air quality due to dust from construction sites, temporary noise from construction activities, temporary traffic flow restrictions, and close proximity to designated wetlands and floodplains (but without any anticipated impacts on them).

The open cut construction method alternative would have much more of an environmental impact than the drilling method would. The open cut method would involve digging trenches over the entire new watermain length, while the drilling method would involve excavating holes in the ground at long intervals from each other, then drilling new watermain between each hole.

The significantly larger amount of excavation required for the open cut method than excavation required for the drilling method is the primary reason for the open cut method's larger potential environmental impact. The open cut method would produce larger amounts of dust, as excavation would occur over the entire new watermain length, rather than at comparatively small, isolated sites. Similarly, the open cut method would create more noise, as construction activities would occur over the entire new watermain length, rather than at individual work sites spaced far apart. The open cut method would require more disruption to traffic flow, as long lengths of road, possibly covering both traffic directions, would need to be closed, rather than short lengths of road with closures for only one side of the road. The open cut method has a higher potential to impact adjacent wetlands and floodplains, as it would produce larger amounts of excess dirt that, if not contained properly, could enter the wetlands or create obstructions to floodplains (e.g. by getting blown around by the wind).

### **4.3 TECHNICAL CONSIDERATIONS**

The primary technical considerations for this project include system reliability, especially for average-flow and fire-flow conditions, safety of distributed water for drinking, minimizing watermain breaks, project cost, project implementability, environmental impact, and maintaining compliance with worker safety regulations.

#### **System Reliability**

The principal alternatives evaluated would meet the engineering principles and comply with the reliability requirements of the Michigan Safe Drinking Act, Act 399.

#### **Residuals**

No residuals will be generated in any of the alternatives.

#### **Industrial/Commercial/Institutional Usage**

There are currently 191 commercial, 14 industrial and 31 institutional users.

#### **Growth Capacity**

The proposed alternatives meet the needed capacity for the year 2043.

## 5.0 SELECTED ALTERNATIVES

The objectives of the drinking water system improvements project are identified as:

- Establish reliable treated drinking water service to the customers.
- Rehabilitate/repair high priority areas of existing watermain infrastructure
- Provide facilities capable of providing consistent compliance with regulatory and permit requirements.
- Minimize financial overburden to the water system users.
- Minimize environmental impact during construction of the improvements project.

One alternative met the project objectives and was reviewed for effectiveness, reliability, implementability, environmental impacts, and cost effectiveness.

Alternative 4 was chosen because it was the only alternative that meet the project needs.

Additional discussion of Selected Alternative presented below.

### 5.1 DESIGN PARAMETERS

#### Water System Improvement Alternatives

The watermain being replaced and sections of looping can be seen in the Proposed Improvements Map in Appendix E. New watermain will be 8" and 12" in diameter. The water tower will be 250,000 gallons.

#### Water Main Construction

A combination of both methods of construction will be used as part of this project.

#### Delivery Method

The City and engineering firm that developed the Project Plan had discussions regarding the available project delivery methods and advantages and disadvantages offered by each method to develop the preferred method for presentation at the Public Hearing.

For the current improvements, the City and engineer will discuss which delivery method is most appropriate for this project and will be determined prior to the commencement of construction.

### 5.2 USEFUL LIFE

The useful life of residential and small commercial meters is 15 years. Meter boxes have a useful life of 25 years. It is anticipated that hydrants & blow offs last 30 years. The useful life of the watermain is 50 years. The useful life of the water tower is 100 years.

### 5.3 WATER AND ENERGY EFFICIENCY

The water piping will be sized to keep velocities to a minimum, thus keeping the horsepower required to pressurize the system to a minimum. Repumping of the water is not necessary which saves on capital and operation expenses.

### 5.4 SCHEDULE

The table below presents the proposed project schedule, which follows the DWSRF FY2023 Quarter 4 milestone schedule, assuming that funds will be available in FY2024. Dates are subject to change pending the final DWSRF milestone schedule.



Milestone	Date
Hold Public Hearing	May 2023
Submit Final Project Plan to EGLE	June 1, 2023
Receive approval of Project	August 2023
Environmental Assessment Published	April 2024
Part I and Part II Application Due	May 2024
Bid Advertisement	May 2024
Part III application Due	July 2024
EGLE Order of Approval Issued	August 2024
MFA Closing	August 2024
Notice to Proceed	October 2024
Construction Complete	December 2025
O&M Manual, Startup Assistance, and Record Drawings	February 2026

## 5.6 COST ESTIMATES

Cost estimates for the proposed improvements are provided in Appendix A. The project costs include construction costs, construction contingencies, and professional services for legal, administrative, and project engineering costs. The total cost for this project is estimated at \$18.0 million.

## 5.7 USER COSTS

User costs from this project were analyzed. The Township will fund water supply and treatment operations through user fees billed to the customer communities based on the total REUs for each community. The customer communities then distribute these charges to individual water users.

Using an interest rate of 2.75% annually over 20 years, the estimated annual debt service for Selected Alternative is \$1,182,091.

Using an interest rate of 2.75% annually over 30 years, the estimated annual debt service for Selected Alternative is \$888,920.

The average cost to users to finance the proposed drinking water system improvements entirely through the CWSRF Program is estimated at \$71.00 to \$54.00 per month per Residential Equivalent Unit (REU) based on a 30-year to 20-year loan respectively.

Actual monthly costs will vary depending on the final DWSRF loan amount, potential ARP Grant funding, potential principal forgiveness, finance terms, interest rates and other potential Federal or State Grants. Actual principal forgiveness eligibility will not be determined by EGLE until later in the project scoping stages.

The exact increase in a customer's water bill will depend on REU variability and the customer community's existing rate structure. A Municipal Financial Advisor should be consulted to confirm and refine these rates.

## 5.8 OVERBURDENED COMMUNITY

Part 53, of the NREPA, provides for several benefits to municipalities who meet the state's criteria for overburdened community status. Those benefits include additional priority points and extended loan terms. The Overburdened Community Status Determination Worksheet from SRF is included in Appendix C. Because the City of West Branch will most likely qualify for Significantly Overburdened Community Status, the potential raise in user costs could have serious repercussions. Principal loan forgiveness or grants from EGLE would help mitigate some of these repercussions.

## 5.9 ABILITY TO IMPLEMENT THE SELECTED ALTERNATIVE

Implementation of a selected alternative is the responsibility of the City of West Branch. The City will own, operate, and finance the drinking water system.



The City Council selected an alternative at the May 15<sup>th</sup>, 2023 Public Hearing. A copy of the resolution is included in Appendix D.

## 6.0 ENVIRONMENTAL AND PUBLIC HEALTH IMPACTS

### 6.1 DESCRIPTION OF THE IMPACTS

The potential environmental impacts of the Selected Alternative are evaluated in this section of the project plan. The analyses of impacts are divided into direct, indirect, and cumulative impacts. Direct environmental impacts are those that are directly attributable to the construction and operation of the project. Indirect impacts are caused by the project but are removed in time and/or distance and are often considered secondary in nature. Cumulative impacts are those impacts that increase in magnitude over time, or result from individually minor, but collectively significant actions.

#### **Beneficial and Adverse Impacts**

A discussion of the full range of potential impacts (i.e., direct, indirect and cumulative) must identify the nature of the impacts in terms of both beneficial and adverse impacts. The following section will describe the impacts resulting from the Selected Alternative with special emphasis on cultural or environmentally sensitive resources.

#### **Short-Term and Long-Term Impacts**

The analysis includes trade-offs between short-term uses and the maintenance enhancement of long-term productivity and vice versa.

#### **Irreversible or Irretrievable Resources**

The analysis of the environmental impacts also includes any irreversible commitments or use of irretrievable resources, such as the commitment of construction materials, energy, and land to the proposed project.

### 6.2 DIRECT IMPACTS

Direct impacts are the social and environmental impacts directly attributable to the construction and operation of the project. The effects of the proposed project are considered for each of the following factors:

#### **Construction Impacts**

##### Natural and Man-made Features

Because construction is confined to the road ROW's, easements, and City property, impacts during construction to both natural features should be kept to a minimum. For man-made features, any impact to existing roads or other structures will be handled in a timely manner following the completion of construction in that area.

##### Natural Setting and Sensitive Ecosystems

The Selected Alternative is not anticipated to impact any sensitive ecosystems. Floodplains, wetlands, stream crossings, shorelands, and prime/unique agricultural lands are not anticipated to be disturbed.

##### Construction Methods

Directionally drilling and open cut will be used for this project. Drilling will keep disturbance to the surrounding areas to a minimum. When open cut is used, any existing features that are damaged will be replaced following the installation of the watermain.

##### Species

No direct impact to rare, threatened or endangered species is anticipated. A list of the threatened and endangered species near the project area can be found in Appendix F.

##### Historic, Archaeological, Geological, Cultural or Recreational

An application for a Section 106 Review will be sent to the Environmental Review Coordinator at the State Historic Preservation Office.

Typically, on a project not affecting historically significant structures themselves, the SHPO focuses on disturbance to the surrounding landscape. Removal of mature trees and significant alterations of the existing landscape may affect a property's overall aesthetic value and therefore its ability to be listed on the federal register.

The proposed project construction will be within road ROW's, easements and City property, therefore minimal disturbances to the surrounding landscape is anticipated.

#### Traffic Impacts

A minor impact on local traffic may occur during the construction of the proposed project, including potential delays.

#### Existing and Future Quality of Surface Water and Groundwater

A primary goal of the project is to provide reliable water supply to the system's users. The proposed project is not anticipated to cause changes to the quality of nearby surface or groundwater. It is anticipated dewatering will not be required during this project. If encountered, it will be local to wherever the connections of directionally drilled pipe are located. The dewatering will be kept to a minimum and will not have an impact on any nearby wells or wetlands nearby.

#### Consumption of Materials, Land, Energy

Construction materials, public funds, energy and manpower will be consumed to construct the proposed improvements. No known shortage of these items exists, nor is it expected that a shortage of these items will result from implementing this project.

The only chemicals used during the construction would be fertilizers used after the seeding and mulching of disturbed areas from the construction operations.

Energy (both electrical and fossil fuels) will be used during the construction of the improvements.

#### Air Quality and Noise Impacts

During construction, equipment will increase local noise and dust levels during operations. There will be a short-term adverse impact on air quality during the construction phase due to dust and construction equipment emissions generated during the minimal excavation operations.

### **Operational Impacts**

Public Funds, energy and manpower will be consumed to operate the proposed improvements. No known shortage of these items exists, nor is it expected that a shortage of these items will result from implementing this project.

No residential areas will be impacted by the operation of this project. No other operational impacts such as odors, noise, traffic or accidents should occur either.

### **Social Impacts**

There will be no dislocation of people during the construction. Minimal impact to residents is anticipated because the construction work would occur within the road ROW's, easements and City property.

Employment of some residents by the contractor(s) is a possibility for certain construction operations.

Overall, the proposed project is anticipated to have positive social and economic impacts on the City. The project will address portions of the system that are aging and undersized, creating a more reliable system.

Pursuing this project will increase water rates for existing water customers. The burden of the water rate increases on existing customers can be diminished if the City receives a loan or grant for the proposed project. The larger the loan or grant, the less of a water rate increase that will be needed.

### **6.3 INDIRECT IMPACTS**

Indirect impacts are those caused by the proposed project but removed in time and/or distance. Indirect impacts are often secondary in nature and are generally caused by residential and/or commercial development made possible by the project.

Examples of indirect impacts include undirected growth including additional traffic, over-extended police and fire protection, or heavy financial burden on existing and future residents for the cost of the drinking water system facilities. It is not expected that the proposed project would cause any significant undirected growth that would result in changes to zoning, population density, or types of developments found throughout the City of West Branch including residential, commercial and industrial areas.

Transportation and infrastructure is already in place within the service area, and the proposed project will only serve to enhance the existing infrastructure.

The proposed project will not result in any changes in anticipated land use.

There are no anticipated indirect impacts due to changes to the natural setting or sensitive ecosystems or jeopardy to any endangered species resulting from potential secondary growth.

There are no anticipated changes in air or water quality stemming from any primary or potential secondary development as a result of the improvements since any additional commercial/industrial development would be subject to the individual communities' existing zoning requirements.

No impacts on the aesthetic of the area are anticipated. Impacts resulting from the resource consumption over the life of the project are not anticipated.

### **6.4 CUMULATIVE IMPACTS**

There are no anticipated cumulative impacts that would increase in magnitude over time or result from individually minor, but collectively significant actions of the project.

## 7.0 MITIGATION OF IMPACTS

### 7.1 GENERAL

Structural and non-structural measures that avoid, eliminate, or mitigate adverse impacts on the environment need to be identified in the project plan. Structural measures involve the specific design and construction of the improvements, while non-structural measures involve regulatory, institutional, governmental, or private plans, policies, or regulations of the City. Mitigation of short-term, long-term, and indirect impacts must be considered in the project plan.

### 7.2 SHORT-TERM IMPACT MITIGATION

#### **Traffic and Safety Hazard Control**

Because this project includes work within road ROW's, it is anticipated that traffic control measures will be required. Traffic control and maintaining access to homes and businesses will be the responsibility of the Contractor. However, access to all homes and businesses will be maintained and emergency vehicle access will be ensured throughout construction. Residents will be notified when construction work is scheduled in their area. Traffic detour signs and flag control will be incorporated to provide non-local traffic with the information they need to navigate the construction site and to travel safely.

Construction site safety is the responsibility of the contractor. The contractor will be required to have only trained persons performing all phases of the work. The contractor will also be required to comply with the Occupational Safety & Health Act (OSHA), including using back up alarms on all equipment, having employees trained in hazard control, and maintaining materials safety data sheets (MSDS) for materials that may be used or handled by construction personnel.

#### **Dust Control**

Construction activities will result in increased dust in the vicinity of the construction sites during the length of the proposed construction. Mitigation measures to minimize the negative effect of dust on residents and construction workers will be defined in the project specifications. It is anticipated that dust control will be provided by the application of water and/or dust palliative during dry and dusty periods. The Contractor will be required to control dust in accordance with methods described in the project specifications.

#### **Noise Control**

Noise levels will increase temporarily during construction of the proposed project. Construction activities will only be allowed during the hours approved by the City and would be subject to all local noise control ordinances. Construction workers and site visitors may be required to wear earplugs to minimize the effects of long-term noise during the construction operations.

#### **Soil Erosion/Sedimentation Control**

The Contractor will be required to obtain a soil erosion and sedimentation control permit from the local agency prior to the start of the work. It is anticipated that utilized mitigation measures may include silt fence, straw bales, rip rap, geotextile fabric, and other such methods, as appropriate.

#### **Tree Protection**

There will be no impact to trees as the project is staying within the road row, easements and City property and will be avoiding trees.

#### **Disposal of Construction Spoils**

Disposal of construction spoils will be at an approved upland location and any contaminated soils will be taken to a licensed landfill facility.

### **Restoration of Disturbed Areas**

Construction will generally be confined to within road right-of-ways. Disturbed areas will be restored in a timely fashion and in accordance with the project specifications.

### **Water System Operational Impacts**

While they are being constructed, new watermain will be disconnected from existing ones. However, when new watermain get connected to the existing system, small, localized areas of the existing system may need to be temporarily shut off as part of flushing out the new mains of sediment and other materials that should not be in domestic water supply.

## **7.3 MITIGATION OF LONG-TERM IMPACTS**

### **General Construction**

Mitigation measures would be developed to ensure that sensitive environments do not suffer permanent damage. Every effort will be made to avoid potential long-term or irreversible adverse impacts during the construction of the drinking water system improvements.

The construction work will incorporate "best management practice" methods for installing pipelines or disturbing the earth. Wetland, floodplain, and inland stream mitigation would be handled through the permit process. If impacts cannot be avoided, wetland mitigation measures will be used, although this is not anticipated as part of this Project. The design and project specifications will include the proper use of physical measures to reduce soil erosion to a manageable level and any disturbed slope areas will be immediately seeded, mulched and/or sodded to prevent soil erosion and/or sedimentation.

### **Site and Routing Decisions**

The proposed watermain looping routes and location of new water tower will have no major impact on the existing environment. The rest of the work will be in the same general location of the existing watermain system.

### **Operational Impacts**

There are no anticipated changes in operational impacts to the environment.

## **7.4 MITIGATION OF INDIRECT IMPACTS**

### **Master Plan and Zoning**

The most effective way of mitigating unrestricted growth in any community is proactive creation of zoning districts and effective enforcement of that zoning. It is anticipated that 15% growth could occur, however, unrestricted growth in these areas is not anticipated with or without the proposed project.

### **Ordinances**

In the event that growth in the community occurs, future action will be taken in order to minimize potential increases in stormwater generated from the new construction.

Increased noise, odors, air pollution and general combustion sources will also be addressed if future growth happens from the proposed project.

### **Staging Construction**

It is not anticipated that this project will need to be broken into multiple stages/segments.

## **7.5 LONG-TERM IMPACT MITIGATION**

Mitigation measures would be developed to ensure that sensitive environments do not suffer permanent damage. Every effort will be made to avoid potential long-term or irreversible adverse impacts during the

construction of the water distribution system improvements. Watermain construction work will incorporate "best management practice" methods for installing pipelines and disturbing the earth.

Wetland, floodplain, and inland stream mitigation would be handled through the permit process. Although wetland, floodplain, inland stream, and other water resource impacts are not anticipated as part of this project, mitigation measures will be employed if these impacts cannot be avoided and/or the need for them arises.

The design and project specifications will include the proper use of physical measures to reduce soil erosion to a manageable level. Any disturbed slope areas will be immediately seeded, mulched, and/or sodded to prevent soil erosion and/or sedimentation.

## **7.6 INDIRECT IMPACT MITIGATION**

The most effective way of mitigating unrestricted growth in any community is proactive creation of zoning districts and effective enforcement of that zoning. Unrestricted growth in the City water distribution system service area is not anticipated, with or without the proposed project.

## 8.0 PUBLIC PARTICIPATION

### 8.1 FORMAL PUBLIC HEARING

A formal public hearing on project alternatives and user costs was held on May 15th, 2023 at the West Branch City Hall.

### 8.2 PUBLIC HEARING ADVERTISEMENT

The public hearing was advertised on the City website. A copy of the public hearing notice is included in Appendix D.

A copy of the Draft Project Plan was made available to the public for a 10-day period at the West Branch City Hall and on the City's website as stated in the public hearing notice.

### 8.3 PUBLIC HEARING TRANSCRIPT

A recording of the Public Hearing is available for review.

### 8.4 PUBLIC HEARING CONTENTS

The following items were discussed at the public hearing:

- Project background.
- A description of the drinking water treatment needs and problem areas.
- A description of the principal alternatives considered.
- Proposed method of financing.
- Comparison of environmental impacts for the principal alternatives.
- Recommended Alternative.
- Proposed monthly user costs for the implementation of the Recommended Alternative for the average residential customer.
- Proposed timeline schedule.
- Estimate of project cost for the selected alternative.

### 8.5 PUBLIC HEARING COMMENTS AND ANSWERS

No written comments from the public were received before, during or subsequent to the Public Hearing. Questions and comments received during the Public Hearing were addressed as a part of the Question and Answer portion of the presentation.

### 8.6 ADOPTION OF THE PROJECT PLAN

The official period for receiving comments was ended at the close of the formal public hearing. After the close of the public comment period, the Recommended Alternative was selected for implementation by the City Council. A copy of the City's resolution to adopt the Project Plan and to implement the selected alternative is included in Appendix D.



## **APPENDIX A**

### **TABLES**

- **OPINION OF PROBABLE COSTS – SELECTED ALTERNATIVE**
  - **WATER WELL DATA**
  - **WATER LOSS TRENDS**
  - **WATER USAGE TRENDS**

City of West Branch  
DWSRF Improvements  
5/1/2023



Opinion of Probable Cost

Item No.	Description	Amount
1	Replace Watermain	\$ 9,080,000.00
2	New Watermain Loop	\$ 1,365,000.00
3	Ogemaw Township Watermain Loop	\$ 625,000.00
4	Lead Service Line Replacement	\$ 500,000.00
5	New Water Tower	\$ 2,200,000.00
6	New Master Meter	\$ 75,000.00
	<b>Construction Total</b>	<b>\$ 13,845,000.00</b>
	Engineering/contingencies	\$ 4,155,000.00
	<b>Total Project Cost</b>	<b>\$ 18,000,000.00</b>

**TABLE 1**  
**CITY OF WEST BRANCH**  
**DWSRF PROJECT PLAN**  
**EXISTING MUNICIPAL WELL DATA**

	<b>Well #1</b>	<b>Well #2</b>	<b>Total Rated Flow (gpm)</b>
Well Casing Diameter (in)	12	12	
Casing Depth (ft)	155	155	
Screen Diameter (in)	12	12	
Screen Length (ft)	30	22	
Total Well Depth	185	180	
Year Drilled	2009	2009	
Rated Capacity (gpm)*	600	300	900
@ TDH (ft)	135	135	
Current Capacity (gpm)*	731	704	1,435
@ TDH (ft)	141	158	
Latest Inspection	2020	2020	
Latest Pump Maintenance	2020	2020	
Latest Well Cleaning	2009	2009	
<b>FIRM PUMP CAPACITY (GPM)</b>			<b>704</b>

**TABLE 2  
CITY OF WEST BRANCH  
DWSRF PROJECT PLAN  
WATER LOSS TRENDS**

<b>Actual Trend*</b>				
<b>Year</b>	<b>Water Pumped (1,000 gal)</b>	<b>Water Billed (1,000 gal)</b>	<b>Water Loss (1,000 gal)</b>	<b>% Loss</b>
2017	105,166	65,598	39,568	38%
2018	94,414	64,914	29,500	31%
2019	82,387	62,612	20,225	25%
2020	82,666	60,311	22,355	27%

<b>Market Value of Lost Water Assuming Normal Losses of 10%**</b>			
<b>Year</b>	<b>Actual Water Loss (1,000 gal)</b>	<b>Normal Water Loss (1,000 gal)</b>	<b>Value of Water Losses over 10%</b>
2017	39,568	6,560	\$ 172,632.89
2018	29,500	6,491	\$ 120,334.98
2019	20,225	6,261	\$ 73,030.67
2020	22,355	6,031	\$ 85,374.00
<b>Totals</b>	<b>111,648</b>	<b>25,344</b>	<b>\$ 451,372.54</b>

\* Based on City water records

\*\* losses based on current billing rate of \$5.23/thousand gallons

**TABLE 3**  
**CITY OF WEST BRANCH**  
**DWSRF PROJECT PLAN**  
**WATER USAGE TRENDS**

<b>Year</b>	<b>Average Day Demand (gpd)</b>	<b>Maximum Day Demand (gpd)</b>	<b>Average Day Demand (gpm)</b>	<b>Maximum Day Demand (gpm)</b>	<b>Peaking Factors</b>	<b>Estimated Population</b>	<b>Average per Capita Use (gpcd)</b>
2017	179,721	389,720	125	271	2.2	2,139	84.0
2018	177,847	438,847	124	305	2.5	2,139	83.1
2019	171,540	519,540	119	361	3.0	2,139	80.2
2020	165,236	318,236	115	221	1.9	2,139	77.2
<b>Averages</b>	<b>173,586</b>	<b>416,586</b>	<b>121</b>	<b>289</b>	<b>2.4</b>	<b>2,139</b>	<b>81.2</b>

## **APPENDIX B**

### **AGENCY/ENVIRONMENTAL REVIEW CORRESPONDENCE**



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY  
BAY CITY DISTRICT OFFICE



LIESL EICHLER CLARK  
DIRECTOR

January 22, 2020

Mr. Frank Goodroe  
City of West Branch  
121 North Fourth Street  
West Branch, Michigan 48661

WSSN: 07010

Dear Mr. Goodroe:

Subject: City of West Branch, Ogemaw County – System Improvements

The Department of Environment, Great Lakes, and Energy (EGLE) has been informed that the City of West Branch (City) is in the process of applying for a Community Development Block Grant (CDBG) for improvements to their Type I drinking water supply. As part of the application, EGLE was asked to provide comment as to whether the project will serve to correct conditions that do not meet applicable standards of construction.

It has been noted that the City's Well #4 has been increasing in Arsenic concentration since its origin. Though the City's arsenic monitoring has remained in compliance with EGLE's Maximum Contaminant Level (MCL) regulations, it is important to minimize the concentration of arsenic in the public drinking water as the Maximum Contaminant Level Goal (MCLG) is zero (0) parts per billion (ppb). The proposed project is planning to build an arsenic removal treatment plant, as well as add a new Type I drinking water well. The addition of a well would improve the City's firm well capacity (the production capability of each respective part of the waterworks system with the largest well, pump, or treatment unit out of service) and would likely justify the addition of the proposed treatment plant. It is recommended that these additions be made to maintain compliance with R325.10604c and R325.11204 of Act 399, which describe that the MCL for arsenic is ten (10) ppb and that the firm well capacity shall equal or exceed the design maximum day demand, respectively.

The aforementioned items are all important in maintaining a water supply system. These items help ensure the system will produce safe drinking water for the community, while keeping the supply in compliance with Act 399.

If you have any questions, please contact me by phone at 989-395-8567, or by email at [SylvesterM1@Michigan.gov](mailto:SylvesterM1@Michigan.gov); or by mail at EGLE, Bay City District Office, Drinking Water and Environmental Health Division, 401 Ketchum Street, Suite B, Bay City, Michigan 48708.

Sincerely,

Matthew Sylvester  
District Engineer  
Field Operations Section  
Drinking Water and Environmental Health Division

cc: Mr. Mike Killackey, Operator-in-Charge



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



LIESL EICHLER CLARK  
DIRECTOR

January 8, 2019

Ms. Heather Grace  
City Manager  
City of West Branch  
121 North Fourth Street  
West Branch, Michigan 48661

WSSN: 07010

Dear Ms. Grace:

**SUBJECT: City of West Branch - Water System Sanitary Survey**

This letter confirms the Department of Environmental Quality's (DEQ's) staff visit on December 20, 2018, meeting with Mr. Mike Killackey to conduct a Survey of the City of West Branch, (City) and to present the final findings, discuss areas for improvement, and identify timelines for corrective action where appropriate. The purpose of a Survey is to evaluate the water supply system with respect to the requirements of the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399). It is also an opportunity to update the DEQ's records, provide technical assistance, and identify potential risks that may adversely affect drinking water quality. Enclosed, is a copy of the Sanitary Survey Review Summary (Summary) for your reference. Since the last Survey, the DEQ acknowledges that the City of West Branch has completed the following water facility improvements and operations:

1. The City greatly decreased the loss of treated water, by making a few minor repairs throughout the distribution system.
2. The City has been working on a mass meter replacement with new cellular read meters. The City should continue to replace meters until the average age of the meters returns below a (12-15) average age.
3. The City has also begun using a computer program (Silversmith) to track information and locate all valves, hydrants, meters, etc. throughout the system. The program seems to be working well for the City and should continue to be used.

The following table summarizes our findings from our survey of the water system:

Survey Element	Findings
Source	No deficiencies/recommendations
Treatment	Recommendations made
Distribution System	Recommendations made
Finished Water Storage	No deficiencies/recommendations
Pumps	Not applicable
Monitoring & Reporting	No deficiencies/recommendations
Management & Operations	No deficiencies/recommendations
Operator Compliance	No deficiencies/recommendations



Security	Recommendations made
Financial	No deficiencies/recommendations
Other	Not applicable

It is hoped that the following recommendations will prove useful in enhancing the operation and maintenance of your water supply.

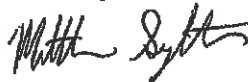
1. The City should still be focused on the replacement of the numerous cast iron mains that are located throughout the system. Replacement of old, undersized water main should improve the fire flows and thus the fire-fighting capabilities of the water system. An additional benefit of water main replacement is the replacement of water system components such as valves, hydrants and services. Replacing these aged components improves the reliability of the distribution system while making maintenance activities easier.
2. Act 399 requires that all Type I water supplies have updated General Plans (GP) and Reliability Studies (RS). The GP and RS requirements were met by the Water Reliability Study completed by C2AE in November 2013. The City has also completed and submitted a CIP and an Asset Management Plan (AMP). The RS requirement can be waived, if done so in writing by the MDEQ, for facilities where the source meets capacity requirements and water use projections are stable. Please consider this letter to be the written waiver of the RS requirement. Since the water system has not changed significantly, we are also willing to waive the GP requirement. These waivers can be withdrawn if the GP and RS are deemed no longer acceptable. If any major systems changes are completed in the future a new GP will be required.
3. As previously mentioned, the City has been working on customer meter replacement. The life expectancy of meters is 12-15 years. The City should continue to pursue meter replacement until the meter ages reach below that average.
4. The City has recently started routinely exercising distribution system valves. The City is currently turning approximately one fourth of all valves a year. It is recommended that the City exercise at least one third of the distribution system valves each year such that all valves are turned within a three (3) year time period. Inoperable valves can result in unnecessary service interruptions and wasted water during water main installation, repair, and maintenance activities. As a result of inoperable valves, larger portions of the distribution system must be depressurized for repairs. Without pressure, these portions of the distribution system are more susceptible to ground water infiltration and backflow from cross connections.
5. The City's wellhouse has two knob handled doors. The doors should have panic bars to ensure the safety of any personnel that maybe inside the facility.

Ms. Heather Grace  
Page 3  
January 8, 2019

6. The City uses LMI pumps for chemical addition to the water system. These pumps should be calibrated as instructed by the manufacturer's standards to ensure accuracy and dependability.
7. The Chlorine and Fluoride are fed from the chemical storage room into the other room where the taps are located on the piping. Because both pipes go into a different room, it can be easy to confuse which tubing and which chemical injection tap is for Chlorine and which one is for Fluoride. Therefore, it is recommended that labeling should be done, so that the tubing and Injection taps can be easily distinguished between chemicals.
8. The two chemical Injection taps for Chlorine and Fluoride are located on a vertical pipe. It is recommended that the Injection taps be relocated to a horizontal pipe at the 4 or 8 o'clock position.
9. The City has an emergency connection with West Branch Township (Township). The valve is not frequently exercised, and the hydraulic effects are not fully known. Therefore, it is recommended that the City and the Township work together to better understand the effects if the valve is opened and if it is reliable to open and use if there is an emergency.

If you have any questions, or desire to discuss the contents of this letter, please contact me at the number below; or email to [sylvesterm1@michigan.gov](mailto:sylvesterm1@michigan.gov) or DEQ, Saginaw Bay District Office, 401 Ketchum Street, Suite B, Bay City, Michigan 48708.

Sincerely,



Matthew Sylvester  
District Engineer  
Drinking Water and Municipal Assistance Division  
Saginaw Bay District Office  
989-395-8567

Enclosure

cc: District Health Department #2 (Ogemaw)  
cc/enc: Mr. Mike Killackey, City of West Branch

## **APPENDIX C**

### **OVERBURDENED COMMUNITY STATUS DETERMINATION**



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY  
**OVERBURDENED AND SIGNIFICANTLY OVERBURDENED COMMUNITY STATUS  
DETERMINATION WORKSHEET**

The following data is required from each State Revolving Fund (SRF) applicant requesting a determination for overburdened and significantly overburdened community status.

The most recent census and tax data are available in a searchable table on EGLE's [State Revolving Fund – Overburdened Community Definition and Scoring Criteria Development](#) webpage along with an excel worksheet to help determine blended Median Annual Household Income (MAHI) and blended taxable value per capita for regional systems. The MAHI and taxable value per capita table will be used to make all FY24 determinations. Applicants are encouraged to visit this page prior to completing this form to see if they qualify based on MAHI (blended MAHI if applicable) or taxable value per capita (blended taxable value per capita if applicable) alone. If so, they only need to fill out lines 1 and 2 of this form, electronically sign it on page 2, and submit.

**Alternately, if the applicant's MAHI or blended MAHI is above the state average - \$63,498 for FY24 – they cannot be determined as being overburdened or significantly overburdened for FY24 funding and should not complete or turn in this form.**

For applicants whose MAHI or blended MAHI is below \$63,498 but do not automatically qualify based on MAHI or taxable value per capita alone, please complete the entire form and return to:

Mark Conradi  
[conradim@michigan.gov](mailto:conradim@michigan.gov)

Name of Applicant

City of West Branch

Please check the box indicating which funding source this determination is for:

DWSRF ☒

CWSRF ☐

1. Is this a regional system? A regional system refers to any system that serves more than one municipality (cities, townships, and/or villages)

Yes ☐  
No ☒

If yes, refer to the instructions at the end of this form to complete calculations for a blended MAHI and blended taxable value per capita. Additionally, page 3 of this form will also need to be completed.

2. Median Annual Household Income from table on the overburdened webpage (blended if applicable)  
\$32,172.00
3. Taxable Value Per Capita from table on the overburdened webpage (blended if applicable)  
\$27,866.00
4. Total amount of anticipated debt for the proposed project (amount of loan requested for FY24 loan)  
\$18,000,000.00
5. Annual payments on the existing debt for the system  
\$92,694.00
6. Total operation, maintenance, and replacement expenses (OM&R) for the system on an annual basis  
\$534,023.00
7. Number of residential equivalent users (REUs) in the system  
1393

\*I ( John Dantzer ) hereby certify that the information in this form is complete, true, and correct to the best of my knowledge.

**John Dantzer**

Digitally signed by John Dantzer  
Date: 2023.05.05 10:56:26 -04'00' 05/08/2023

Signature

Date

**For determinations made using anticipated debt, a final determination will be made based upon the awarded loan amount and not the anticipated amount provided on this form.**

## **APPENDIX D**

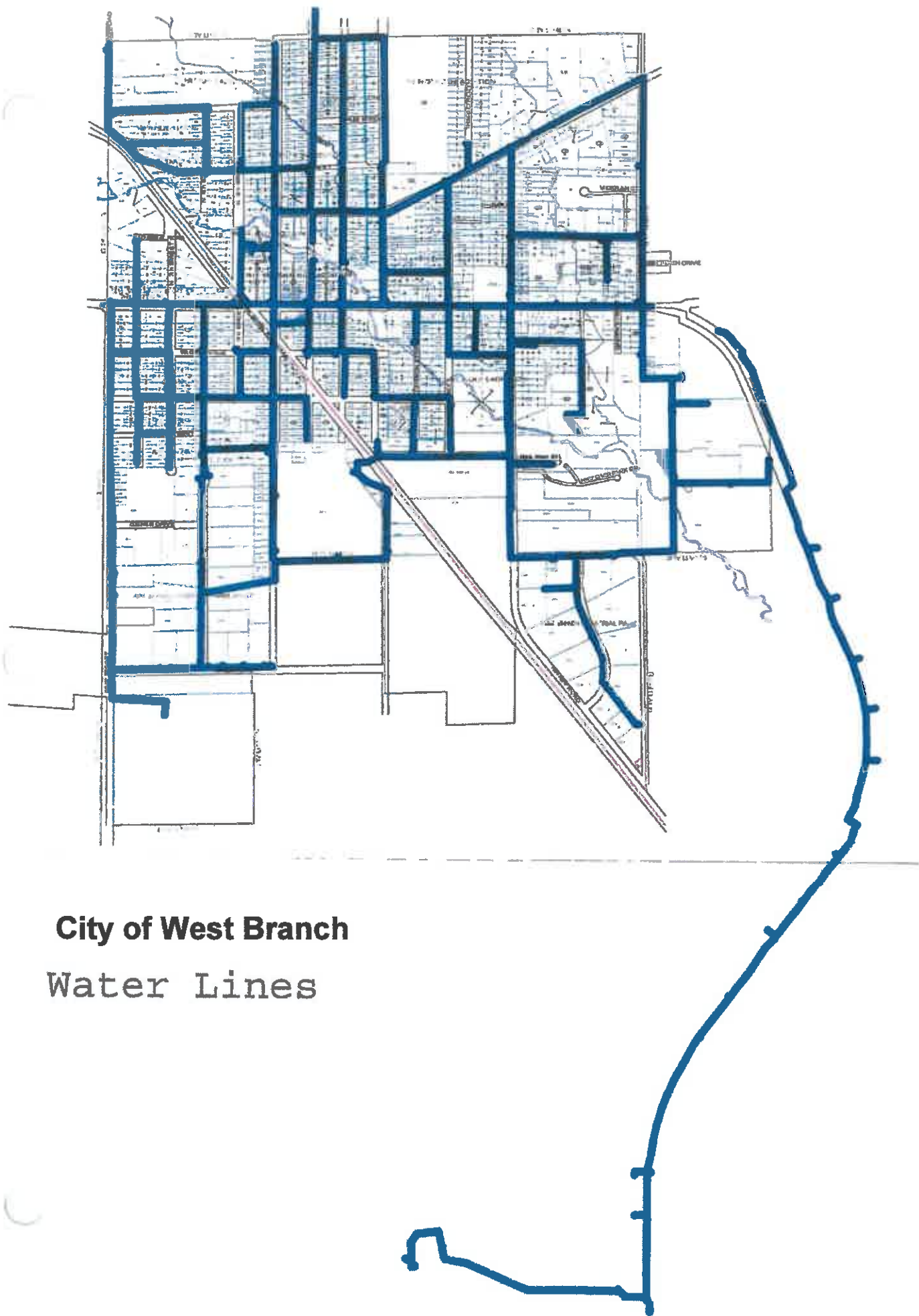
### **PUBLIC PARTICIPATION**

- **MEETING MINUTES**
  - **PROOF OF PUBLICATION**
  - **PUBLIC HEARING NOTICE**
- **PUBLIC ATTENDING THE HEARING**
- **PUBLIC HEARING PRESENTATION**
- **RESOLUTION OF PLAN ADOPTION**
- **PUBLIC HEARING RECORDING**  
(UNDER SEPARATE ENCLOSURE)

## **APPENDIX E**

### **MAPS**

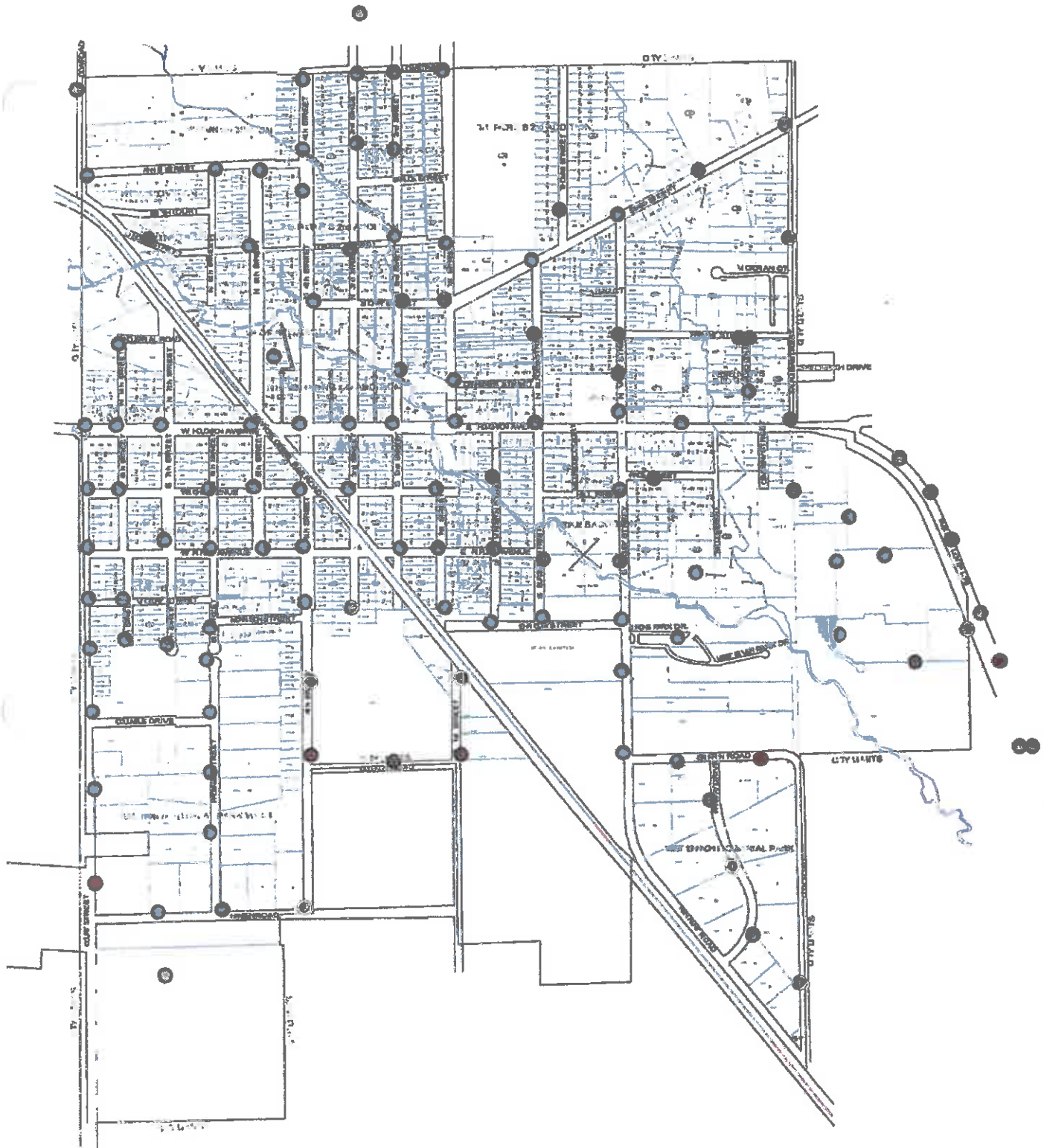
- **WATER LINES AND STORAGE TANK**
  - **WATER VALVES**
  - **HYDRANTS**
- **PROPOSED IMPROVEMENT OPTIONS**
  - **OGEMAW COUNTY**
  - **USFWS WETLANDS**
  - **FEMA FLOODPLAIN**
  - **USGS QUADRANGLE**
- **1982 QUATERNARY GEOLOGY OF MICHIGAN**
- **1987 BEDROCK GEOLOGY OF MICHIGAN**
  - **USDA SOILS CLASSIFICATION**
- **USDA FARMLAND CLASSIFICATION**
- **CITY OF WEST BRANCH ZONING**



**City of West Branch**  
Water Lines

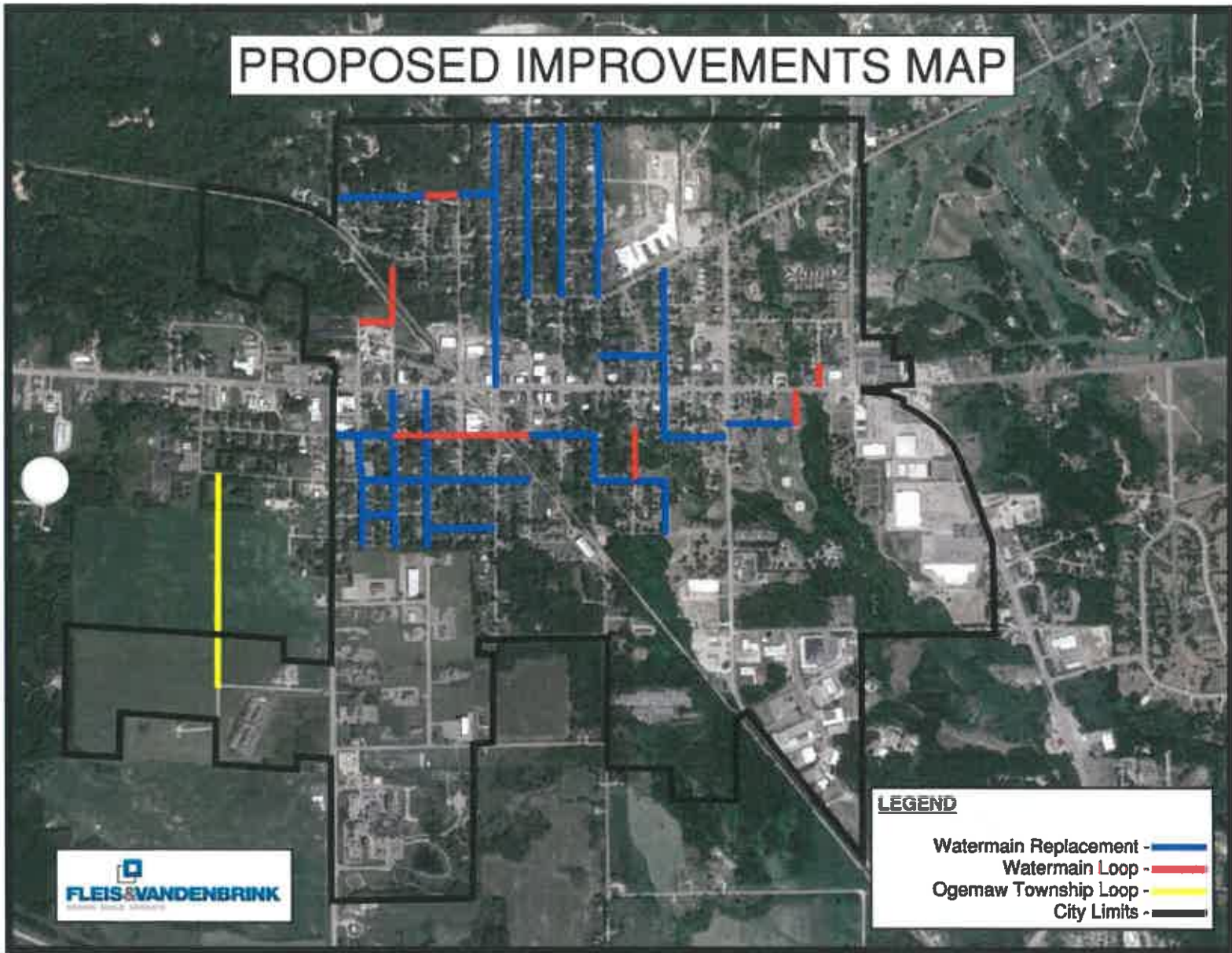




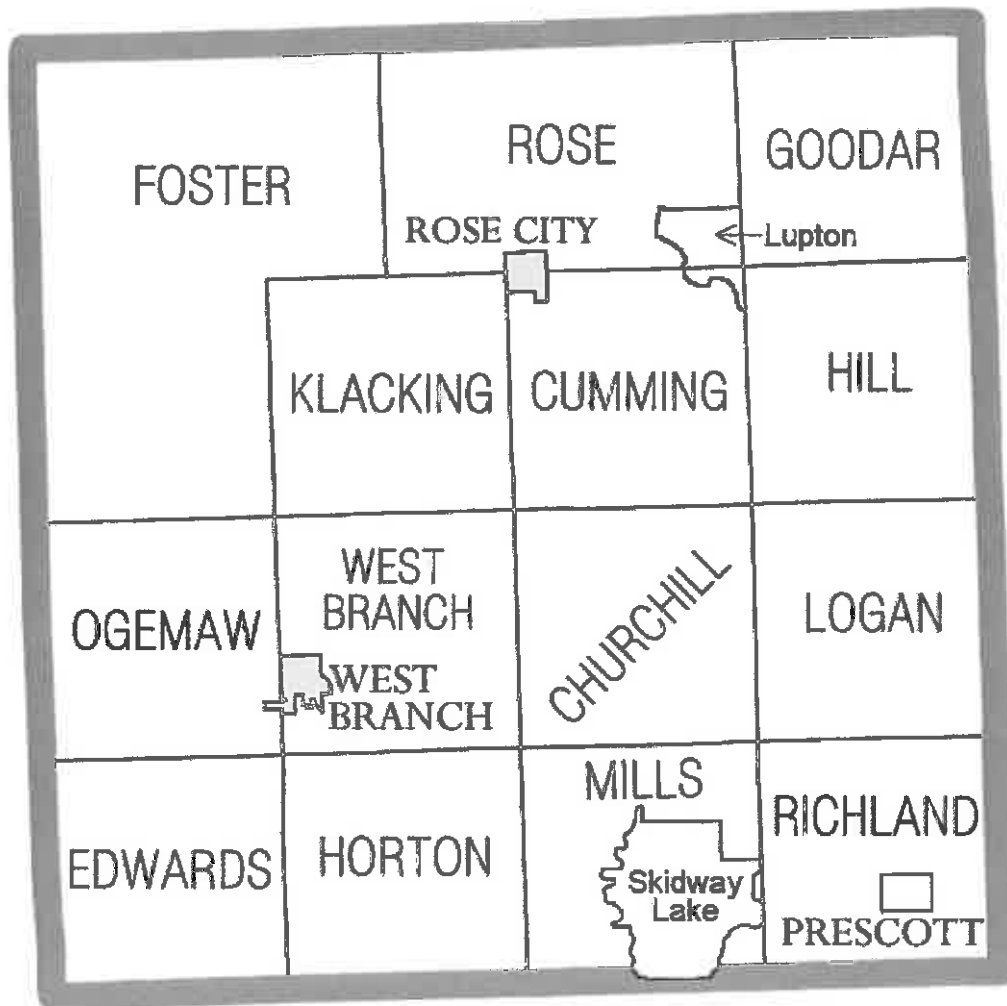


# City of West Branch Hydrants

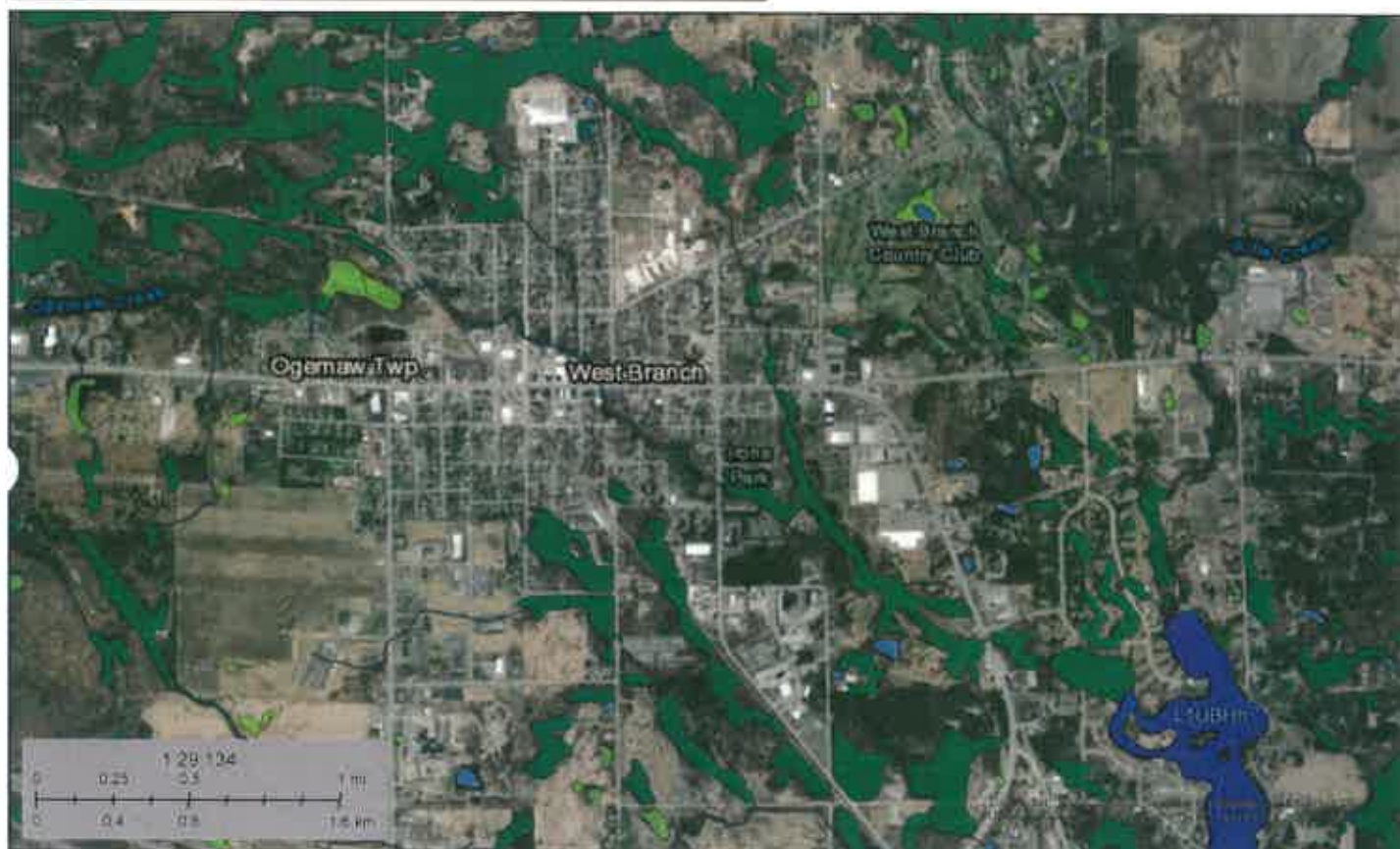
# PROPOSED IMPROVEMENTS MAP














## City of West Branch



March 31, 2021

### Wetlands

	Estuarine and Marine Deepwater		Freshwater Emergent Wetland		Lake
	Estuarine and Marine Wetland		Freshwater Forested/Shrub Wetland		Other
			Freshwater Pond		Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

# City of West Branch

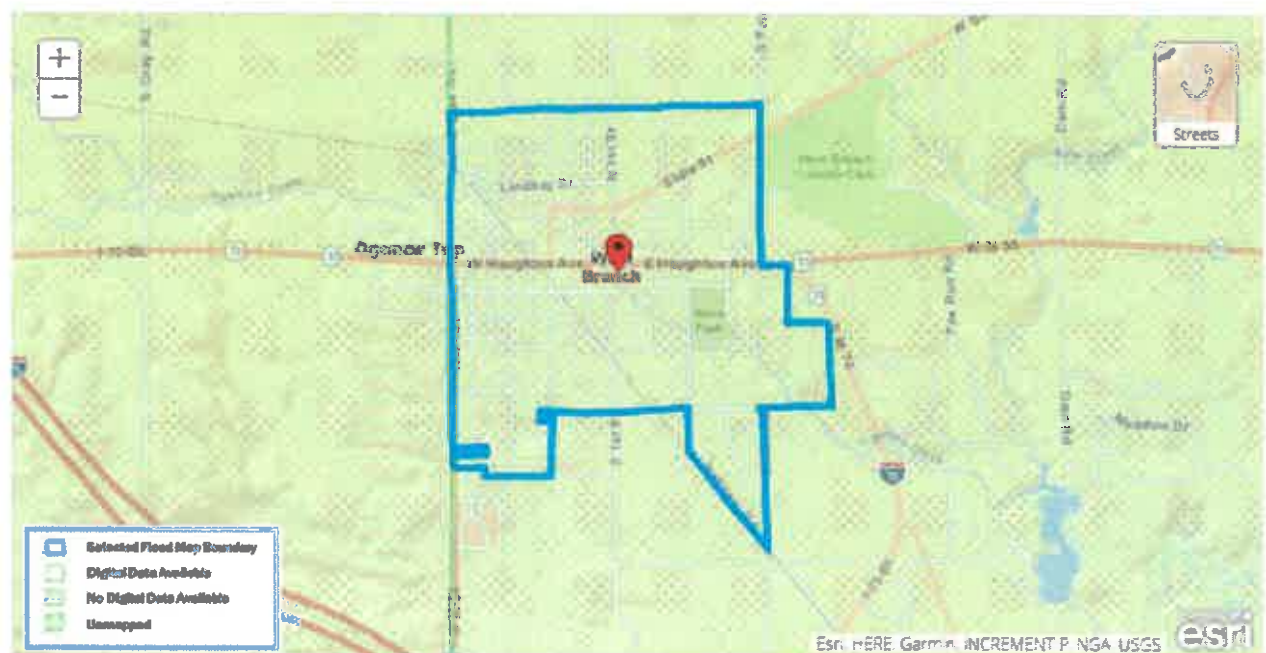
## Flood Hazard

### Search Results—Products for **WEST BRANCH**

[Show ALL Products »](#)

FEMA has not completed a study to determine flood hazard for the selected location; therefore, a flood map has not been published at this time. You can contact your community or the FEMA FMIX for more information about flood risk and flood insurance in your community.

*You can choose a new flood map or move the location pin by selecting a different location on the locator map below or by entering a new location in the search field above. It may take a minute or more during peak hours to generate a dynamic FIRMette. If you are a person with a disability, are blind, or have low vision, and need assistance, please contact a map specialist.*



Source:

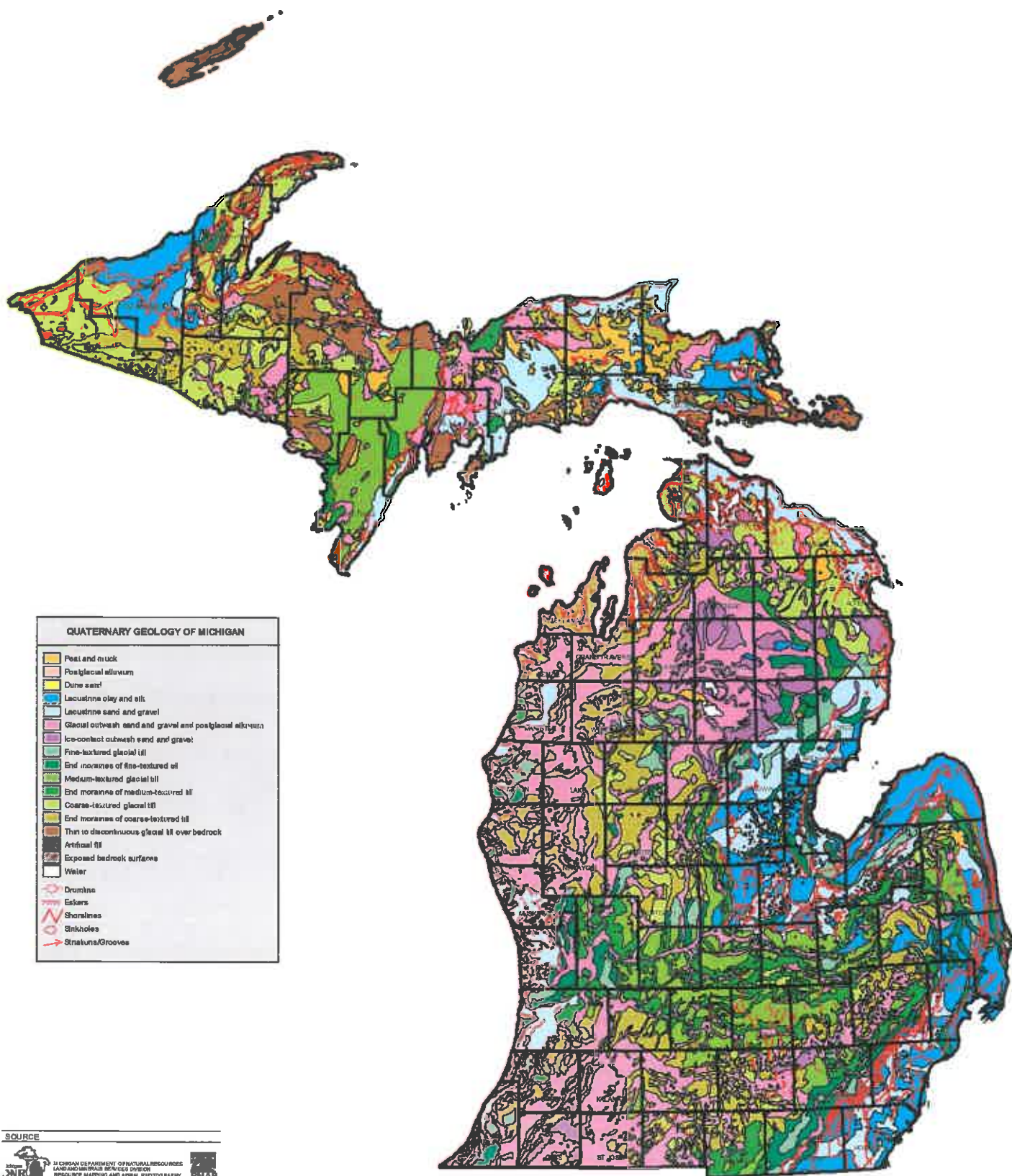
<https://msc.fema.gov/portal/search?AddressQuery=city%20of%20west%20branch%2C%20michigan#searchresultsanchor>



## City of West Branch USGS Map



# 1982 QUATERNARY GEOLOGY OF MICHIGAN



## SOURCE

Michigan Department of Natural Resources  
LAND AND MINERAL SERVICES DIVISION  
RESOURCE MAPPING AND AERIAL PHOTOGRAPHY

Michigan Reference Information System  
Map 500, Resource Inventory of the Natural Resources and  
Environmental Protection Act (1984 PA 451, as amended)

Adapted from "Quaternary Geology of Michigan", 1982, 1:500,000 scale, which was compiled  
by R. R. Peters, University of Michigan and Michigan Department of Natural Resources, Geologic Survey Division.

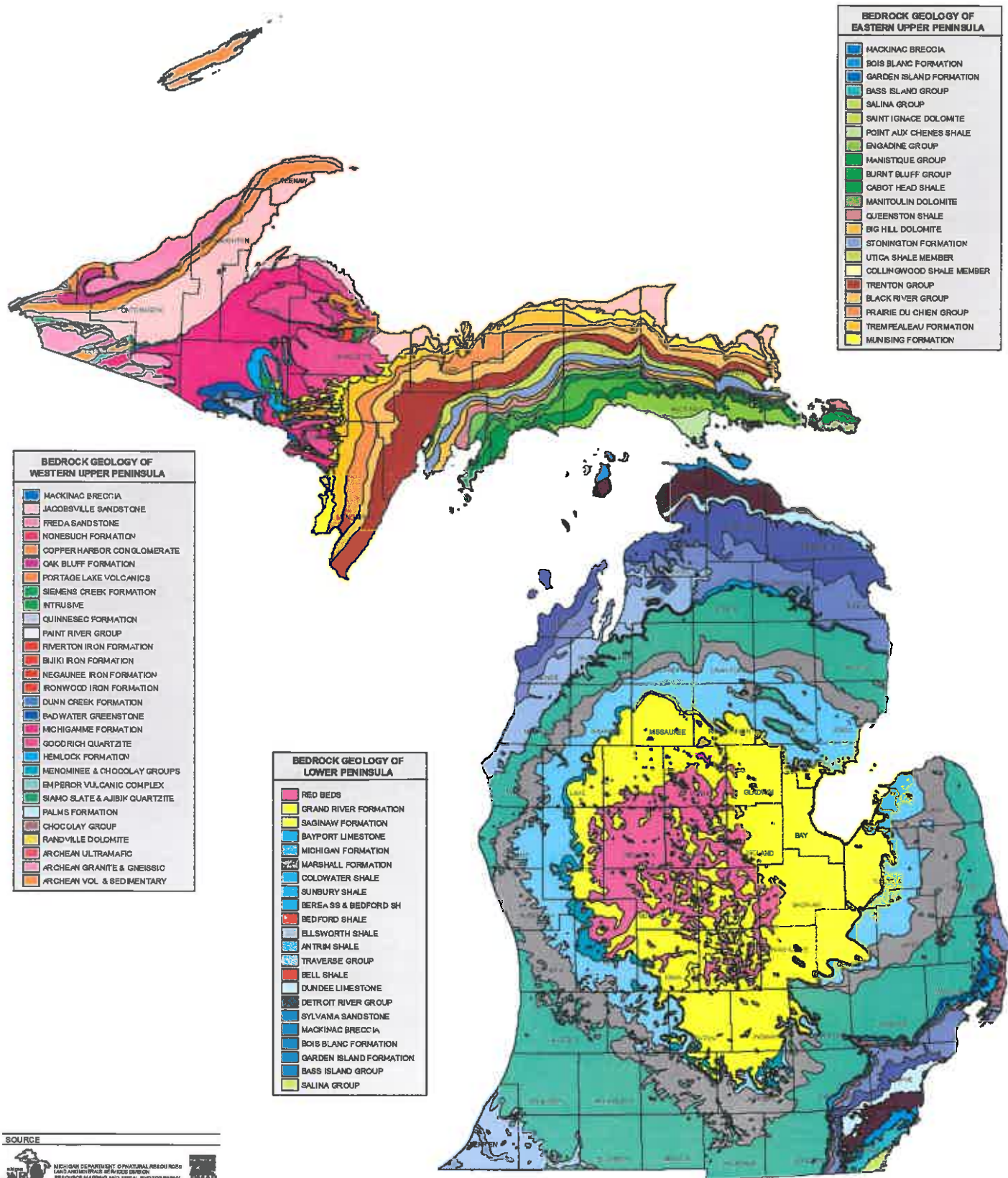
Date: 11/12/88



0 20 40 Miles



# 1987 BEDROCK GEOLOGY OF MICHIGAN



**SOURCE**

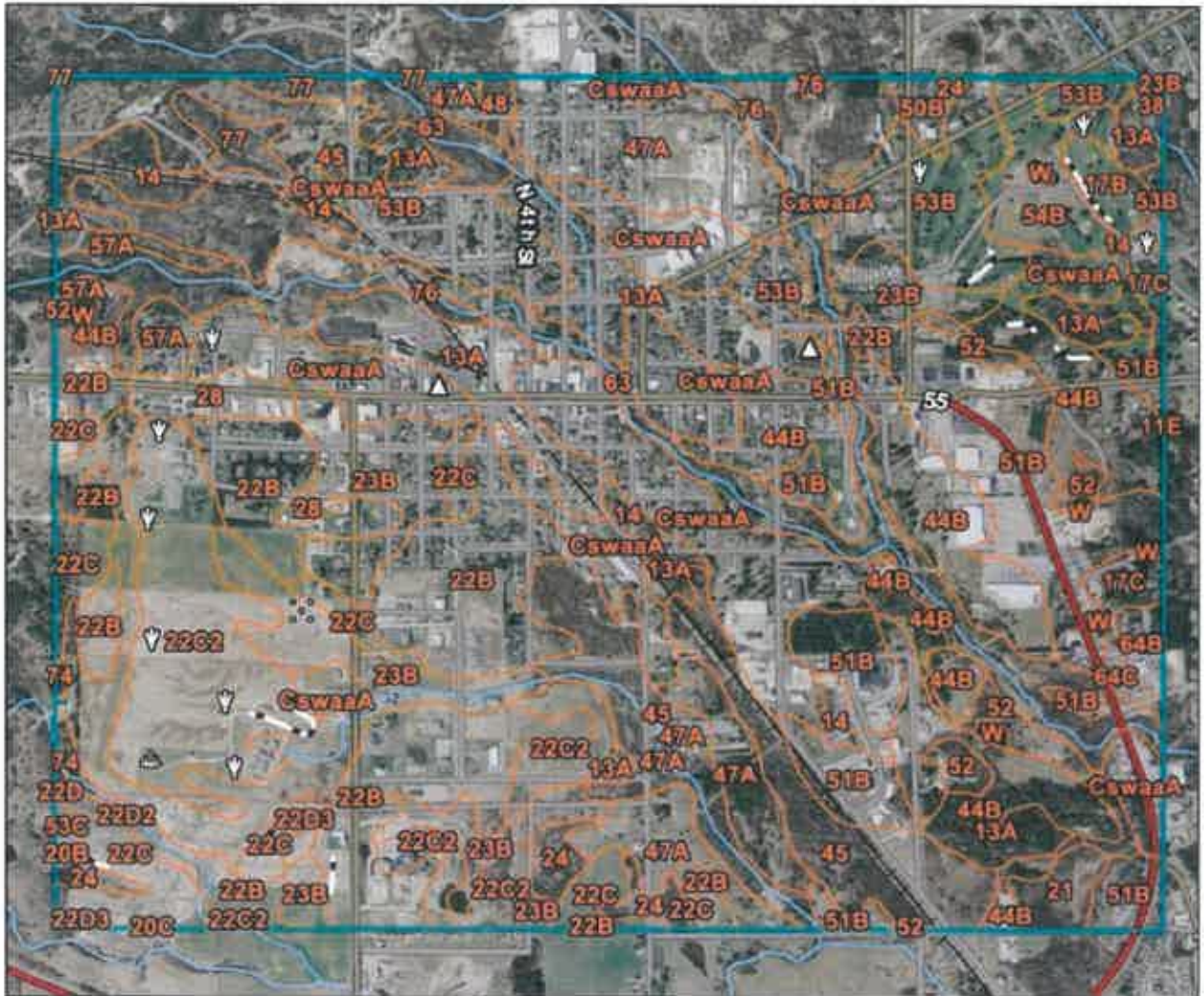


Malware Research Information System  
Part 820, Research Inventory, of the National Research and  
Environmental Protection Act, 1994 PA 651, as amended.

Adapted from "Petroleum Geology of the GPR," 1987, 1500,000 scale, which was compiled from several references by the GPR Department of Environmental Quality, Geological Survey Division.

Date: 11/12/00  0 20 40 Min

## City of West Branch Soil Map

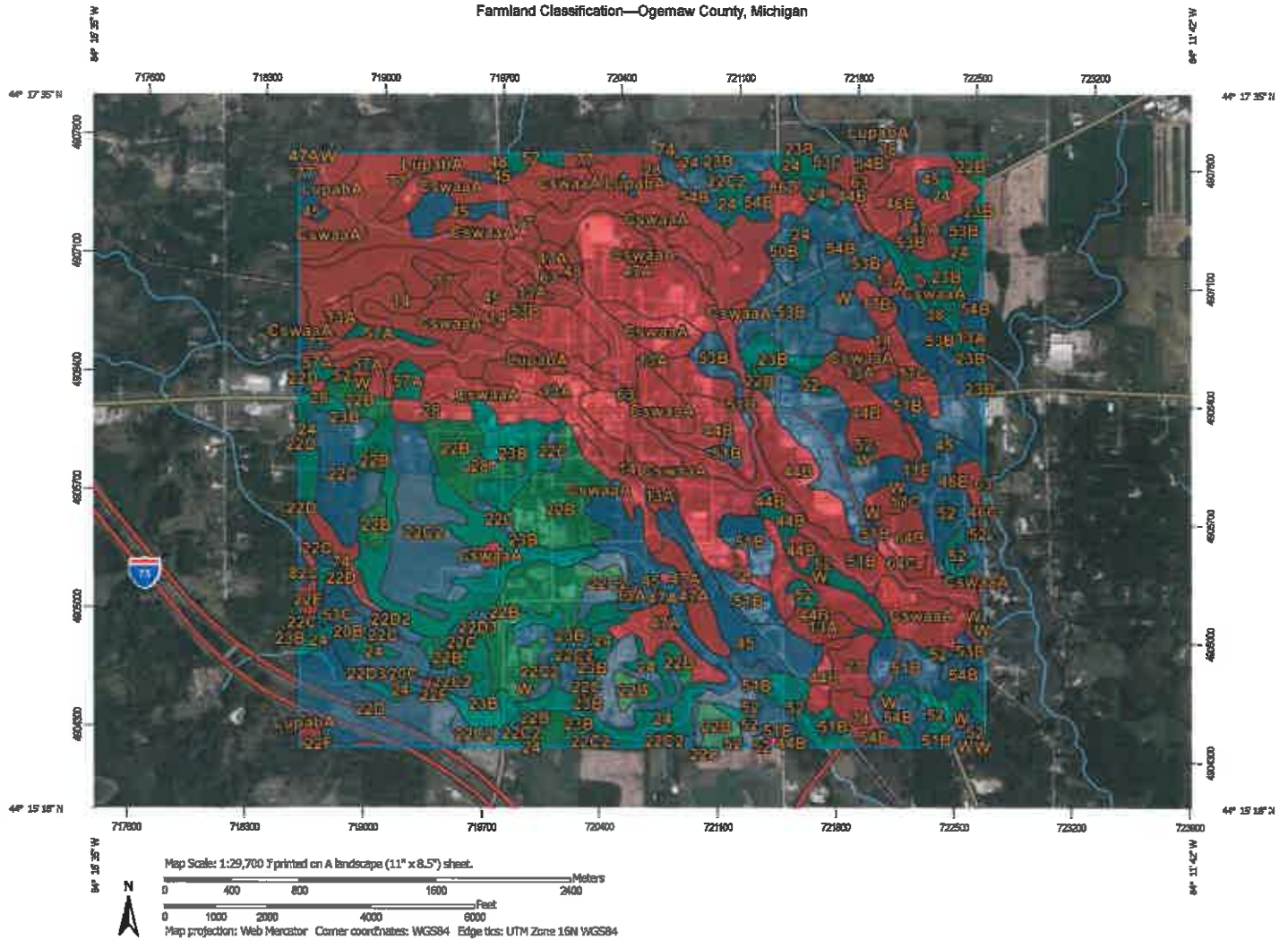




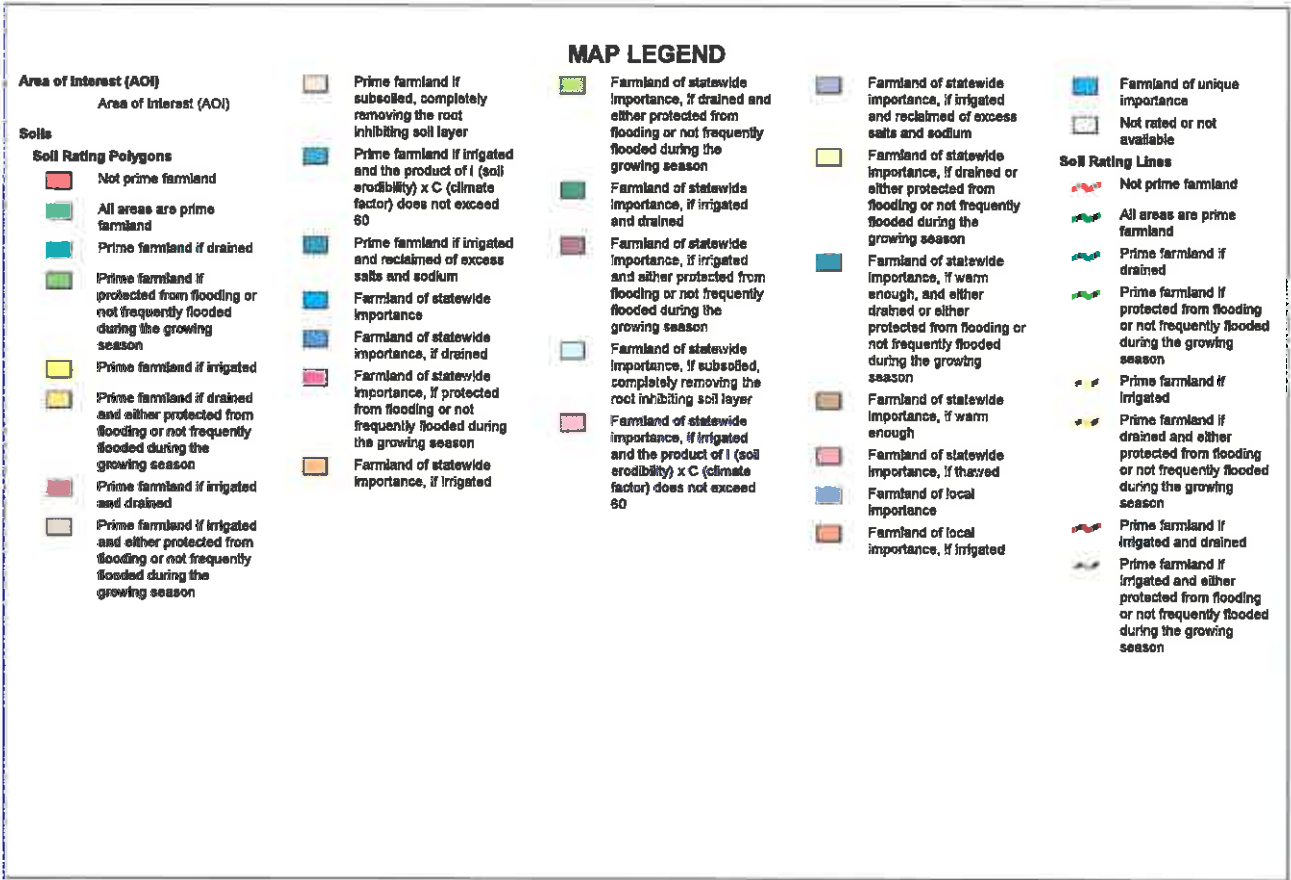
Ogemaw County, Michigan (MI129)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11E	Rubicon sand, 18 to 35 percent slopes	0.2	0.0%
13A	Au Gres sand, 0 to 3 percent slopes	127.9	6.3%
14	Roscommon mucky sand	36.5	1.8%
17B	Graycalm sand, 0 to 6 percent slopes	10.8	0.5%
17C	Graycalm sand, 6 to 18 percent slopes	15.1	0.7%
20B	Montcalm loamy sand, 0 to 6 percent slopes	0.9	0.0%
20C	Montcalm loamy sand, 6 to 18 percent slopes	0.0	0.0%
21	Histosols and Aquents, ponded	12.0	0.6%
22B	Nester fine sandy loam, 2 to 6 percent slopes	194.0	9.5%
22C	Nester fine sandy loam, 6 to 12 percent slopes	82.7	3.1%
22C2	Nester loam, 6 to 12 percent slopes, eroded	128.7	6.3%
22D	Nester fine sandy loam, 12 to 18 percent slopes	0.5	0.0%
22D2	Nester loam, 12 to 18 percent slopes, eroded	7.2	0.4%
22D3	Nester clay loam, 12 to 25 percent slopes, severely eroded	4.6	0.2%
23B	Kawkawlin loam, 0 to 4 percent slopes	177.6	8.7%
24	Sims loam	18.4	0.9%
28	Udorthents, loamy, nearly level	17.6	0.9%
36	Tonkey sandy loam	3.1	0.2%
44B	Croswell sand, loamy substratum, 0 to 3 percent slopes	163.9	8.1%
45	Wheatley mucky loamy sand	106.5	5.2%
47A	Gladwin sand, 0 to 3 percent slopes	113.8	5.6%
48	Epoufette mucky sand	3.8	0.2%
50B	Menominee sand, 0 to 6 percent slopes	6.4	0.3%
51B	Iosco sand, 0 to 4 percent slopes	145.8	7.2%

Ogemaw County, Michigan (MI129)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
52	Brevort mucky loamy sand	32.9	1.6%
53B	Manistee loamy sand, 0 to 6 percent slopes	74.4	3.7%
53C	Manistee loamy sand, 6 to 12 percent slopes	2.0	0.1%
54B	Allendale loamy sand, 0 to 4 percent slopes	32.2	1.6%
57A	Belding sandy loam, 0 to 3 percent slopes	16.6	0.8%
63	Ewart sand	156.2	7.7%
64B	Melita sand, 0 to 6 percent slopes	7.8	0.4%
64C	Melita sand, 6 to 18 percent slopes	4.2	0.2%
74	Cathro muck	4.5	0.2%
76	Lupton muck, 0 to 1 percent slopes	12.5	0.6%
77	Tawas mucky peat	17.5	0.9%
CswaaA	Croswell sand, 0 to 3 percent slopes	311.1	15.3%
W	Water	5.1	0.3%
Totals for Area of Interest		2,035.2	100.0%


































# Farmland Classification—Ogemaw County, Michigan



## Farmland Classification—Ogemaw County, Michigan



# Farmland Classification—Ogemaw County, Michigan

 Prime farmland if subsoiled, completely removing the root inhibiting soil layer	 Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season	 Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium	 Farmland of unique importance	 Prime farmland if subsoiled, completely removing the root inhibiting soil layer
 Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 80	 Farmland of statewide importance, if irrigated and drained	 Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season	<b>Soil Rating Points</b>	 Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 80
 Prime farmland if irrigated and reclaimed of excess salts and sodium	 Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season	 Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season	 Not prime farmland	 Prime farmland if irrigated and reclaimed of excess salts and sodium
 Farmland of statewide importance	 Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer	 Farmland of statewide importance, if warm enough	 All areas are prime farmland	 Farmland of statewide importance
 Farmland of statewide importance, if drained	 Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 80	 Farmland of local importance	 Prime farmland if protected from flooding or not frequently flooded during the growing season	 Farmland of statewide importance, if drained
 Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season		 Farmland of local importance, if irrigated	 Prime farmland if irrigated	 Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
 Farmland of statewide importance, if irrigated			 Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	 Farmland of statewide importance, if irrigated
			 Prime farmland if irrigated and drained	
			 Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season	

# Farmland Classification—Ogemaw County, Michigan

<p>Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season</p> <p>Farmland of statewide importance, if irrigated and drained</p> <p>Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season</p> <p>Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer</p> <p>Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 50</p>	<p>Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium</p> <p>Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season</p> <p>Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season</p> <p>Farmland of statewide importance, if warm enough</p> <p>Farmland of statewide importance, if thawed</p> <p>Farmland of local importance</p> <p>Farmland of local importance, if irrigated</p>	<p>Farmland of unique importance</p> <p>Not rated or not available</p> <p><b>Water Features</b></p> <p>Streams and Canals</p> <p><b>Transportation</b></p> <p>Rails</p> <p>Interstate Highways</p> <p>US Routes</p> <p>Major Roads</p> <p>Local Roads</p> <p><b>Background</b></p> <p>Aerial Photography</p>	<p>The soil surveys that comprise your AOI were mapped at 1:15,800.</p> <p>Please rely on the bar scale on each map sheet for map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)</p> <p>Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Ogemaw County, Michigan Survey Area Data: Version 19, Aug 29, 2022</p> <p>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</p> <p>Date(s) aerial images were photographed: Jul 2, 2020—Nov 12, 2020</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>
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## Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
11E	Rubicon sand, 18 to 35 percent slopes	Not prime farmland	4.8	0.1%
13A	Au Gres sand, 0 to 3 percent slopes	Not prime farmland	137.5	3.9%
14	Roscommon mucky sand	Not prime farmland	37.0	1.0%
17B	Graycalm sand, 0 to 6 percent slopes	Not prime farmland	10.8	0.3%
17C	Graycalm sand, 6 to 18 percent slopes	Not prime farmland	26.7	0.8%
20B	Montcalm loamy sand, 0 to 6 percent slopes	Farmland of local importance	1.7	0.0%
20C	Montcalm loamy sand, 6 to 18 percent slopes	Farmland of local importance	3.4	0.1%
21	Histosols and Aquents, ponded	Not prime farmland	20.4	0.6%
22B	Nester fine sandy loam, 2 to 6 percent slopes	All areas are prime farmland	247.4	7.0%
22C	Nester fine sandy loam, 6 to 12 percent slopes	Farmland of local importance	139.1	3.9%
22C2	Nester loam, 6 to 12 percent slopes, eroded	Farmland of local importance	176.5	5.0%
22D	Nester fine sandy loam, 12 to 18 percent slopes	Farmland of local importance	88.2	2.5%
22D2	Nester loam, 12 to 18 percent slopes, eroded	Farmland of local importance	7.3	0.2%
22D3	Nester clay loam, 12 to 25 percent slopes, severely eroded	Farmland of local importance	6.3	0.2%
22E	Nester fine sandy loam, 18 to 35 percent slopes	Not prime farmland	8.6	0.2%
22F	Nester fine sandy loam, 35 to 50 percent slopes	Not prime farmland	5.8	0.2%
23B	Kawkawin loam, 0 to 4 percent slopes	Prime farmland if drained	249.7	7.1%
24	Sims loam	Prime farmland if drained	123.5	3.5%
28	Udorthents, loamy, nearly level	Not prime farmland	25.9	0.7%

Map unit symbol	Map unit name	Rating	Acres In AOI	Percent of AOI
38	Tonkey sandy loam	Prime farmland if drained	20.0	0.6%
44B	Croswell sand, loamy substratum, 0 to 3 percent slopes	Not prime farmland	178.5	5.1%
45	Wheatley mucky loamy sand	Farmland of local importance	157.2	4.5%
46B	Mancelona sand, 0 to 6 percent slopes	Not prime farmland	14.1	0.4%
46C	Mancelona sand, 6 to 18 percent slopes	Not prime farmland	1.6	0.0%
47A	Gladwin sand, 0 to 3 percent slopes	Not prime farmland	212.0	6.0%
48	Epoufette mucky sand	Not prime farmland	6.7	0.2%
50B	Menominee sand, 0 to 6 percent slopes	Farmland of local importance	12.7	0.4%
50C	Menominee sand, 6 to 12 percent slopes	Farmland of local importance	1.7	0.0%
50E	Menominee sand, 18 to 35 percent slopes	Not prime farmland	3.0	0.1%
51B	Iosco sand, 0 to 4 percent slopes	Farmland of local importance	281.1	8.0%
52	Brevort mucky loamy sand	Prime farmland if drained	114.9	3.3%
53B	Manistee loamy sand, 0 to 6 percent slopes	Farmland of local importance	129.5	3.7%
53C	Manistee loamy sand, 6 to 12 percent slopes	Farmland of local importance	16.0	0.5%
54B	Allendale loamy sand, 0 to 4 percent slopes	Farmland of local importance	102.0	2.9%
57A	Belding sandy loam, 0 to 3 percent slopes	Prime farmland if drained	23.1	0.7%
63	Ewart sand	Not prime farmland	209.3	5.9%
64B	Melita sand, 0 to 6 percent slopes	Not prime farmland	20.4	0.6%
64C	Melita sand, 6 to 18 percent slopes	Not prime farmland	7.8	0.2%
74	Cathro muck	Not prime farmland	34.8	1.0%
77	Tawas mucky peat	Not prime farmland	102.0	2.9%
82C	Nester-Manistee complex, 6 to 12 percent slopes	Farmland of local importance	2.2	0.1%
86D	Nester-Graycalm complex, 12 to 18 percent slopes	Not prime farmland	13.9	0.4%
CswaaA	Croswell sand, 0 to 6 percent slopes	Not prime farmland	440.8	12.5%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LupabA	Lupton muck, 0 to 1 percent slopes	Not prime farmland	93.5	2.6%
W	Water	Not prime farmland	10.9	0.3%
Totals for Area of Interest			3,530.1	100.0%

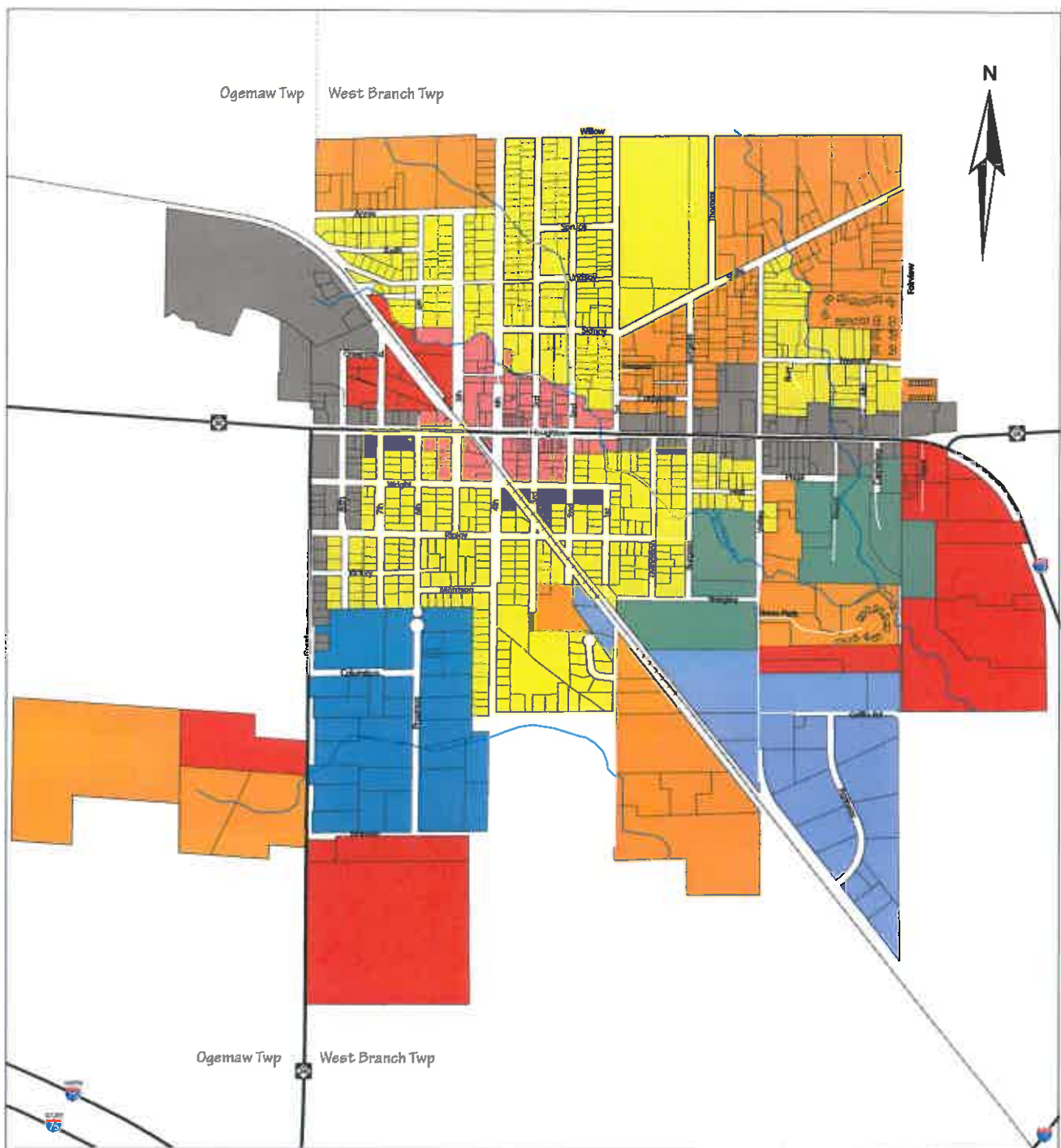
## Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

## Rating Options

*Aggregation Method:* No Aggregation Necessary

*Tie-break Rule:* Lower



## Zoning Districts

- R-1 (Single-Family Residential District)
- R-M (Multiple Family District)
- MU (Mixed Use District)
- O-S Office Service District)
- CBD (Central Business District)
- G-B (General Business District)
- IND (Industrial District)
- Parks & Cemeteries



0 0.25 0.5  
Miles

ADOPTED 12/16/19 LAST AMENDED 11/1/21

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## **APPENDIX F**

### **LISTS**

- **ENDANGERED AND THREATENED SPECIES**
  - **CONTAMINATED SITES**

# Michigan Natural Features Inventory

MSU Extension

## *Setophaga kirtlandii*

Kirtland's warbler

### Key Characteristics

A relatively large wood warbler with adults 5 ¼ inches (14.6cm) in length and weighing 12-15 grams. Adults with a yellow breast with black streaks confined to the sides; two white wing bars, and a heavily streaked blue-gray back. The distinctive white eye ring is broken at the front and back of the eye. The adult female is less colorful than the male, having gray cheeks, paler streaked sides and breast and a grayish-brown back. The Kirtland's warbler persistent tail-pumping habit is similar to that of the Palm Warbler (*Dendroica palmarum*) and Prairie Warbler (*Dendroica discolor*).



### Status and Rank

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**US Status:** LE - Listed Endangered

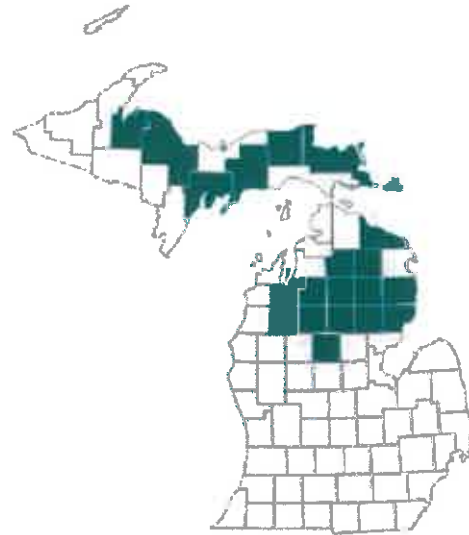
**State Status:** E - Endangered (legally protected)

**Global Rank:** G3G4 - Rank is uncertain, ranging from vulnerable to apparently secure

**State Rank:** S3 – Vulnerable

## Occurrences

County	Occurrences	Year Last Observed
Alcona	2	2010
Baraga	1	2013
Chippewa	4	2012
Clare	1	2010
Crawford	4	2010
Delta	3	2012
Grand Traverse	1	2008
Iosco	4	2010
Kalkaska	4	2010
Luce	2	2012
Marquette	6	2013
Missaukee	1	2010
Montmorency	3	2010
Ogemaw	2	2010
Oscoda	6	2010
Otsego	1	2010
Presque Isle	1	2010
Roscommon	6	2010
Schoolcraft	3	2012
Wexford	1	1977



Information is summarized from MNFI's database of rare species and community occurrences. Data may not reflect true distribution since much of the state has not been thoroughly surveyed.

## **Habitat**

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Young Jack pine stands.

## **Natural Community Types**

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Dry northern forest Pine barrens

For each species, lists of natural communities were derived from review of the nearly 6,500 element occurrences in the MNFI database, in addition to herbarium label data for some taxa. In most cases, at least one specimen record exists for each listed natural community. For certain taxa, especially poorly collected or extirpated species of prairie and savanna habitats, natural community lists were derived from inferences from collection sites and habitat preferences in immediately adjacent states (particularly Indiana and Illinois). Natural communities are not listed for those species documented only from altered or ruderal habitats in Michigan, especially for taxa that occur in a variety of habitats outside of the state.

Natural communities are not listed in order of frequency of occurrence, but are rather derived from the full set of natural communities, organized by

## **Management Recommendations**

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Each year several thousand acres of jack pines are burned (occasionally), seeded, planted, and commercially harvested on a 50-year rotation cycle. This system is designed to provide enough suitable nesting habitat at all times to support the target population of 1,000 singing males. Kirtland's warbler breeding habitat is short-lived and progresses rapidly to an unsuitable condition as the trees age, so continuous intensive management practices cannot stop once reclassification or delisting occurs. Occupied Kirtland's warbler habitats are closed to visitors during the May 1 through August 15 (September 10 for selected areas) breeding season except for guided tours originating from the Grayling Holiday Inn or U.S. Forest Service District Ranger Office in Mio.

## **Active Period**

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Migration from first week of May to second week of May Migration from third week of August to fourth week of September Nesting from third week of May to second week of August

## **Survey Methods**

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An annual census of singing males by the USFWS and the MDNR uses straight line compass



transects or in small areas, meander surveys.

#### **Transect or meander survey**

**Survey Period:** From second week of May to fourth week of June

**Time of Day:** Morning (sunrise)

## **References**

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#### **Survey References**

Bibby, C.J., N.D. Burgess, and D.A. Hill. 1992. Bird Census Techniques. Academic Press, New York.

#### **Technical References**

Evers, D.C. 1994. Endangered and Threatened Wildlife of Michigan. The University of Michigan Press, Ann Arbor. 412pp.

Olson, J. A. 2002. Special Animal Abstract for *Dendroica kirtlandii* (Kirtland's warbler). Michigan Natural Features Inventory, Lansing, MI. 5pp.

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# City of West Branch List of Contaminated Sites

Location ID	Facility ID	Facility Name	LIST Name	Regulatory Program	Full Address	City	Township	County	Risk Condition	Release Status	Latitude	Longitude
2994	50001451	Carscallens Store	Carscallens Store	213	1340 E STATE RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.31284	-84.078681
3799	3625	Danzers Standard Service	Danzers Standard Service	213	105 W Houghton Ave, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.27596	-84.236619
4110	14893	Dore Stone #7	West Branch Union 76	213	411 E HOUGHTON AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.27647	-84.22995
5061	55000102	Foster Blue Water Oil, LLC	Franklin Forge Co	201	2288 Refinery Road, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26242	-84.224799
5092	36625	Franklin Forge Co	Franklin Forge Company	213	4747 S M 76, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26228	-84.225563
5073	14295	Griffin Beverage Co	Griffin Beverage Company	213	1501 Dean Rd, West Branch, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26921	-84.283285
5075	37129	Clear Lake Party Store	Clear Lake Party Store	213	2124 N CLEAR LAKE RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.27625	-84.286653
7091	19329	3737 West M-76	Robb's Western Service Inc	213	3737 W M 76, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.27775	-84.133849
7739	10719	Lucy Schlichter	Lucy Schlichter	213	1968 S M 33, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26965	-84.127674
8288	1282	Ogemaw County Road Commission	Ogemaw County Road Commission	213	1250 S M 33, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.27614	-84.223627
8289	37140	Ogemaw Trail Service Inc	Ogemaw Trail Service Inc.	213	2445 W M 55, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.27614	-84.223627
8316	65000076	Old M-76 1690 South West Branch		201	2650 S. Old M 76 Highway, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Not Determined	Open	44.27536	-84.213346
8726	65000066	Sempro Inc.		201	201 North 8th Street, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.27793	-84.249388
10372	21538	Super Fite Oil	Superfite Oil Station	213	2338 S M 76, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present and Immediate	Open	44.26678	-84.217807
41059	7962	Fuel Gas Div-amro Propane Co	Enro Propane Fuel Gas	213	2147 I 75 BUSINESS LOOP, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26274	-84.218001
42237	18643	Jacksonville Store Inc	Jacksonville Store Inc.	213	987 E M 55, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.27806	-84.08528
42677	42407	Independent Bank Branch Office	Independent Bank Branch Office	213	700 W HOUGHTON AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.27806	-84.204332
33873	39987	Proposed Rite Aid Store	Proposed Rite Aid Store	213	901 E HOUGHTON AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.27625	-84.226362
33107	19542	West Branch Airport	West Branch Airport	213	1519 W AIRPORT RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
48959	34138	Kent J Chaschick	Kent J Chaschick, Inc., Marian M	213	2394 S M 76, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
45128	13253	West Branch	West Branch	213	224 Thomas St, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
45431	1273	Rose City School's Bus Garage	West Branch Elementary School	213	901 W Houghton Ave, West Branch, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
45922	36081	Ogemaw Co Sheriff's Dept.	Ogemaw County Sheriff's Dept.	213	901 W Houghton Ave, West Branch, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
47513	34552	Data Property Management LLC	Lake Ogemaw Marina	213	3528 Rifle River Rd, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
49215	50000299	Coffee House	Coffee House	213	133 HOUGHTON, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
51239	36104	West Branch Community Airport	West Branch Community Airport	213	1519 W AIRPORT RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
51723	17245	West Branch Production Office	Marathon Oil Company-West Branch	213	2527 PEACH LAKE RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
52620	13597	West Branch Work Centre	Michigan Bell West Branch W.C.	213	600 S VALLEY ST, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
54852	33248	Corner Express 2	Honors Travel Center 7-eleven	213	2997 Cock Rd, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
55635	6056	Henry Sappington	Henry Sappington Machine & Tool	213	142 N Valley St, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
57327	7758	Schmitt Tire & Gas	Schmitt Tire & Gas	213	624 W Houghton Ave, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
57360	43756	Northern Bay Investments	Northern Bay Investments	213	400 E HOUGHTON AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
57913	13759	Marathon Unit #1603	Marathon Oil Company #1603	213	520 W HOUGHTON AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
58550	322	Or Vijay Kumar Property	West Branch Oper Garage	213	113 N 31ST ST, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
58740	37585	Branch Ind	Branch Industries	213	651 OCEANUS AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
58861	10000014	West Branch Steel	West Branch Steel (KAC10000014)	213	1705 S FAIRVIEW RD, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
61601	18086	Sunrise Store #14	Sunrise Convenience Store No. 14	213	2447 W M 55, WEST BRANCH, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
62998	33654	Kens Iga	Kens Iga	213	4025 S M 30, WEST BRANCH, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
63533	14302	Nuck Oil Co	Sheldon (Richard) Nuck	213	1516 S FAIRVIEW RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
64982	16486	Central Paving Co	Central Paving Company	213	2367 S OLD M-76, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
65774	3262	Foster Oil Pac-Pride	Foster Oil Pac-Prize	213	2288 REFINERY RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
65911	5321	Ben Hodges Chw-chy Inc	Ben Hodges Chw, Oils, Inc.	213	2255 S M 76, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
67794	37746	Bertz Health Care Of West Branch	Bertz Health Care Of West Branch	213	445 S Valley St, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
68687	18805	West Branch Gas Mart	West Branch Gas Mart	213	2981 COOK RD, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
78025	65000133	Fox Run Road and M-55, West Branch		201	Fox Run Road, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
74973	65000130	417 West Houghton Avenue		201	417 West Houghton Avenue, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
74974	65000131	912 West Houghton Ave.		201	912 West Houghton Ave., MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
5082	65000067	Foster Oil Co Bulk Plant		201	1985 & 1393 East M-55 Highway, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
6078	65000098	I-75 Business Loop 2480, West Branch		201	2430 I-75 Business Loop, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
6079	65000070	I-75 Business Loop 2640, West Branch		201	2650 I-75 Business Loop, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
7074	65000094	M-58, 3977 S		201	3977 S M 58, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
7080	65000097	M-76, 2762 South C14, West Branch		201	2762 S. C14 M-76, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
8404	65000004	Oscoda Refining Co		201	2789 S Refinery Rd, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
9031	65000003	Refinery Rd, Mercury Waste		201	Refinery Rd., West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
10439	650000010	Taylor Building Products		201	631 North Third St, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
11648	650000009	Zettel Drive Fuel Oil Spill		201	3091 Zettel Drive, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
39947	18789	Coe West Branch Distribution Fac	Coca-cola Enterprises (real)	213	221 THCAAS ST, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Open	44.26667	-84.178011
40183	550000128	404 W. Houghton		201	404 W. Houghton, West Branch, MI, 48661	West Branch	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
42992	1850	Little Rave Gas-o-stuff		213	508 E HOUGHTON AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011
53165	10715	WIB Mini Plaza Forward	Forwards West Branch Mini Plaza	213	600 W HOUGHTON AVE, WEST BRANCH, MI, 48661	WEST BRANCH	West Branch	Ogemaw	Risks Present but Not Immediate	Closed	44.26667	-84.178011

Source: DEQ Web site for contaminated sites: <https://www.eagle.state.mi.us/RDE/>

## **APPENDIX G**

### **WATER QUALITY REPORT**

# 2021 Water Quality Report for City of West Branch

This report covers the drinking water quality for City of West Branch for the 2021 calendar year. This information is a snapshot of the quality of the water that we provided to you in 2021. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards.

Your water comes from 2 groundwater wells, each over 170' deep. The State performed an assessment of our source water to determine the susceptibility or the relative potential of contamination. The susceptibility rating is on a seven-tiered scale from "very-low" to "very-high" based on geologic sensitivity, well construction, water chemistry and contamination sources. The susceptibility of our source can be obtained at City Hall or by calling 989-345-0500 or by email at [publicworks@westbranch.com](mailto:publicworks@westbranch.com)

There are no significant sources of contamination in our water supply. We are making efforts to protect our sources by updating the City of West Branch's well head protect program.

If you would like to know more about the report, please contact Mike Killackey, DPW Superintendent at 989-965-4982 or email at [publicworks@westbranch.com](mailto:publicworks@westbranch.com)

- **Contaminants and their presence in water:** Drinking Water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

- **Vulnerability of sub-populations:** Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

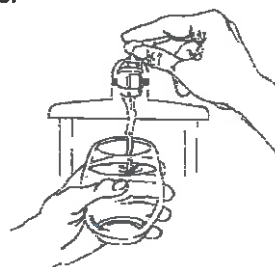
- **Sources of drinking water:** The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water comes from wells. As water travels over the surface of the land or through the ground, it

dissolves naturally-occurring minerals and, in some cases, radioactive material, and can

- Pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture and residential uses.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also, come from gas stations, urban storm water runoff, and septic systems.



In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which provide the same protection for public health.

While your drinking water meets the U.S. EPA standard for arsenic, it does contain low levels of arsenic. The U.S. EPA standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

## Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2021 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 – December 31, 2021. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All of the data is representative of the water quality, but some are more than one year old.

### Terms and abbreviations used below:

- **Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- **Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.
- **N/A:** Not applicable **ND:** not detectable at testing limit **ppb:** parts per billion or micrograms per liter **ppm:** parts per million or milligrams per liter **pCi/l:** picocuries per liter (a measure of radioactivity).
- **Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Regulated Contaminant	MCL, TT, or MRDL	MCLG or MRDLG	Level Detected	Range	Year Sampled	Violation Yes / No	Typical Source of Contaminant
<b>Inorganic Contaminants</b>							
Arsenic (ppb)	10	0	8	5-9	2021	Yes	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Nitrate (ppm)	10	10	0	0	2021	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	.69	.43-.95	Daily 2021	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Sodium <sup>1</sup> (ppm)	N/A	N/A	7.7	7.7	2021	No	Erosion of natural deposits.
<b>Disinfectants &amp; Disinfection By-Products</b>							
TTHM - Total Trihalomethanes (ppb)	80	N/A	16	0-16	2021	No	Byproduct of drinking water disinfection
HAA5 Haloacetic Acids (ppb)	60	N/A	0	0	2021	No	Byproduct of drinking water disinfection
Chlorine <sup>2</sup> (ppm)	4	4	.70	.37-1.03	Daily 2021	No	Water additive used to control microbes

Microbiological Contaminants							
Total Coliform (total number or % of positive samples/month)	TT	N/A	N/A	N/A	2021	No	Naturally present in the environment.
<i>E. coli</i> in the distribution system (positive samples)	See <i>E. coli</i> <sup>3</sup> note below	0	N/A	N/A			Human and animal fecal waste.
Fecal Indicator – <i>E. coli</i> at the source (positive samples)	TT	N/A	N/A	N/A			Human and animal fecal waste.
Inorganic Contaminant Subject to AL	AL	MCLG	Your Water <sup>4</sup>	Year Sampled	# of Samples Above AL	Does System Exceed AL? Yes / No	Typical Source of Contaminant
Lead (ppb)	15	0	4	2019	0	No	Lead service lines, corrosion of household plumbing including fittings and fixtures; erosion of natural deposits
Copper (ppm)	1.3	1.3	.1	2019	0	No	Corrosion of household plumbing systems; Erosion of natural deposits

Date Collected	Sample location	PFOS+PFOA (ppt)	LHA (ppt) PFOS + PFOA	Total tested PFAS
9-15-21	TP104	N/D	0	N/D
9-15-21	TP105	N/D	0	N/D

<sup>1</sup> Sodium is not a regulated contaminant.

<sup>2</sup> The chlorine "Level Detected" was calculated using a running annual average.

<sup>3</sup> *E. coli* MCL violation occurs if: (1) routine and repeat samples total coliform-positive and either is *E. coli*-positive, or (2) supply fails to take all required repeat samples following *E. coli*-positive routine sample, or (3) supply fails to analyze total coliform-positive repeat sample for *E. coli*.

<sup>4</sup> 90 percent of the samples collected were at or below the level reported for our water.

**Information about lead:** If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of West Branch is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you have a lead service line it is recommended that you run your water for at least 5 minutes to flush water from both your home plumbing and the lead service line. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>.

**Monitoring and Reporting to the DEQ Requirements:** The State and EPA require us to test our water on a regular basis to ensure its safety. We met all the monitoring and reporting requirements for 2021.

We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen. Copies are available at the City of West Branch City Hall 121 N. 4<sup>th</sup> St. This report will not be sent to you.

We invite public participation in decisions that affect drinking water quality. City Council meeting are held the first and the third Monday of every month at 6:00pm at City Hall. For more information about your water, or the contents of this report, contact Mike Killackey, DPW Superintendent at 989-965-4982, [publicworks@westbranch.com](mailto:publicworks@westbranch.com) or at our web city [www.westbranch.com](http://www.westbranch.com). For more information about safe drinking water, visit the U.S. Environmental Protection Agency at [www.epa.gov/safewater/](http://www.epa.gov/safewater/).

