



MANITOWOC COUNTY, WISCONSIN

Hazard Mitigation Plan 2020 - 2025



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MANITOWOC COUNTY, WISCONSIN

HAZARD MITIGATION PLAN



Adopted: January 21, 2020

Prepared by:

Bay-Lake Regional Planning Commission

425 S Adams Street, Suite 201

Green Bay, WI 54301

(920) 448-2820



The preparation of this document was financed through contract #18010-05 between Manitowoc County and the Bay-Lake Regional Planning Commission. The cost to develop this plan was paid for through a grant from the Federal Emergency Management Agency (FEMA) through the Pre-Disaster Mitigation program. A local match for the grant was provided through in-kind efforts by Manitowoc County.



FEMA

Resolution of County Adoption

No. 2019/2020-64

RESOLUTION ADOPTING 2020 TO 2025 HAZARD MITIGATION PLAN

TO THE MANITOWOC COUNTY BOARD OF SUPERVISORS:

1 WHEREAS, Manitowoc County recognizes the threat that natural hazards pose to people
2 and property; and
3

4 WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the
5 potential for harm to people and property and save taxpayer dollars; and
6

7 WHEREAS, an adopted natural hazard mitigation plan is required as a condition of future
8 grant funding for mitigation projects; and
9

10 WHEREAS, in recognition of the need to prepare for the mitigation of natural hazards,
11 Manitowoc County has prepared its *Manitowoc County Wisconsin Multi Hazards Mitigation Plan*
12 *2020-2025* (the "Plan"); and
13

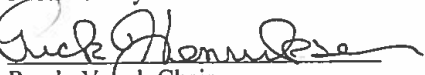
14 WHEREAS, Wisconsin Emergency Management ("WEM") has reviewed and approved
15 the Plan; and
16

17 WHEREAS, after careful consideration and review, the Public Safety Committee
18 recommends the County Board of Supervisors of the County of Manitowoc adopt the Plan;
19


20 NOW, THEREFORE, BE IT RESOLVED, that the County Board of Supervisors of the
21 County of Manitowoc hereby adopts the *Manitowoc County Wisconsin Multi Hazards Mitigation*
22 *Plan 2020-2025* as approved by WEM as the County's official Hazard Mitigation Plan; and
23

24 BE IT FURTHER RESOLVED, that upon approval of the Manitowoc County, Wisconsin
25 Hazard Mitigation Plan (2020-2025), the Bay-Lake Regional Planning Commission will submit
26 the Plan to Wisconsin Emergency Management and Federal Emergency Management Agency
27 officials for final approval, as required under the Hazard Mitigation Grant Program.

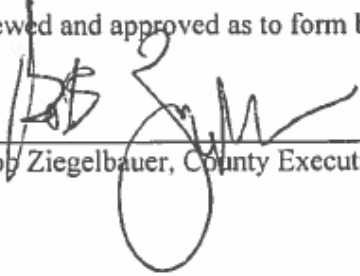
Dated this 21st day of January 2020.

Respectfully submitted by the
Public Safety Committee

Randy Vogel, Chair


FISCAL IMPACT: None.

FISCAL NOTE: Reviewed and approved by Comptroller. 

LEGAL NOTE: Reviewed and approved as to form by Corporation Counsel. 

APPROVED: 

Bob Ziegelbauer, County Executive



Date 1/21/2020

FEMA/WEM Approval Letters



STATE OF WISCONSIN
DEPARTMENT OF MILITARY AFFAIRS
~~~~~  
**DIVISION OF EMERGENCY MANAGEMENT**

Darrell L. Williams, Ph.D.  
Administrator

Tony Evers  
Governor

December 6, 2019

Mr. Travis Waack, Director  
Manitowoc County Emergency Management  
1024 South 9<sup>th</sup> Street  
1<sup>st</sup> Floor, Room 113  
Manitowoc, WI 54220

Dear Mr. Waack:

Wisconsin Emergency Management (WEM) has reviewed the *Manitowoc County Wisconsin Multi-Hazards Mitigation Plan 2020-2025*. The Federal Emergency Management Agency (FEMA) and WEM have signed a Program Administration by States operational agreement, dated November 9, 2017, allowing WEM to review local mitigation plans to ensure they meet the required criteria for a multi-jurisdiction hazard mitigation plan outlined in 44 CFR Part 201. Upon review, Manitowoc County has met the required criteria for a multi-jurisdictional hazard mitigation plan.

The county and participating jurisdictions *must now adopt* the plan in order to have a FEMA-approved hazard mitigation plan and be eligible for funding through the Hazard Mitigation Grant Program, Pre-Disaster Mitigation program, and the Flood Mitigation Assistance program.

I have emailed a copy of the WEM Mitigation Plan Review Tool for your records.

If you have any questions, please call Katie Sommers at (608) 242-3222.

Sincerely,

A handwritten signature in black ink, appearing to read 'Charles Nettesheim', with a long horizontal flourish extending to the right.

Charles Nettesheim  
Hazard Mitigation Specialist  
Wisconsin Emergency Management

Enclosures

Cc: Steve Fenske, East Central Region Emergency Management Director  
Madison Smith, Bay Lake Regional Planning Commission Representative



**STATE OF WISCONSIN**  
**DEPARTMENT OF MILITARY AFFAIRS**  
**DIVISION OF EMERGENCY MANAGEMENT**

Darrell L. Williams, Ph.D.  
Administrator

Tony Evers  
Governor

February 3, 2020

Mr. Travis Waack, Director  
Manitowoc County Emergency Management  
1024 South 9<sup>th</sup> Street  
1<sup>st</sup> Floor, Room 113  
Manitowoc, WI 54220

Dear Travis:

It gives me great pleasure to inform you that the *Manitowoc County, Wisconsin, Hazard Mitigation Plan 2020-2025* has officially been approved by FEMA for the County! Approval for the other participating jurisdictions is contingent upon receipt of their adoption resolutions.

The plan complies with the requirements of the Disaster Mitigation Act of 2000. The approved jurisdictions are eligible to apply for funding through the Hazard Mitigation Grant Program, Pre-Disaster Mitigation program, and Flood Mitigation Assistance program through February 2, 2025, for projects identified in the Plan. Per regulation, the Plan must be updated and resubmitted for approval every five years for the participating jurisdictions to remain eligible for mitigation funding.

Along with the Meets Requirements letter, you received the Local Mitigation Plan Review Tool, which includes recommended revisions for the five-year update.

Congratulations on the approval of your Plan! Our office commends the County for its commitment to mitigation and reducing future disaster losses, and we look forward to working with you in the future.

If you have any questions, please call me at (608) 242-3222 or Robyn Fennig at (608) 888-5292.

Sincerely,

Katie Sommers, CFM  
Hazard Mitigation Section Supervisor

Enclosure

Cc: Steve Fenske, East Central Region Emergency Management Director, WEM  
Madison Smith, Environmental Planner, Bay-Lake Regional Planning Commission

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## FEMA/WEM Approval Letters

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FEB 03 2020



U.S. Department of Homeland Security  
536 S. Clark St. 6<sup>th</sup> Floor  
Chicago, IL 60605

**FEMA**

Ms. Robyn Fennig  
State Hazard Mitigation Officer  
Wisconsin Emergency Management  
2400 Wright Street, P.O. Box 7865  
Madison, WI 53707-7865

Dear Ms. Fennig:

Thank you for submitting the adoption documentation for the Manitowoc County Wisconsin Multi-Hazards Mitigation Plan 2020-2025. The plan was reviewed based on the local plan criteria contained in 44 CFR Part 201, as authorized by the Disaster Mitigation Act of 2000. The Manitowoc County plan met the required criteria for a multi-jurisdiction hazard mitigation plan and the plan is now approved for the county. Please submit the adoption resolutions for any remaining jurisdictions who participated in the planning process.

The approval of this plan ensures continued availability of the full complement of Hazard Mitigation Assistance (HMA) Grants. All requests for funding, however, will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted.

We encourage Manitowoc County and the participating jurisdictions to follow the plan's schedule for monitoring and updating the plan, and to continue their efforts to implement the mitigation measures. The expiration date of the Manitowoc County plan is five years from the date of this letter. To continue project grant eligibility, the plan must be reviewed, revised as appropriate, resubmitted, and approved no later than the plan expiration date.

Please pass on our congratulations to Manitowoc County. If you or the communities have any questions, please contact Cadence Peterson at [cadence.peterson@fema.dhs.gov](mailto:cadence.peterson@fema.dhs.gov) or at 312-408-5260.

Sincerely,

A handwritten signature in black ink, appearing to read "Julia McCarthy".

Julia McCarthy  
Chief, Risk Analysis Branch  
Mitigation Division

## BAY-LAKE REGIONAL PLANNING STAFF



Project Team:  
**Madison Smith**  
Environmental Planner

**Nicole Barbiaux**  
GIS Specialist



**BAY LAKE**  
Regional Planning Commission | Since 1972



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# EXECUTIVE SUMMARY

## PLAN UPDATE SUMMARY

Table 0.1 below lists the plan changes made to the previous Manitowoc County, Wisconsin Hazard Mitigation Plan. Table 0.2 lists the updates made to the previously identified mitigation strategies.

Table 0.1: Plan Update Summary

| Plan Chapter                                     | Overview of Plan Update                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chapter 1: Introduction                          | Updated recent disasters, planning process participants, and public review information. Several updates were made to the original steering committee to reflect the changes in positions since the last plan was adopted. The steering committee updated the prioritized order of the hazards to be addressed and added coastal hazards, landslides, subsidence, and dam failure.                                                                |
| Chapter 2: Planning Area                         | Updated demographic profile information using the 2010 Census. Updated land use information.                                                                                                                                                                                                                                                                                                                                                     |
| Chapter 3: Risk Assessment                       | All hazard profiles, occurrences, and probabilities were updated. In addition, the risk assessments were updated. Hazard occurrences were updated to include all from 1995 to 2011 (original plan covered 1990 to 2005). Hazard probabilities were updated based on updated occurrences. Updated critical facilities and changed some categories names. A risk assessment was added for coastal hazards, landslide, subsidence, and dam failure. |
| Chapter 4: Mitigation Strategy                   | Updated the mitigation action plan to account for completed projects, updated timetables, and new project additions. Added specific municipal mitigation actions.                                                                                                                                                                                                                                                                                |
| Chapter 5: Plan Maintenance and Adoption Process | Updated plan maintenance process and plan update schedule.                                                                                                                                                                                                                                                                                                                                                                                       |



Table 0.2: Mitigation Strategy Updates

| Project                                                                                                                                                                                                           | Changes                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>All Hazards</b>                                                                                                                                                                                                |                                                                                                                                                                                                                                  |
| Establish Mutual Aid Agreements for utility and communications systems including 9-1-1 that are similar to the Mutual Aid Box Alarm System (MABAS)                                                                | Completed for communications systems, a similar effort has been completed for utilities.                                                                                                                                         |
| Develop a central data collection process to report hazard incidences and resulting deaths, injuries, and property or crop damages.                                                                               | Addition                                                                                                                                                                                                                         |
| Add capability for the Dispatch Center to accept text messages.                                                                                                                                                   | Addition                                                                                                                                                                                                                         |
| Maintain Code Red (i.e. Reverse 911) capability.                                                                                                                                                                  | Addition. Capability provided in 2013, \$22K/year to maintain                                                                                                                                                                    |
| Develop land use policies that guide development away from hazardous areas; reduce density in hazardous areas; and/or encourage greater development restrictions in hazardous areas                               | Completed                                                                                                                                                                                                                        |
| Update Comprehensive Plan and include land use policies that guide development away from hazardous areas; reduce density in hazardous areas; and/or encourage greater development restrictions in hazardous areas | Addition                                                                                                                                                                                                                         |
| Collect building footprints for all structures in the County to allow for analysis of where facilities/structures are located                                                                                     | Completed for City of Manitowoc +3 miles. Priority changed from “Medium” to “Low” for the remaining of the county. Timetable changed from “2009-2010” to “2015-2020”.                                                            |
| Collect building height data for all structures in the County                                                                                                                                                     | Priority changed from “Medium” to “Low”.                                                                                                                                                                                         |
| Work with County, State, and Federal agencies to maintain a consistent critical facility database                                                                                                                 | Changed Responsible Party from “Manitowoc County Planning and Park Commission and Manitowoc County Emergency Management” to “Manitowoc County Hazard Mitigation Plan Steering Committee.” Priority changed from “Low” to “High”. |
| Acquire updated air photos and LIDAR data                                                                                                                                                                         | Addition                                                                                                                                                                                                                         |
| Outage management software to help triage outage repairs                                                                                                                                                          | Addition                                                                                                                                                                                                                         |
| Ability to test individual sirens after repairs                                                                                                                                                                   | Addition                                                                                                                                                                                                                         |
| Develop Comprehensive Safety Plan for all municipal-owned buildings                                                                                                                                               | Addition                                                                                                                                                                                                                         |
| <b>Tornado and Strong Wind</b>                                                                                                                                                                                    |                                                                                                                                                                                                                                  |
| Assist personnel in schools and businesses, public facility managers, mobile home park managers, and citizens in determining “best available” tornado safety areas or need to construct safe rooms                | Added “mobile home park manager” and “or need to construct safe rooms” to Project                                                                                                                                                |
| Continued investment in state-of-the-art early warning systems                                                                                                                                                    | Combined with another project                                                                                                                                                                                                    |
| Use of early warning system through pagers, NOAA weather radios, and sirens to first responders                                                                                                                   | Added “continued investment” and “social media and Code Red” to Project                                                                                                                                                          |
| Consider adoption of ordinances requiring construction of safe shelters for mobile home parks, fairgrounds, shopping malls, or other vulnerable public places                                                     | Removed “shopping malls” from Project and changed Timetable from “2008-2012” to “2015-2020”                                                                                                                                      |

Table 0.2: Mitigation Strategy Updates (cont'd)

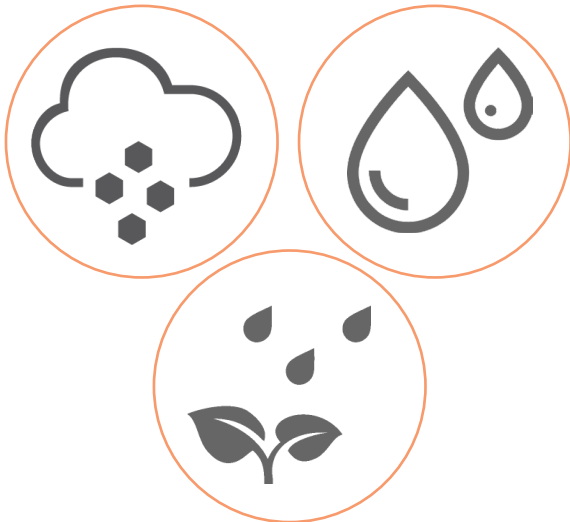
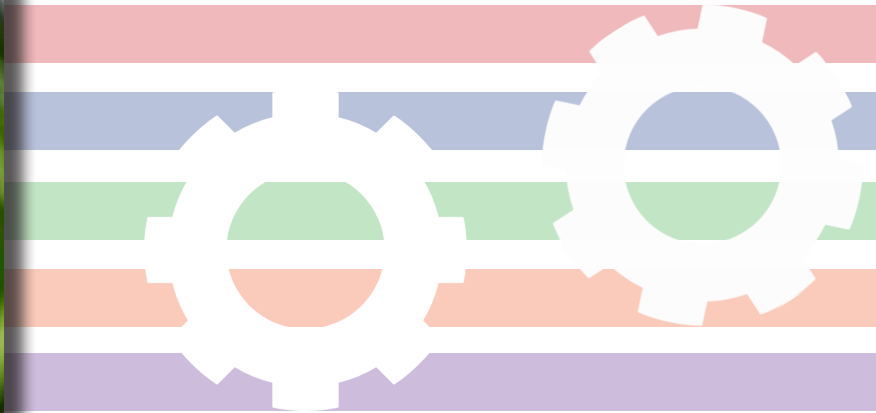
| Project                                                                                                                                                       | Changes                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tornado and Strong Wind</b>                                                                                                                                |                                                                                                                                                                                                                                                                                    |
| Harden utility infrastructure to make more resistant to tornadoes and high winds (i.e., burying of telephone lines)                                           | Removed                                                                                                                                                                                                                                                                            |
| Review and update Comprehensive Safety Plan for all county buildings                                                                                          | Added "-owned" to Project                                                                                                                                                                                                                                                          |
| Revise and amend zoning and building ordinances to require anchoring of manufactured and mobile homes and exterior attachments (such as carports and porches) | Removed "...and exterior attachments (such as carports and porches)" from Project and changed Timetable from "2010" to "2015". Changed Estimated Cost from "~\$25.00/mobile home for tie down and then additional costs for leveling and installation" to "Costs to be determined" |
| Inform public of severe weather                                                                                                                               | Changed project wording from "Disseminate severe weather safety information to the public" to "Inform public of severe weather"                                                                                                                                                    |
| <b>Hail</b>                                                                                                                                                   |                                                                                                                                                                                                                                                                                    |
| Harden utility infrastructure to make more resistant to hail (i.e., burying of telephone lines)                                                               | Changed Timetable from "2010-2012" to "2015-2020" and changed Responsible Party from "Manitowoc County Emergency Management Department, in conjunction with local utility companies" to "local utility companies, and local jurisdictions"                                         |
| Animal Protection                                                                                                                                             | Added "Costs to be determined" for Estimated Cost                                                                                                                                                                                                                                  |
| Promote purchase of hail crop insurance                                                                                                                       | For Project, replaced "Promote purchase of..." with "Provide information about..." Added "Covered by existing budgets" to Estimated Cost                                                                                                                                           |
| <b>Winter Storms</b>                                                                                                                                          |                                                                                                                                                                                                                                                                                    |
| Utilization of the media to disseminate emergency information                                                                                                 | Added "highway depts" to Responsible Party                                                                                                                                                                                                                                         |
| Provide educational materials to the public regarding safety during winter storm events                                                                       | Changed Responsible Party from "Local highway departments and local law enforcement departments" to "County Emergency Management and State EM ( <a href="http://readywisconsin.wi.gov">readywisconsin.wi.gov</a> )"                                                                |
| <b>Flooding</b>                                                                                                                                               |                                                                                                                                                                                                                                                                                    |
| Dissemination of instructions to the public through the media                                                                                                 | Added "highway depts" to Responsible Party                                                                                                                                                                                                                                         |
| Handle the evacuation of people and property in the case of a severe flood event                                                                              | Added "County Emergency Management, County Highway Dept, County Aging Dept, and County Health Dept" to Responsible Party                                                                                                                                                           |
| Sand-bagging when necessary                                                                                                                                   | Added "County Emergency Management, local public works depts" to Responsible Party. Changed Priority from "Low" to "Medium"                                                                                                                                                        |
| Review and update floodplain zoning ordinances as necessary                                                                                                   | Added Note "Updated in 2010; approved by FEMA and WDNR"                                                                                                                                                                                                                            |
| Land use planning                                                                                                                                             | Added Note "Updated in 2008 with Comprehensive Planning; will update again in 10 years." Changed Timetable from "2008-2011" to "2018-2020". Changed Priority from "High" to "Low"                                                                                                  |

Table 0.2: Mitigation Strategy Updates (cont'd)

| Project                                                                                                                                               | Changes                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Flooding</b>                                                                                                                                       |                                                                                                                                                                 |
| Promotion of the sale of flood insurance                                                                                                              | Removed. Replace by actions that address NFIP.                                                                                                                  |
| Issue or deny floodplain development/building permits                                                                                                 | Addition to address NFIP Compliance                                                                                                                             |
| Inspect all development to assure compliance with local ordinance                                                                                     | Addition to address NFIP Compliance                                                                                                                             |
| Maintain records of floodplain development                                                                                                            | Addition to address NFIP Compliance                                                                                                                             |
| Assist in the preparation and revision of floodplain maps                                                                                             | Addition to address NFIP Compliance                                                                                                                             |
| Help residents obtain information on flood hazard, floodplain map data, flood insurance, and proper construction measures                             | Addition to address NFIP Compliance                                                                                                                             |
| Study effects of current and future development in the approximate floodplain and any other areas that have not yet been studied                      | Changed Estimated Cost of "\$40,000 - \$50,000" with "Costs to be determined."<br>Changed Responsible Party to replace "County Emergency Management" with "GIS" |
| Review and update floodplain zoning ordinances as necessary                                                                                           | Changed Priority from "Medium" to "Low".<br>Changed Project Timetable from "As Needed" to "Annually".                                                           |
| Stormwater protection planning                                                                                                                        | Changed Responsible Party to replace "County and Municipal Planning/Zoning" with "Wisconsin DNR and Public Works/Engineering"                                   |
| <b>Dam Failure Flooding</b>                                                                                                                           |                                                                                                                                                                 |
| Review and update evacuation procedures for persons located in affected area as needed                                                                | Moved to "Flooding"                                                                                                                                             |
| <b>Flooding (Stormwater)</b>                                                                                                                          |                                                                                                                                                                 |
| Stormwater Protection Planning                                                                                                                        | Moved to "Flooding"                                                                                                                                             |
| Erosion Control Zoning                                                                                                                                | Moved to "Flooding"                                                                                                                                             |
| Stormwater Retention/Detention Facilities                                                                                                             | Moved to "Flooding"                                                                                                                                             |
| <b>Extreme Cold</b>                                                                                                                                   |                                                                                                                                                                 |
| Continue to provide safety information to the public during periods of extreme temperature                                                            | Added "County Emergency Management, and County Health Dept" to Responsible Party                                                                                |
| <b>Extreme Heat</b>                                                                                                                                   |                                                                                                                                                                 |
| Continue to provide safety information to the public during periods of extreme temperature                                                            | Added "County Emergency Management, and County Health Dept" to Responsible Party                                                                                |
| <b>Lightning</b>                                                                                                                                      |                                                                                                                                                                 |
| Protection of structures through use of fire resistant materials                                                                                      | For Project, replaced "Protection of..." with "Provide information about protecting..." and added Fire Inspectors to Responsible Party                          |
| Disseminate severe weather safety information to the public                                                                                           | Removed as it's covered under "Inform public of severe weather" under Tornado and Strong Wind                                                                   |
| Use of early warning system through pagers and NOAA weather radios                                                                                    | Moved to All Hazards. Removed "to first responders" in project                                                                                                  |
| <b>Drought</b>                                                                                                                                        |                                                                                                                                                                 |
| Identification of areas with potential ground water level problems and inspection of shallow wells in those areas for adequate depth and construction | Changed Timetable from "2008-2012" to "2015-2020"                                                                                                               |

Table 0.2: Mitigation Strategy Updates (cont'd)

| Project                                                                                                                                                                                              | Changes                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Dense Fog</b>                                                                                                                                                                                     |                                                                                                                              |
| Upkeep existing signage in areas of high fog event incidence                                                                                                                                         | Changed Responsible Party from "Manitowoc County Traffic Safety Commission" to "County Highway Dept and Local Jurisdictions" |
| Additional fog warning signs along Interstate State 43                                                                                                                                               | Removed - Determined to be unnecessary.                                                                                      |
| <b>Wildland Fires</b>                                                                                                                                                                                |                                                                                                                              |
| Coordinate public outreach efforts to promote such things as non-combustible roof covering, fire safe construction, safe burning, and the importance of clearing brush and grass away from buildings | Changed Priority from "Medium" to "Low". Removed "Local building inspectors" from Responsible Party                          |
| <b>Coastal Hazards</b>                                                                                                                                                                               |                                                                                                                              |
| Continue to enforce greater setbacks for properties adjacent to Lake Michigan under the county shoreland zoning ordinance                                                                            | Addition                                                                                                                     |
| <b>Land Subsidence</b>                                                                                                                                                                               |                                                                                                                              |
| Provide information to residents as needed                                                                                                                                                           | Addition                                                                                                                     |



# Chapter 1 - Introduction

## ► PURPOSE OF THE PLAN

The primary focus of the Manitowoc County, Wisconsin Hazard Mitigation Plan is to evaluate the planning area's potential exposure to hazards and to identify appropriate mitigation strategies. Consistent with the Code of Federal Regulations (44 CFR Part 201.6), this plan conforms to Federal Emergency Management Agency (FEMA) requirements for local hazards mitigation planning.

This plan provides County-level information on areas of risk, magnitude of risk, and strategies for reducing this risk. Through the process of developing this plan, the County addressed issues related to the protection of lives and property from hazards, the protection of critical facilities, and the reduction of community and taxpayer costs associated with disaster relief and rescue efforts. Completion and approval of the plan makes Manitowoc County eligible to apply for future FEMA disaster relief and mitigation project funds, helping the County to implement their recommended mitigation strategies.

## ► DISASTER MITIGATION ACT OF 2000

The development and update of the Manitowoc County, Wisconsin Hazard Mitigation Plan is in response to passage of the Disaster Mitigation Act of 2000. This act was signed into law in October of 2000. The Act attempts to stem the losses from disasters, reduce future public and private expenditures, and speed up response and recovery from disasters. The Act (Public Law 106-390) was amended by the Robert T. Stafford Relief and Emergency Assistance Act. The following is a summary of the parts of the Disaster Mitigation Act of 2000 that pertain to local governments and tribal organizations:

- The Act establishes a new requirement for local governments and tribal organizations to prepare a hazard mitigation plan in order to be eligible for funding from FEMA through the Pre-Disaster Mitigation Assistance Program and the Hazard Mitigation Grant Program.
- The Act establishes a requirement that natural hazards need to be addressed in the risk assessment/vulnerability analysis part of a hazard mitigation plan. Man-made/technological hazards are encouraged, but not required to be addressed.

- The Act authorizes up to seven percent of Hazard Mitigation Grant Program funds available to a state after a federal disaster to be used for development of state, local and tribal organization hazard mitigation plans.
- The Act established November 1, 2004, as the date by which local governments and tribal organizations are to prepare and adopt their respective plans in order to be eligible for the FEMA Hazard Mitigation Grant Program; this deadline was November 1, 2003, for the Pre-Disaster Mitigation Program.
- If a plan is not prepared by November 1, 2004, and a major disaster is declared, in order for a local government or tribal organization to be eligible to receive funding through the Hazard Mitigation Grant Program, they must agree to prepare a hazard mitigation plan within one year.
- In addition, not having a current, FEMA-approved, and adopted hazard mitigation plan will prevent local and tribal governments from utilize funding through the Pre-Disaster Mitigation Grant Program. Such federal funding hinges on the community being covered by a hazard mitigation plan within one year.

## ► FUNDING OF THE HAZARD MITIGATION PLAN

In July 2018, Manitowoc County received a planning grant to develop an update to their hazard mitigation plan in the amount of \$33,308 from FEMA through the FFY17 Pre-Disaster Mitigation Program. Through the grant (Agreement #: EMC-2018-PC-0004), FEMA provided 75 percent of the funds (\$24,981), while the remaining 25 percent (\$8,327) was required by Manitowoc County to meet the local match.

Manitowoc County entered into a contract (#18010-05) with the Bay-Lake Regional Planning Commission to prepare the update to the hazard mitigation plan. Development of the plan began in February 2019.



## ► FIVE PARTS OF THIS NATURAL HAZARDS MITIGATION PLAN

The Manitowoc County, Wisconsin Hazard Mitigation Plan is divided into five chapters in order to address FEMA's local mitigation plan requirements. The five chapters are as follows:

*Chapter 1 - Introduction and Planning Process*



*Chapter 2 - Community Profile*



*Chapter 3 - Risk Assessment*



*Chapter 4 - Mitigation Strategy*



*Chapter 5 - Plan Adoption and Maintenance*

## ► PLANNING PROCESS

Development of the Manitowoc County, Wisconsin Hazard Mitigation Plan was based on the planning requirements and guidance provided by FEMA and WEM. Following these requirements and guidance, the plan meets the requirements of the Disaster Mitigation Act of 2000. Since the WEM guidance for hazard mitigation plans recommended that planning areas “be consistent with a community’s comprehensive planning boundary,” the planning area for this plan includes all of Manitowoc County with its three cities (Manitowoc, Two Rivers, and Kiel), nine villages (Cleveland, Francis Creek, Kellnersville, Maribel, Mishicot, Reedsville, St. Nazianz, Valders, and Whitelaw), and eighteen towns (Table 2.1).

The steering committee, comprised of county, city, and village representatives, emergency management personnel, and businesses, guided the plan development process over an 18-month time-frame beginning in February 2019. Professional planning support and facilitation was provided by the Bay-Lake Regional Planning Commission. Public review and input was encouraged at all meetings and through a public informational meeting to present the plan goals, mitigation actions plan, and mapped hazard areas.



Development of the plan was structured along a five-phase planning process:

Phase 1: Pre-planning and review of steering committee appointments

Phase 2: Reassessing risks and critical factors

Phase 3: Updating the mitigation action plan

Phase 4: Reviewing the policies and procedures for plan implementation

Phase 5: Documenting the planning process and plan action

**Phase 1** involved initial conversations and meetings aimed at reviewing the previous steering committee appointments, reconvening the steering committee, and outlining the planning process and responsibilities of the steering committee.

**Phase 2** was comprised of meetings with the steering committee to reassess natural hazards and potential risks to the County, and reassessing identified critical facilities.

**Phase 3** involved updating the mitigation strategy to address identified risks including removing completed task and adding new mitigation actions to address risks.

**Phase 4** involved reviewing the policies that affect plan implementation and the procedures that would be followed to implement the plan.

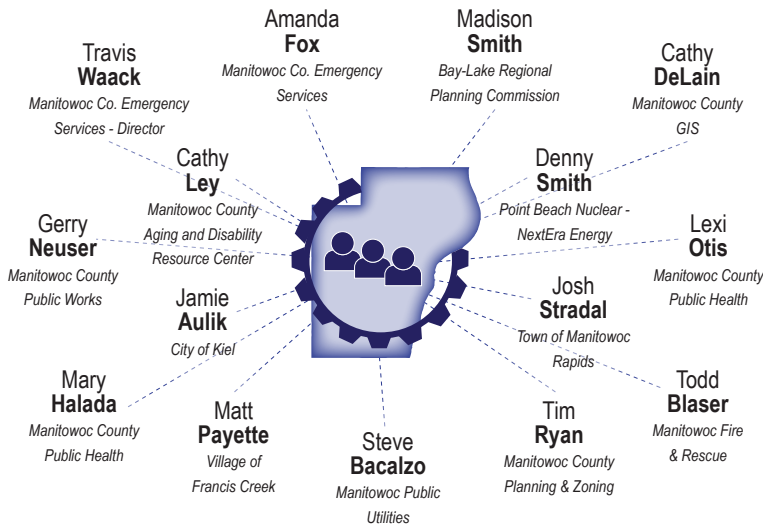
**Phase 5** involved documenting the planning process, developing a complete draft of the plan, and plan adoption.

Plan development was completed with the adoption of the plan by resolution at the Manitowoc County Board. The maps in the Planning Area and Risk Assessment chapters of the plan were completed using the Bay-Lake Regional Planning Commission’s Geographic Information System (GIS), allowing spatial analysis and a consistent base map. The FEMA HAZUS software was not utilized due to the availability of current local data and numerous differences between census boundaries and locally available map features. Maps included in this plan are for general planning purposes only, and are not for legal or formal survey purposes.

## ► HAZARD MITIGATION PLAN STEERING COMMITTEE

Manitowoc County established a steering committee for the plan development (Table 1.1). The steering committee was responsible for providing input, helping to guide the planning process, and reviewing draft chapters of the plan.

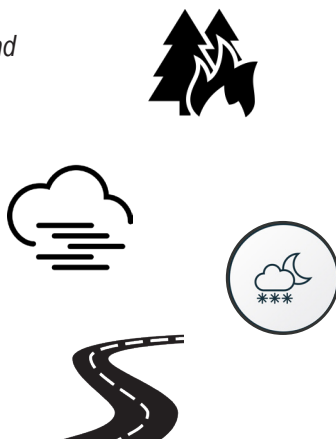
Table 1.1: Manitowoc County, Hazard Mitigation Plan Steering Committee



Other contributors: Angela Kowalzek-Adrians

During the assessment of natural hazard conditions, the plan steering committee reviewed the prioritization of the various potential natural hazards facing the planning area. The hazards addressed in this plan are listed below in order of priority.

1. Tornado and Strong Wind
2. Winter Storm
3. Hail
4. Flooding
5. Extreme Cold
6. Excessive Heat
7. Drought
8. Lightning
9. Coastal Hazards
10. Dense Fog
11. Land Subsidence
12. Wildland Fires



The steering committee reviewed and analyzed each section of the plan, and subsequently Table 0.1 was developed to document the sections of the plan that were revised as part of the update process. The steering committee held six meetings to update the plan: February 11, 2019, May 16, 2019, July 17, 2019, and October 3, 2019. Copies of the sign-in sheets are included in Appendix A.

## Public Involvement

### Steering Committee Meetings

Opportunities for public comment during the drafting stage of the plan were held at all meetings of the steering committee, which were all open to the public. No comments were provided by the public at these meetings.

### Public Informational Meeting

An informational meeting was held for the public on November 11, 2019, 5:30 p.m. at the Manitowoc County Emergency Operations Center (EOC) at 1024 S 9th Street in Manitowoc. This meeting was held to provide additional opportunity for the public to review and comment on the draft plan and maps. No comments were provided by the public at this meeting. Both the steering committee meetings and the public informational meeting were open to the public and notices were posted at County EOC.

### County Board Meeting

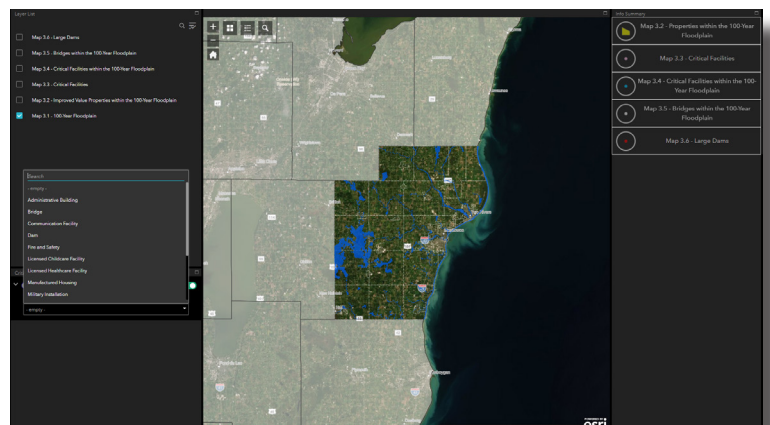
On January 21, 2020 the Manitowoc County Board adopted the hazard mitigation plan at a public meeting. A copy of the resolution of adoption can be found at the front of this plan on page I and II.

### Neighboring Jurisdictions

A copy of the Manitowoc County, Wisconsin Hazard Mitigation Plan and an invitation to the public informational meeting was sent to the emergency management directors in counties adjacent to Manitowoc County including Sheboygan, Kewaunee, Calumet, and Brown counties for their review and comment. No comments were received.

### Critical Facilities Online Maps

Throughout the development of the Manitowoc County Hazard Mitigation Plan Update, an online ArcGIS platform to view and filter critical facilities was created. The link to this tool is: <https://baylakerpc.maps.arcgis.com/apps/webappviewer/index.html?id=bd4968b7ed394fc4b071a9559af0c708>



## Chapter 2 - Community Profile

### General Geography

The planning area for the Manitowoc County, Wisconsin Hazard Mitigation Plan covers Manitowoc County and all of the municipalities within the county. The County has twelve incorporated communities (three cities and nine villages).

Map 2.1 illustrates the location of Manitowoc County and its municipalities. Table 2.1 indicates the geographical size of the County as well as the size of each municipality within the County.

Table 2.1: Manitowoc County Planning Area

| Municipality        | Total Planning Area (Sq. Miles) |
|---------------------|---------------------------------|
| C. Kiel             | 2.1                             |
| C. Manitowoc        | 18.1                            |
| C. Two Rivers       | 6.5                             |
| V. Cleveland        | 2.0                             |
| V. Francis Creek    | 1.2                             |
| V. Kellnersville    | 0.5                             |
| V. Maribel          | 1.1                             |
| V. Mishicot         | 2.5                             |
| V. Reedsville       | 1.2                             |
| V. St. Nazianz      | 0.8                             |
| V. Valders          | 1.4                             |
| V. Whitelaw         | 0.5                             |
| T. Cato             | 34.9                            |
| T. Centerville      | 23.8                            |
| T. Cooperstown      | 35.1                            |
| T. Eaton            | 35.5                            |
| T. Franklin         | 36.2                            |
| T. Gibson           | 35.3                            |
| T. Kossuth          | 38.6                            |
| T. Liberty          | 35.5                            |
| T. Manitowoc        | 6.1                             |
| T. Manitowoc Rapids | 27.3                            |
| T. Maple Grove      | 35.4                            |
| T. Meeme            | 36.3                            |
| T. Mishicot         | 27.6                            |
| T. Newton           | 34.4                            |
| T. Rockland         | 35.3                            |
| T. Schleswig        | 33.8                            |
| T. Two Creeks       | 14.9                            |
| T. Two Rivers       | 31.7                            |
| <b>County Total</b> | <b>595.9</b>                    |

Source: U.S. Bureau of the Census, 2010, and Bay-Lake Regional Planning Commission, 2019.

### Historical County Description

Manitowoc was officially founded in 1836. In 1839, the county government was formed and the first courthouse followed a year later. Early county commissioners authorized the first roads to connect the farms and settlements of the area. Manitowoc County is located along Lake Michigan in east central Wisconsin encompassing an area of approximately 380,000 acres. Manitowoc County is bordered by Brown and Kewaunee counties to the north; Calumet County to the west; Sheboygan County to the south; and Lake Michigan to the east. Map 2.1 provides a general location of Manitowoc County in Wisconsin.

### Development Pattern

A field inventory of land use of the county was conducted in 2010 by the Bay-Lake Regional Planning Commission, with updates completed in 2015 (Map 2.2). Using GIS, land use types were tabulated to calculate the total area of Manitowoc County at 381,453 acres (Table 2.2).

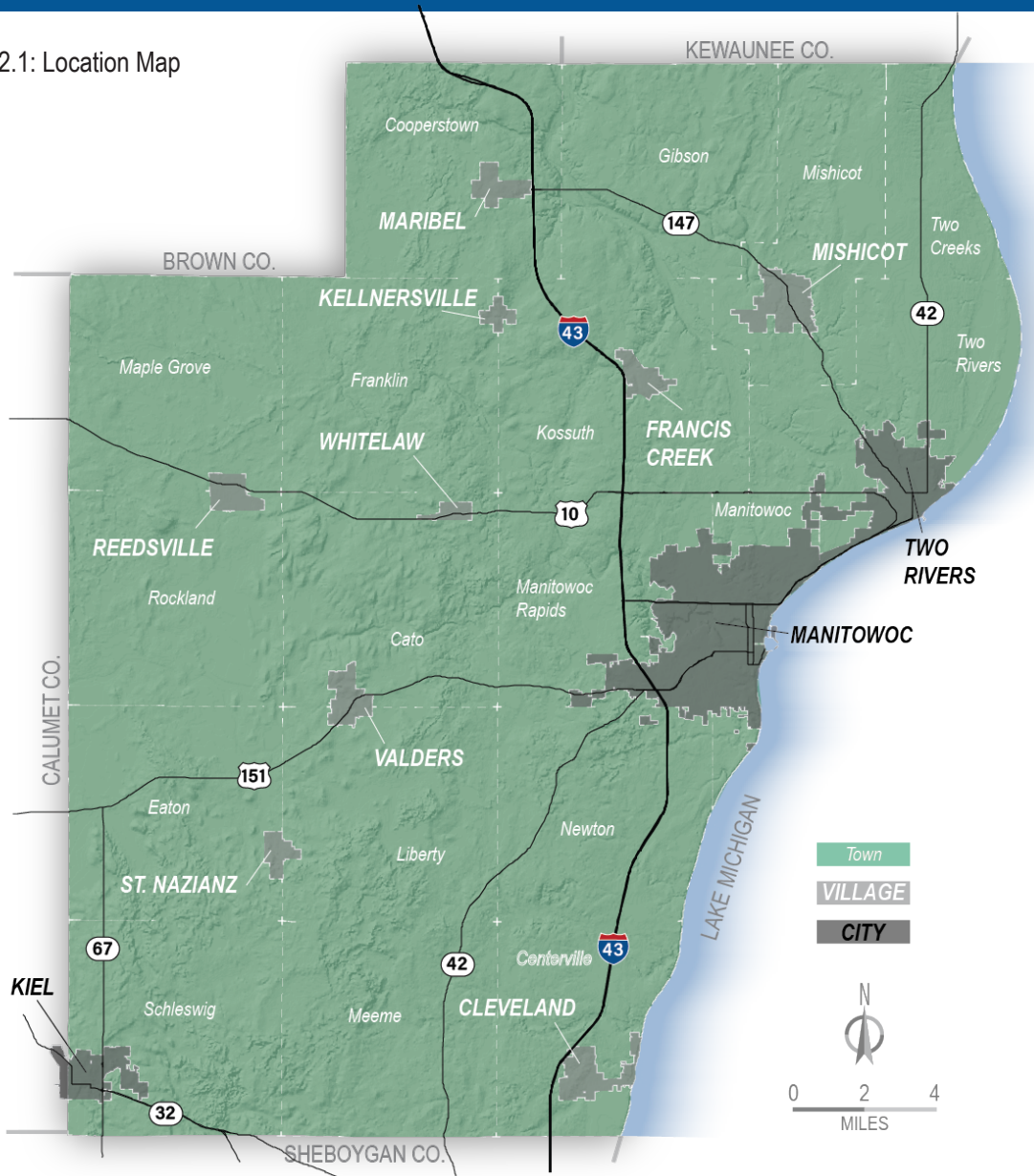
The vast majority of the county is comprised of agricultural land (specifically croplands) with 219,368 acres or 57.5 percent of the land. Woodlands and natural areas comprise 106,890 acres or 28 percent. Approximately 48,129 acres or about 13 percent of Manitowoc County is developed. Developed land is comprised of residential, commercial, industrial, transportation, communications/utilities, governmental/institutional, and parks and recreation.

Table 2.2: Manitowoc County Land Use, 2015

| Land Use Type              | Acreage          | Percent       |
|----------------------------|------------------|---------------|
| Communication/Utilities    | 831.7            | 0.2%          |
| Governmental/Institutional | 1,598.6          | 0.4%          |
| Commercial                 | 1,877.7          | 0.5%          |
| Industrial                 | 3,569.2          | 0.9%          |
| Parks and Recreation       | 5,565.4          | 1.5%          |
| Wetland/Water Features     | 7,066.3          | 1.9%          |
| Transportation             | 17,005.3         | 4.5%          |
| Residential                | 17,680.6         | 4.6%          |
| Woodland/Natural Areas     | 106,890.3        | 28.0%         |
| Agricultural               | 219,368.0        | 57.5%         |
| <b>Total</b>               | <b>381,453.1</b> | <b>100.0%</b> |

Source: Bay-Lake Regional Planning Commission, 2010 and 2015 land use data; 2019.

Map 2.1: Location Map



Manitowoc County is located in northeast Wisconsin and has a total of 381,637 acres. The County is surrounded by Brown and Kewaunee Counties to the north, Calumet County to the west, and Sheboygan County to the south. Lake Michigan borders the County to the east and provides over 35 miles of lakeshore coastline.



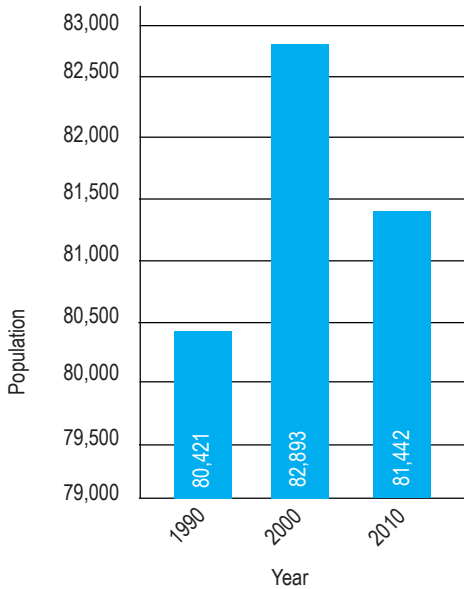
# Community Profile

## Demographic Trends

### Population

Over the past 110 years, Manitowoc County's population increased by 93 percent or 39,181 persons. The county's population increased every decade with the exception of a slight decline between 1980 and 1990, and again between 2000 and 2010. The largest period of population increase in the county occurred between 1910 and 1920 with an increase of 14.8 percent.

Figure 1: Population Trends, Manitowoc County 1990 - 2010



Manitowoc County is projected to see a slow, but steady growth in its population from 2010 to 2030 and is projected to have a population of 82,230 by 2030, according to the Wisconsin Department of Administration (WDOA).

Figure 2: Population Projections, 1990 - 2040

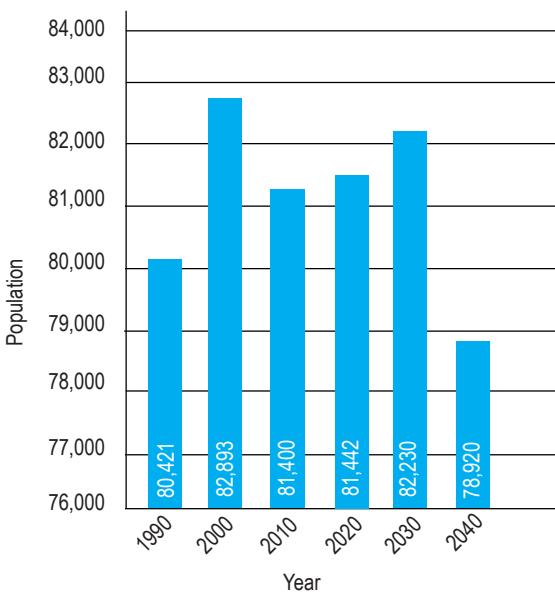
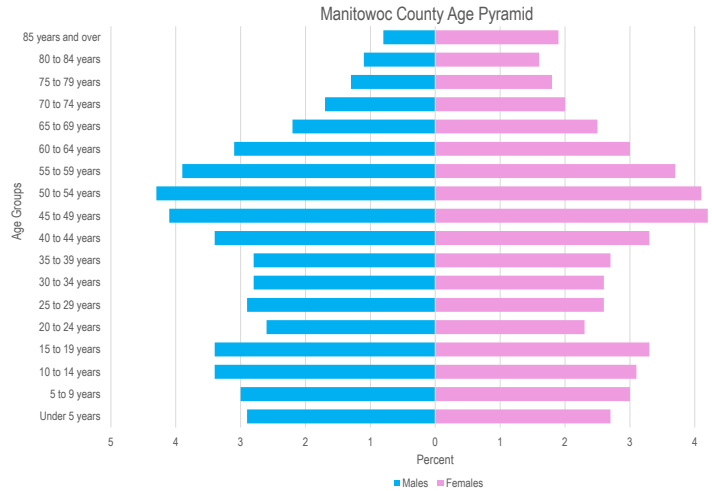


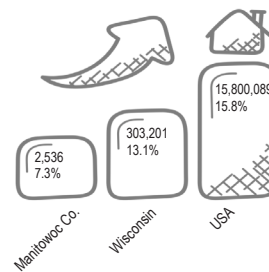
Figure 3: Age Pyramid



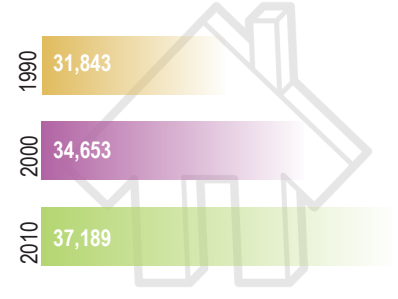
## Housing

From 1970 to 2010, Manitowoc County has had steady growth in the number of housing units and gained 2,536 housing units during this time. The market is diverse, 48.1% own their house with a mortgage or loan, 27.3% own without a mortgage and 24.6% rent.

Change of Housing Units, 2000 - 2010

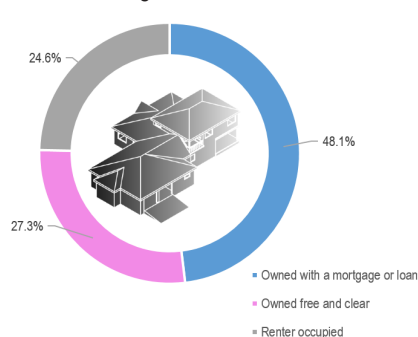


Housing Units

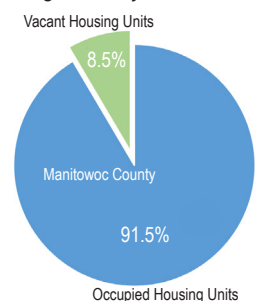


There were approximately 37,356 housing units in Manitowoc County in 2017. Over 30% of homes were built in 1939 or earlier. Between 1980 and 2009, Manitowoc County averaged slightly over 3,300 new housing units every 10 years. However, only 340 new housing units have been built since 2010 with the majority (312) being built in the cities. Just over 75% of housing units in Manitowoc County are single family housing units while 21% of housing units are multifamily. The total housing unit vacancy rate was 8.5% in 2010.

Housing Tenure, 2010



Housing Vacancy, 2010



## Economy

As a result of the recession that affected the entire country, there was a significant jump in the county's unemployed in 2009 causing the unemployment rate to reach its highest level, 10.1 percent. It took the county 5 years to recover from this impact.

The civilian labor force is comprised of employed persons and those seeking employment, and excludes persons in the armed forces and those under age 16. Variations in the number of persons in the labor force are the result of many factors. Shifts in the age and gender characteristics of the population, changes in the number of residents aged 16 and over, and the proportion of this group working or seeking employment are all factors affecting the size of the labor force.

The majority of employed county residents worked in manufacturing (30%) followed by healthcare and social assistance. The median household income has increase at a county, state, and national level. Manitowoc County's median household income has increased from 2010 - 2017 by approximately \$1,699 according to the American Community Survey (ACS).

According the 2010 U.S. Census, the poverty rate of Manitowoc County was 9.2%, residing less than the state and national percentages. The County's total percent of population over 16 years old in the labor force is 65.4%, which is less than the state (66.8%), but greater than the national percentage (63.0%).

Industry and employment projections have been developed from the year 2010 to 2020 for the 11 county Bay Area Workforce Development district which consists of Brown, Door, Florence, Kewaunee, Manitowoc, Marinette, Menominee, Oconto, Outagamie, Shawano, and Sheboygan counties. Illustrated in the table above, it is projected that there will be an overall 12 percent increase in full and part-time non-farm employment from 2010 to 2020. The Professional and Business Services industries are expected to add 8,750 jobs for a 23 percent increase, followed by Leisure and Hospitality with 8,091 new jobs reflecting a 21 percent gain.

Figure 4: Median Household Income Inflation-Adjusted

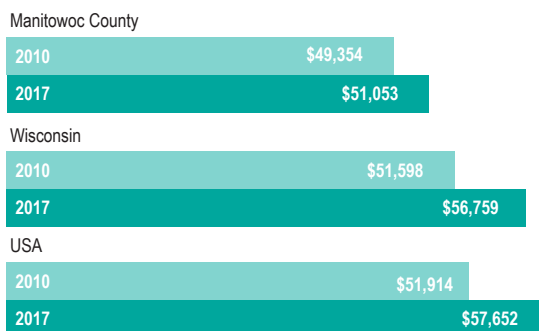
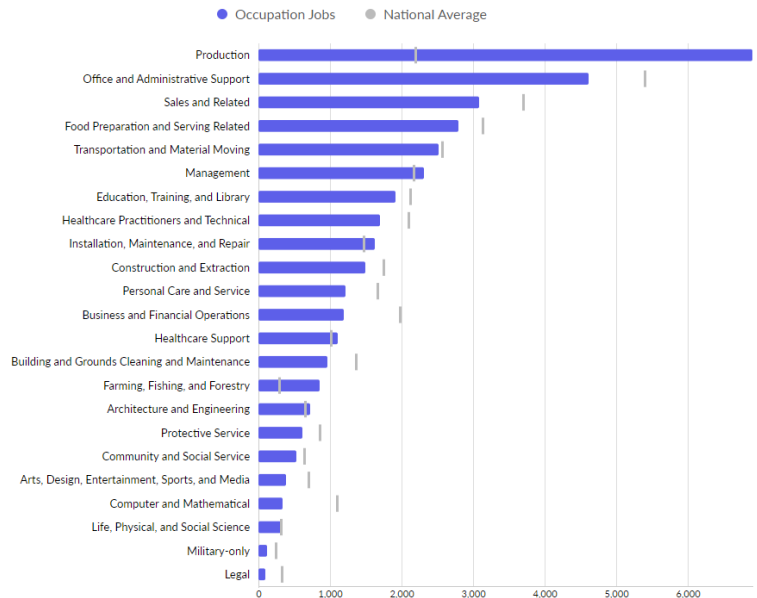


Figure 5: Largest Occupation Jobs, Manitowoc County

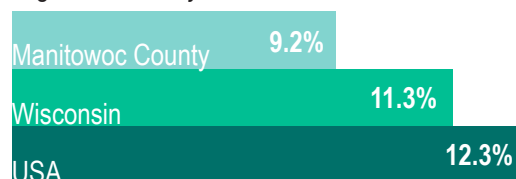


Agriculture remains as a key economic component in Manitowoc County. It includes hundreds of family-owned farms, agriculture-related businesses and industries that provide equipment, services, and other products farmers need to process, market, and deliver food to consumers. The generating, sales, and processing of these farm products create momentous employment and revenue opportunities for residents.

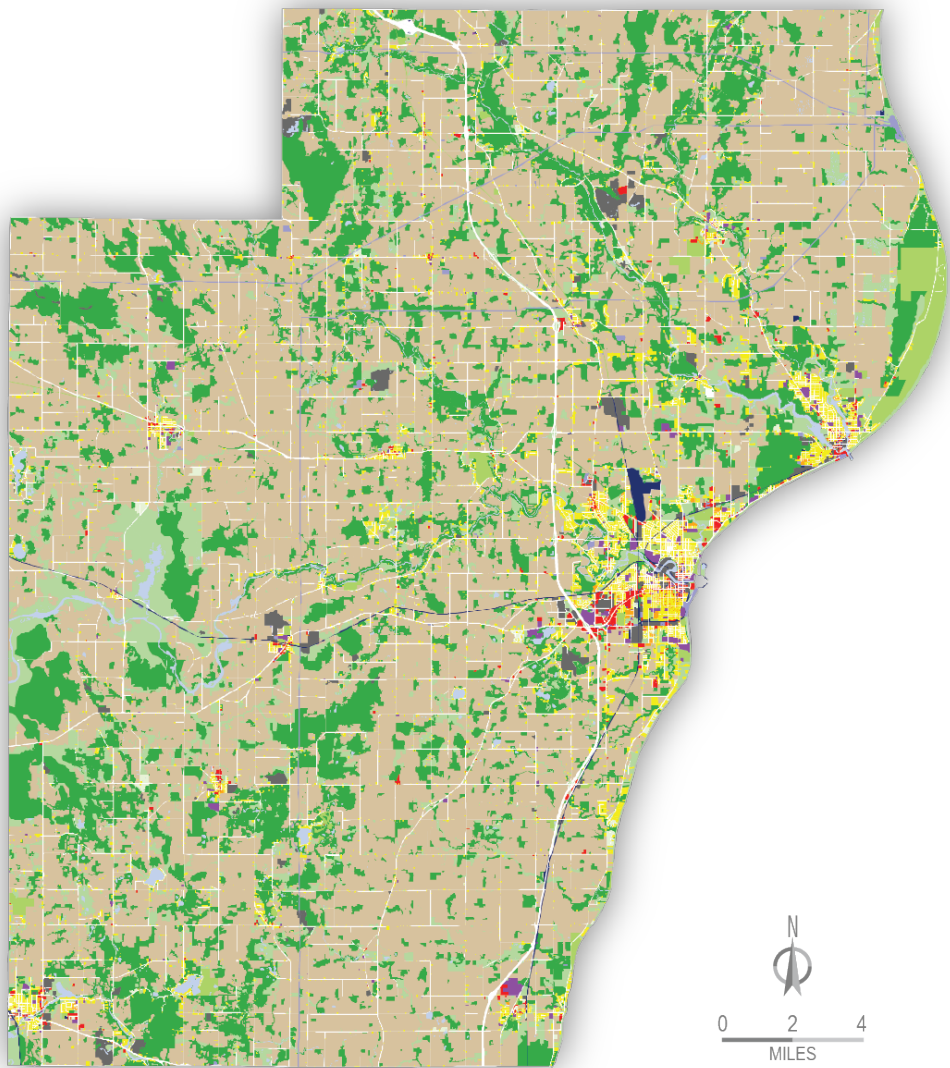
The 2014 UW-Extension Agricultural report, *Manitowoc County Agriculture: Value & Economic Impact*, characterizes the impact of agriculture the County:

- Provides jobs for 5,105 county residents, or 11.5 percent of the county's total employment. Jobs include farm owners and managers, farm employees, veterinarians, crop and livestock consultants, feed, fuel and other crop input suppliers, farm machinery dealers, etc.
- Generates \$1.5 billion in economic activity and contributes \$360 million to the county's total income.
- Pays over \$16 million in taxes (not including all property taxes paid to local schools).

Figure 6: Poverty Rate

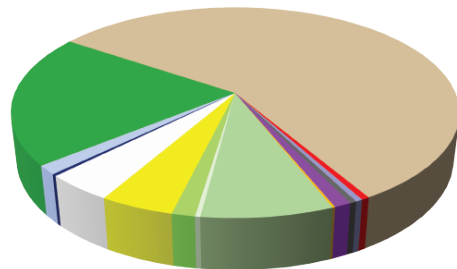


Map 2.2: Land Use Map



- AGRICULTURAL (57%)
- COMMERCIAL (<1%)
- COMMUNICATION/UTILITIES (<1%)
- INDUSTRIAL (<1%)
- INSTITUTIONAL/GOVERNMENTAL (1%)
- MULTI-FAMILY (<1%)
- NATURAL AREA (8%)
- OPEN LANDS (<1%)
- PARKS & RECREATION (1%)
- RESIDENTIAL (5%)
- RIGHT-OF-WAY (4%)
- TRANSPORTATION (<1%)
- WATER (1%)
- WOODLANDS (20%)

**FAST FACT:**  
Manitowoc County is over 50% agricultural and 20% woodlands.



# Chapter 3 - Risk Assessment

In order to more effectively evaluate potential hazard mitigation measures and develop useful strategies to address the risks associated with the identified natural hazards, a risk assessment has been prepared for Manitowoc County. The risk assessment identifies the natural hazards thought to pose the greatest risk to residents of the county, to profile the extent and severity of past natural hazard events that have affected the county, and to assess the vulnerability of the county to the risk of future natural hazard events.

## Hazard Identification

Although the county could potentially be at risk from several distinct hazards, this plan focuses on addressing the natural hazards that pose the greatest risk to people and property in the county. Identification of the natural hazards to be addressed was based on a priority rank ordering of the many different natural hazards identified in the Resource Guide to All Hazards Mitigation Planning in Wisconsin (prepared by the Association of Wisconsin Regional Planning Commissions through funding provided by the State of Wisconsin Department of Military Affairs, Wisconsin Emergency Management, and the Federal Emergency Management Agency).

## Natural Hazards Prioritization

The plan steering committee identified the following ranked natural hazards to be the focus of the plan assessment and mitigation action strategies. Ranking the potential risks associated with each natural hazard helped the steering committee prioritize the mitigation action strategies that are addressed later in the plan. The following natural hazards combined more than one listing from the NCDC data for consistency (the additional listings are provided in parenthesis). The hazards are listed in order of their prioritized ranking.

1. Tornado and Strong Wind
2. Winter Storm
3. Hail
4. Flooding
5. Extreme Cold
6. Excessive Heat
7. Drought
8. Lightning
9. Coastal Hazards
10. Dense Fog
11. Land Subsidence
12. Wildland Fires



## Natural Hazard Events Historical Summary

The National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) publishes National Weather Service (NWS) data describing past weather events and the resulting deaths, injuries, and damages associated with each of these events. Event occurrence information is available at a local, county, or regional level – depending on the area covered by the hazard event. Historical hazard events were available from January 1, 2000 through October 1, 2018. The query for that time period resulted in 246 events recorded (Table 3.1).

The data from the NCDC shows that of the 246 events, the natural hazards occurring most frequently in Manitowoc County between January 2000 and October 2018 include: tornado and strong wind (100 events), winter storms (66 events), hail (46 events), and flooding (15 events). Other events occurring less than ten times in the county since 2000 include extreme cold (6 events), extreme heat (4 events), lightning (3 events), drought (3 events), and dense fog (2 events). Some of the recorded hazard events may not have been specific to the Manitowoc County, as they may have been recorded for a larger regional area, or statewide. Additionally, some of the common hazard events, such as lightning or dense fog, may only get reported to the NCDC if they are extreme events that cause property damage, injury, or death.

Two deaths (from extreme heat) and thirty injuries (from two-inch hail combined with near 100 mph wind) have been reported in Manitowoc County from hazard events since 2000. The most costly hazard events in terms of property damage 2000 has been flooding (\$20,000,000), hail (\$5,190,000), and tornadoes and strong winds (\$20,500). The reported costs of crop damage and property damage can be found on the next page in Table 3.1.





# Risk Assessment

Table 3.1: Manitowoc County Hazard Events (2000-2018)

| Natural Hazard          | # Of Events <sup>1</sup> | Avg #/ Year | Risk <sup>2</sup>     | Deaths | Injuries | Reported Crop Damage | Property Damage <sup>3</sup> |
|-------------------------|--------------------------|-------------|-----------------------|--------|----------|----------------------|------------------------------|
| Tornado and Strong Wind | 100                      | 5           | High                  | 0      | 0        | \$1,977,000          | \$20,500                     |
| Winter Storms           | 66                       | 4           | High                  | 0      | 0        | \$0                  | \$0                          |
| Hail                    | 46                       | 2           | Moderate              | 0      | 30       | \$53,515,000         | \$5,190,000                  |
| Flooding                | 15                       | 1           | Moderate              | 0      | 0        | \$452,000            | \$20,000,000                 |
| Extreme Cold            | 6                        | 0           | Low                   | 0      | 0        | \$0                  | \$0                          |
| Extreme Heat            | 4                        | 0           | Low                   | 2      | 0        | \$0                  | \$0                          |
| Drought                 | 3                        | 0           | Low                   | 0      | 0        | \$0                  | \$0                          |
| Lightning               | 3                        | 0           | Low                   | 0      | 0        | \$3,010              | \$0                          |
| Coastal Hazards         | 1                        | 0           | Moderate <sup>4</sup> | 0      | 0        | \$50,000             | \$0                          |
| Dense Fog               | 2                        | 0           | Low                   | 0      | 0        | \$0                  | \$0                          |
| Land Subsidence         | ND                       | ND          | Low                   | ND     | ND       | ND                   | ND                           |
| Wildland Fires          | ND                       | ND          | Low                   | ND     | ND       | ND                   | ND                           |
| Total Events            | 246                      | --          | --                    | 2      | 30       | \$55,997,010         | \$25,210,500                 |

ND = No data

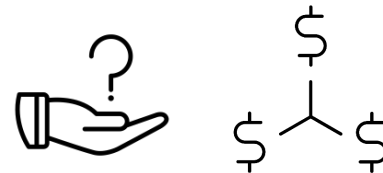
1. January 1, 2000 to October 1, 2018 (18.75 years)

2. Risk based on occurrences per year: High>3; Medium 1-3; and Low <1

3. Does not factor in private losses for most occurrences

4. Based on information provided by *Resource Guide for Great Lakes Coastal Hazards in Wisconsin* ([coastal.lic.wisc.edu/urpl999.htm#Section\\_4](http://coastal.lic.wisc.edu/urpl999.htm#Section_4))

Source: NOAA-NCDC, 2018; and Bay-Lake Regional Planning Commission, 2018.



## Disaster Declaration History

There have been 20 major (federal) disaster declarations issued for Wisconsin since 2000. Manitowoc County was included in one of the declarations.

On June 14, 2008, Manitowoc County was included in a major disaster declaration that was issued because of property damage resulting from severe storms, tornadoes, and flooding that occurred over a period from June 5 to July 25, 2008 and affected 30 counties across the southern half of Wisconsin (DR-1768).



Table 3.2: Manitowoc County Hazard Events (1/1/2000 to 10/1/2018)

| Hazard                  | # Of Events | 2019 Rank |
|-------------------------|-------------|-----------|
| Tornado and Strong Wind | 100         | 1         |
| Winter Storm            | 66          | 2         |
| Hail                    | 46          | 3         |
| Flooding                | 15          | 4         |
| Extreme Cold            | 6           | 5         |
| Excessive Heat          | 4           | 6         |
| Drought                 | 3           | 7         |
| Lightning               | 3           | 8         |
| Coastal Hazards         | 1           | 9         |
| Dense Fog               | 2           | 10        |
| Land Subsidence         | ND          | 11        |
| Wildland Fires          | ND          | 12        |

## Natural Hazards Determined Not to Pose a Significant Risk

The following natural hazards were determined to have a minimal chance of occurring or pose minimal risk to the safety of residents or property in Manitowoc County. These natural hazards are excluded from the full assessment, but are briefly discussed here to meet the comprehensive requirements for developing a natural hazards mitigation plan under Federal law.

### Earthquakes

According to the U.S. Geological Survey (USGS), there have been 19 earthquake events in Wisconsin. The closest of these to Manitowoc County occurred in northern Ozaukee County (Lake Church) in 1956, as well as in Fond du Lac County in 1922. Where readings were available, these events were relatively small, most being 3.0 to 4.2 on the Richter Scale in intensity, and the largest being an intensity of 5.3 (Beloit, 1909), which may be strong enough to crack some plaster, but typically does not cause serious damage. Due to the lack of recent events, some geologists question whether many of these events were true earthquakes, but rather were quarry collapses, blasts, etc.

The nearest active earthquake fault outside of Wisconsin is the New Madrid Fault, which stretches from northeast Arkansas to southern Illinois. Manitowoc County falls within the lowest earthquake hazard shaking area, which represents the levels of horizontal shaking which have a 1-in-50 chance of being exceeded in a 50 year period. Similarly, Manitowoc County falls within a 0%g to 1%g peak ground acceleration (PGA) zone as shown on the USGS PGA values map with a 10 percent chance of being exceeded over 50 years. Therefore, the county is considered unlikely to be substantially affected by earthquakes in the long-term future. The earthquake threat to the county is considered very low.

### Landslides

The term “landslide” includes a wide range of ground movement, including rock falls, deep failure of slopes and shallow debris flows. Although gravity acting on an overly steep slope is the primary reason for a landslide, there can be other contributing factors, such as erosion by rivers, excess weight from the accumulation of rain or snow, or man-made and other structures stressing weak slopes to the point of failure. In addition, slope material that becomes saturated with water may develop a debris flow or mudflow. The U.S. Geological Survey Landslide Overview Map of the Conterminous United States identifies low landslide risks for all of Manitowoc County. The majority of the land within Manitowoc County does not involve steep slopes and does not pose a landslide risk.

While there are steeper portions of the county, the soils involved pose more of a gradual erosion risk, as opposed to the sudden, large-scale movement of ground associated with landslide hazards. Hillside erosion (minor landslides) within the county is very uncommon, and is the result of man-made impacts, such as the removal of vegetation. Hillside erosion has not posed substantial risk to life or property, and has been largely mitigated through subdivision law, site plan review and erosion control plans for construction sites.

There are no records of substantial damage or injury from large landslides within Manitowoc County, and these hazard threats are considered low.

## Risk and Vulnerability Assessment

The risk and vulnerability assessment is intended to describe the frequency, severity, and probability of future occurrence of natural hazards that could impact the planning area. The following hazard profiles attempt to historically describe the characteristics of each natural hazard and how they have affected the population, infrastructure, and environment of the planning area, and the potential risk to the population and property that could occur because of each of these natural hazards.

### Critical Facilities

Although the risk assessment focuses on the risk potential to the overall planning area, critical facilities are of particular concern. Critical facilities are necessary to preserve health, welfare, and quality of life in the county, and fulfill important public safety, emergency response, and/or disaster recovery functions, or they house vulnerable populations (such as schools, childcare, and mobile home parks).

Critical facilities in the planning area have been identified and mapped, and are illustrated in Map 3.1. Table 3.3 lists the types and number of critical facilities within the county. Table 3.4 lists the critical facilities by municipality.

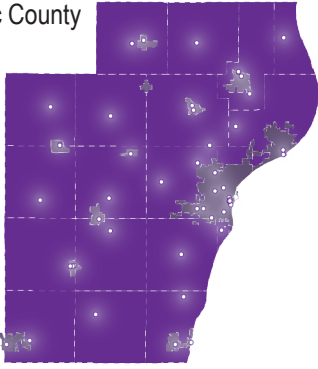
Table 3.3: Number of Critical Facilities by Type

| Type                             | # Of Critical Facilities |
|----------------------------------|--------------------------|
| Administrative Building          | 54                       |
| Bridge                           | 290                      |
| Communication Facility           | 140                      |
| Dam                              | 10                       |
| Fire and Safety                  | 79                       |
| Licensed Childcare Facility      | 47                       |
| Licensed Healthcare Facility     | 69                       |
| Manufactured Housing             | 13                       |
| Military Installation            | 3                        |
| Post-Disaster Recovery Site      | 51                       |
| Power Facility/Bulk Fuel Storage | 33                       |
| School                           | 51                       |
| Transportation Facility          | 3                        |
| Wastewater Treatment Facility    | 59                       |
| Water Supply                     | 38                       |
| <b>Total</b>                     | <b>940</b>               |

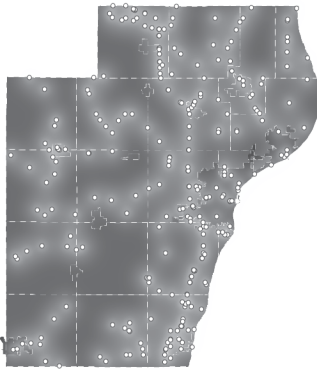
Source: Bay-Lake Regional Planning Commission, 2019.



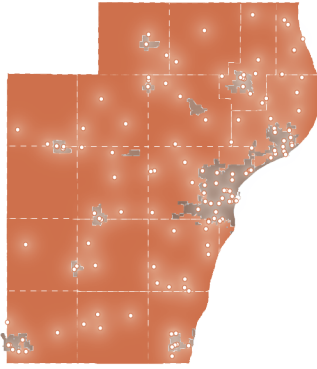
Map 3.1 Critical Facilities by Type, Manitowoc County



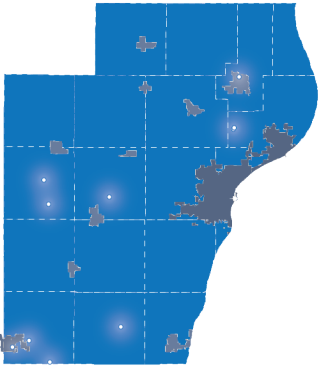
ADMINISTRATIVE BUILDING



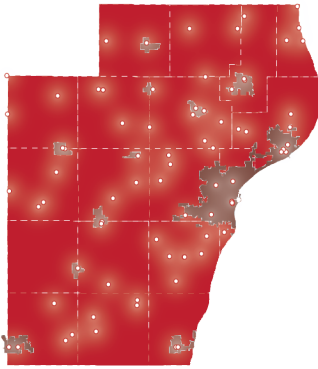
BRIDGE



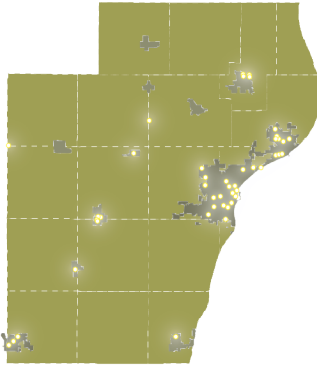
COMMUNICATION FACILITY



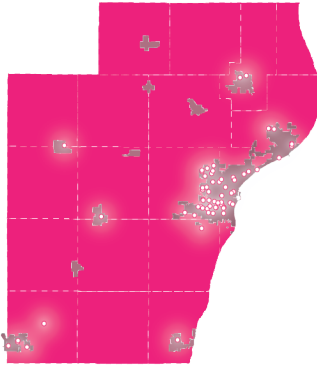
DAM



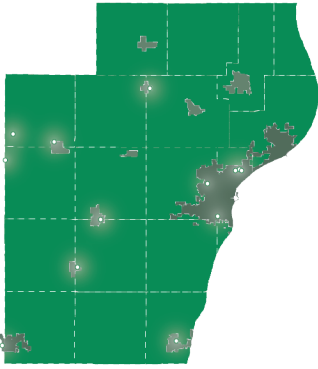
FIRE & SAFETY



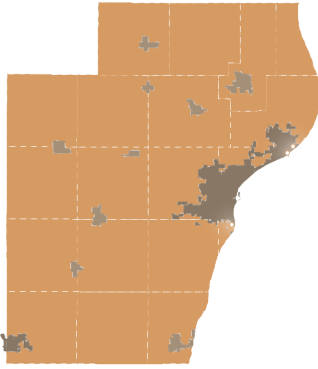
LICENSED CHILDCARE FACILITY



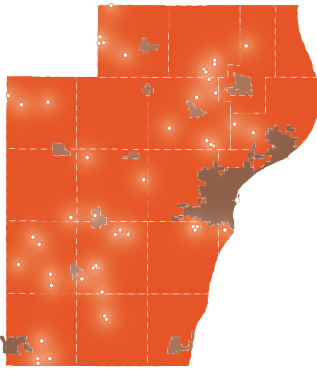
LICENSED HEALTHCARE FACILITY



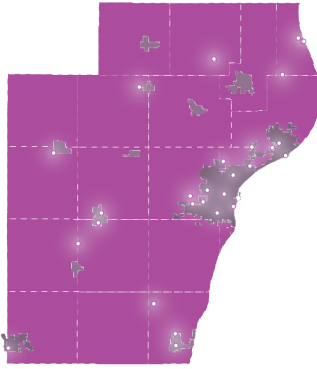
MANUFACTURED HOUSING



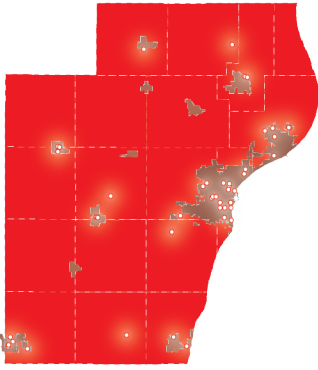
MILITARY INSTALLATION



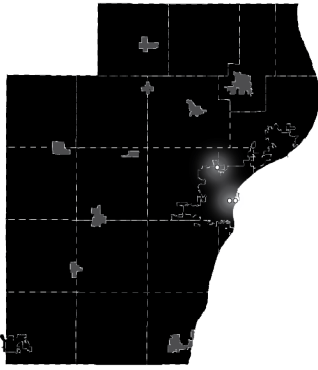
POST DISASTER RECOVERY SITE



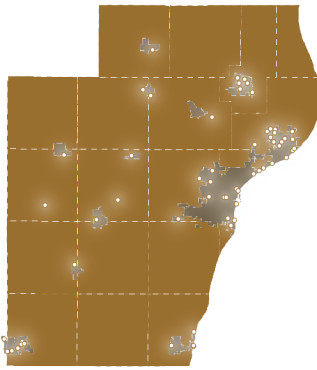
POWER FACILITY/  
BULK FUEL STORAGE



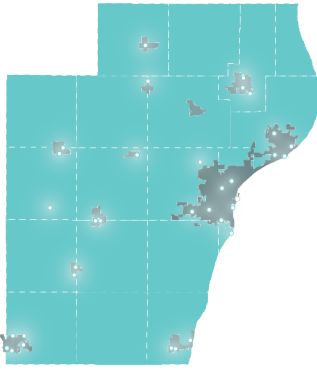
SCHOOL



TRANSPORTATION FACILITY



WASTEWATER TREATMENT FACILITY



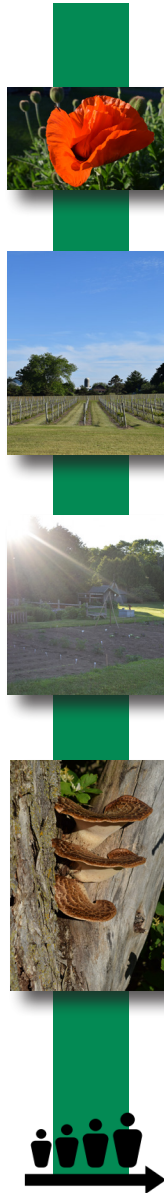
WATER SUPPLY

## Tornado and Strong Wind

Table 3.4: Number of Critical Facilities by Municipality, Manitowoc County

| Municipality             | # Of Critical Facilities |
|--------------------------|--------------------------|
| City of Kiel             | 38                       |
| City of Manitowoc        | 204                      |
| City of Two Rivers       | 82                       |
| Town of Cato             | 20                       |
| Town of Centerville      | 33                       |
| Town of Cooperstown      | 42                       |
| Town of Eaton            | 12                       |
| Town of Franklin         | 20                       |
| Town of Gibson           | 27                       |
| Town of Kossuth          | 45                       |
| Town of Liberty          | 18                       |
| Town of Manitowoc        | 14                       |
| Town of Manitowoc Rapids | 38                       |
| Town of Maple Grove      | 15                       |
| Town of Meeme            | 25                       |
| Town of Mishicot         | 18                       |
| Town of Newton           | 50                       |
| Town of Rockland         | 23                       |
| Town of Schleswig        | 24                       |
| Town of Two Creeks       | 23                       |
| Town of Two Rivers       | 25                       |
| Village of Cleveland     | 28                       |
| Village of Francis Creek | 6                        |
| Village of Kellnersville | 4                        |
| Village of Maribel       | 6                        |
| Village of Mishicot      | 36                       |
| Village of Reedsville    | 23                       |
| Village of St. Nazianz   | 12                       |
| Village of Valders       | 21                       |
| Village of Whitelaw      | 6                        |
| <b>Total</b>             | <b>938</b>               |

Source: Bay-Lake Regional Planning Commission, 2019.



### Tornado and Strong Wind

#### Description of Hazard

A tornado is a violently rotating column of air (vortex) extending from the base of a convective cloud (usually cumulonimbus) to the ground. Tornadoes form in many parts of the world under many types of conditions; however, the most common conditions in Wisconsin are intense squall lines and supercell thunderstorms. Tornadoes can be classified as supercell or nonsupercell. Supercell tornadoes are derived from supercell thunderstorms of which a key component is a rotating updraft. These tornadoes can be devastating. Non-supercell tornadoes are formed by a spinning column of air near the ground and tend to be short-lived and weaker than supercell tornadoes. Non-supercell tornadoes include gustnadoes, land spouts, and water spouts.

The destructive power of the tornado results primarily from strong wind velocities and sudden changes in pressure. Wind and pressure differentials probably account for 90 percent of the damage caused by tornadoes. Since tornadoes are generally associated with severe storm systems, they are usually accompanied by hail, torrential rain, and intense lightning. Depending on their intensity, tornadoes can uproot trees, down power lines and destroy buildings. Flying debris can cause serious injury and death.

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornadoes (commonly known as "tornado alley"), which extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the southern and western portions of Wisconsin have a higher frequency of tornadoes; however, every county in Wisconsin has had tornadoes and is considered to be susceptible to a tornado disaster. Tornadoes have occurred in Wisconsin in every month except February.

Wisconsin's tornado season runs from the beginning of April through September. The most severe tornadoes statewide typically occur during the months of April, May, and June. Many tornadoes strike in late afternoon or early evening. However, tornadoes have occurred during other times of the day. Personal property damage, deaths, and injuries have and will continue to occur due to tornado events in Wisconsin. The table on the following page (Table 3.5, page 19) shows the Enhanced Fujita Scale (EF Scale), which is recognized as the tornado magnitude measurement rating.

### Hazard Profiles

Hazard profiles are intended to describe the frequency, severity, and probability of future natural hazards that could have an impact on Manitowoc County. These hazard profiles attempt to historically describe the cause and characteristics of each natural hazard and how they have impacted the population, infrastructure, and environment of the county. These potential risks are evaluated to determine their likelihood of re-occurrence and to gauge the impacts to the existing (or planned) population and property that could occur as a result of these hazards.

Hazard probabilities are represented as high, medium, and low. High probability hazards are defined as hazards that occur an average of more than once per year; medium probability hazards are those that occur an average of more than once every two years, but not more than once per year; and low probability hazards occur less frequently than once every two years.



Table 3.5: Enhanced Fujita Scale (EF Scale)

| EF Rating | Wind Speeds | Expected Damage                                                                                                                                                                                                                                                 | Expected Damage                                                                   |                                                                                   |
|-----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| EF-0      | 65-85 mph   | 'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.                                                                                                            |  |  |
| EF-1      | 86-110 mph  | 'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.                                                                                                                      |  |  |
| EF-2      | 111-135 mph | 'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.                                                                       |  |  |
| EF-3      | 136-165 mph | 'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.                                                                 |  |  |
| EF-4      | 166-200 mph | 'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.                                                                                               |  |  |
| EF-5      | > 200 mph   | 'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped. |  |  |

Source: NOAA National Weather Service, 2018.

Strong winds, including thunderstorm winds and high winds can often be just as damaging as a tornado. Strong winds are most likely to happen in the spring and summer months and during the afternoon and evening hours, but can occur throughout the year and at all hours.

Strong winds include downburst winds and high winds. Downburst winds are strong, concentrated, straight-line winds created by falling rain and sinking air that can reach speeds of 125 miles per hour. High winds are high speeds winds that can be as damaging as a tornado, but remaining nearly straight line and are not the rotating column of air that is characteristic of a tornado.

The National Weather Service classifies a thunderstorm as severe if its winds reach or exceed 58 miles per hour, produces a tornado, or drops surface hail at least 0.75 inch in diameter. Compared with other atmospheric hazards (such as tropical cyclones and winter low pressure systems), individual thunderstorms affect relatively small geographic areas. The average thunderstorm system is approximately 15 miles in diameter, covers 75 square miles, and lasts less than 30 minutes at a single location. However, weather monitoring reports indicate that coherent thunderstorm systems can travel intact for distances in excess of 600 miles.



**Previous Significant Hazard Occurrences**

According to National Climatic Data Center (NCDC), Manitowoc County has experienced 100 significant tornado and strong wind events (including funnel clouds, strong wind, high wind, and thunderstorm wind) over the last 18 years from January 1, 2000 to October 1, 2018.

One significant tornado of note was an EF-1 in the Town of Cato that occurred on July 13, 2004 causing \$1.6 million in damage.

**Hazard Frequency**

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately five significant tornado/strong wind events per year.

**Probability of Hazard Occurring in the Future**

Based on the hazard frequency, Manitowoc County is considered to have a high probability of experiencing a tornado/strong wind event in any given year.

**Areas at Greatest Risk**

Tornadoes have no defined hazard area within the county. Past events have been relatively uniform across the planning area; however, mobile home residents are often most vulnerable to death, injury, and property damage from tornadoes. Therefore, mobile home parks in the planning area are the areas of greatest risk from this hazard.

**Impacts from Hazard**

*Death and Injury*

No deaths or injuries have been reported from tornado/strong wind events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018, according to NCDC data.

*Structures at Risk*

Although tornadoes strike at random, making all buildings vulnerable, there are three types of structures that are most likely to sustain damage. These structure types include mobile homes, homes on crawlspaces, and buildings with vast spans.

Similar to severe thunderstorms, street signs often face disrepair after tornadoes, and debris often litter streets and highways following a tornado, requiring clean-up. Downed trees caused by tornadoes can be problematic in terms of impacting infrastructure (transportation, sewer, water, etc.) as well as critical facilities.



### Critical Facilities

Hospitals can see increases in patient load following tornadoes. Schools can sustain damage, and if they do not sustain damage, they often function as temporary shelters in the aftermath of tornadoes. Police and fire departments often see an increased workload during and after tornadoes. Powerlines and communication towers are at risk of being blown down. Any critical facility in the planning area is capable of being hit. However, schools are a prominent concern because of the number of people present, either during school sessions or as a storm shelter; and secondly, they have large span areas, such as gyms and theaters.

### Economic Impacts

A tornado can have a significant economic impact to a local economy due to irrecoverable businesses and infrastructure damages. A heavily damaged business, especially one that was struggling to make a profit, often never reopens after the hazard event.

Infrastructure damage is usually limited to above ground utilities, such as power lines. Damage to utility lines can usually be repaired or replaced relatively quickly. Damage to roads and to railroads is also localized; if these facilities cannot be repaired promptly, alternate transportation routes are usually available.

Public expenditures include search and rescue, shelters, and emergency protection measures. The greatest public expenditures for a community result from repairs to public facilities, and clean up and disposal of debris. Most public facilities are insured, so the economic impact on the local treasury is likely to be small. Clean up and disposal can be a larger problem, especially if there is limited landfill capacity near the damage site.

### Property Damage

Reported property damage from significant tornadoes/strong winds for Manitowoc County has totaled approximately \$1.9 million in public property and crop damages over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

### Estimate of Potential Dollar Losses

Since mobile homes are especially vulnerable to tornadoes, a “worst case scenario” for this hazard would involve the total destruction of all mobile homes in the county. In such a “worst case scenario,” the total destruction of all buildings and facilities in the 14 mobile home parks in the County would result in estimated dollar losses of approximately \$6.1 million plus with an additional estimated value of building contents of \$3.0 million (calculated as 50 percent of the building value), for total estimate of potential dollar losses of \$9.1 million.



**Hail****Description of Hazard**

A severe thunderstorm can produce frozen precipitation, or hail. Hailstones are ice crystals that form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until they develop sufficient weight and fall as precipitation. The size of hailstones is a direct function of the severity and size of the storm. Significant damage does not result until the hailstones reach 1.5 inches in diameter, which occurs in less than half of all hailstorms. Hail in Wisconsin ranges from pea-sized to golf ball-sized. Area coverage of individual hailstorms is highly variable and spotty because of the unstable nature of cumulonimbus clouds.

**Previous Significant Hazard Occurrences**

According to National Climatic Data Center (NCDC), Manitowoc County has experienced 46 significant hail storm events over the last 18 years from January 1, 2000 to October 1, 2018. Some of these reported occurrences may not have been specific to Manitowoc County, and may have been recorded for a larger regional area.

**Hazard Frequency**

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately two significant hail storm events per year.

**Probability of Hazard Occurring in the Future**

Based on the hazard frequency, Manitowoc County is considered to have a high probability of experiencing a significant hail storm event in any given year.

**Areas at Greatest Risk**

Hail storms have no defined hazard area within the planning area. Past events have been relatively uniform across the planning area or the larger regional area.

**Impacts from Hazard***Death and Injury*

No death, but 30 injuries have been reported from hail events in Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018, according to NCDC data. All 30 injuries occurred during one hail event in St. Nazianz on May 12, 2000 as a result of two-inch hail combined with near 100 mph wind.

*Structures at Risk*

Hail can inflict severe damage to roofs, windows, and siding, depending on hailstone size and winds.

*Critical Facilities*

Hail can inflict severe damage to roofs, windows, and siding of critical facilities, depending on hailstone size and winds.

**Economic Impacts**

Hail can damage or destroy crops. Taller crops, such as corn are particularly vulnerable to hail. Costly damage can occur to roofs, windows, and siding, as well as automobiles, RVs, and boats (including the body, paint and windshields and other windows).

*Property Damage*

Reported property damage from significant hail events for Manitowoc County has totaled over \$58 million in public property and crop damages over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

\$50 million in property and crop damages occurred during one hail event in St. Nazianz on May 12, 2000 as a result of two-inch hail combined with near 100 mph wind.

**Estimate of Potential Dollar Losses**

An estimate of potential dollar losses cannot be calculated for hail storm events, since no vulnerable structures have been identified.



## Winter Storm

### Description of Hazard

Winter storms vary in size and strength and include heavy snowstorms, blizzards, freezing rain, sleet, ice storms, and considerable blowing and drifting snow conditions that can close roads. Additionally, the combination of extremely cold temperatures and strong winds can result in dangerous wind chills that cause bodily injury like frostbite or even death due to exposure (hypothermia). Severe winter storms can cause unusually heavy rain or snowfall, high winds, extreme cold, and ice storms throughout the continental US. Winter storms can be very disruptive to transportation and commerce. Trees, cars, roads, and other surfaces can develop a glaze of ice making conditions extremely hazardous to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice and snow are slippery roads and walkways leading to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communications towers. As a result of severe winter storms, power and telecommunications can be disrupted for days.

A variety of weather phenomena and conditions can occur during winter storms. The following are National Weather Service (NWS) approved descriptions of winter storm elements:

- **Heavy snowfall:** accumulation of four or more inches of snow in a 12-hour period or six or more inches in a 24-hour period.
- **Blizzard:** sustained wind or frequent wind gusts of at least 35 mph accompanied by considerable falling and/or blowing snow.
- **Ice storm:** freezing rain produces significant or damaging accumulations of ice, usually ¼" or thicker.
- **Freezing drizzle/freezing rain:** drizzle or rain that falls as a liquid but freezes into glaze upon contact with the ground or objects with a temperature of 32°F or below.
- **Sleet:** pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes.
- **Wind chill:** measure of accelerated heat loss from exposed skin due to increased wind speeds.



Source: The Value of Snow and Snow Information Services, Report prepared for NOAA's National Operational Hydrological Remote Sensing Center, 2018.

Much of the snowfall in Wisconsin occurs in small amounts of between one and three inches per occurrence. Heavy snowfalls (producing at least eight to ten inches of accumulation) happen on the average about five times per season. True blizzards are rare in Wisconsin, and are more likely to occur in northwestern Wisconsin than in southern portions of the state, even though heavy snowfalls are more frequent in southeastern Wisconsin. However, blizzard-like conditions often exist during heavy snow storms when gusty winds cause the severe blowing and drifting of snow.

### Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Manitowoc County has experienced 66 significant winter storm events over the last 18 years from January 1, 2000 to October 1, 2018 (including blizzard, heavy snow, and lake-effect snow). Many of these hazard events may not have been specific to Manitowoc County, and may have been recorded for a larger regional area.

### Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately four significant winter storm events per year.

### Probability of Hazards Occurring in the Future

Based on the hazard frequency, Manitowoc County is considered to have a high probability of experiencing a winter storm event in any given year. Winter storms tend to be a regional phenomenon in that they affect much of northeastern Wisconsin on nearly all of the occasions in which they affect Manitowoc County.

### Areas at Greatest Risk

Winter storms have no defined hazard area within the planning area. Past events have been relatively uniform across the planning area or the larger regional area.

### Death and Injury

No deaths or injuries have been reported from significant winter storm events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.







## Structures at Risk

Occasionally, heavy snow or accumulated ice will cause structural collapse of buildings (particularly roofs), but most buildings are now constructed with low temperatures, snow loads and ice storms in mind. In addition, with the modern focus on energy conservation, buildings are much better insulated than they were in the past. Therefore, for the most part, winter storms do not have a major impact on buildings in the planning area. The major impacts of winter storms on infrastructure are to utilities and roads. Power lines and tree limbs can be coated with heavy ice in some winter storms, resulting in disrupted power and telephone service, often for days. Cable and satellite television services can also be negatively impacted in certain winter storm events. In the case of transportation, even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

## Critical Facilities

Street and road crews have an increased burden of snow removal (and salting in the case of ice storms) during and after winter storms. In some cases, winter storms can be so severe that these crews have to be called off the road for a period of time. Hospitals and clinics can treat additional patients for frostbite, pedestrian and vehicular accident injuries, and conditions resulting from the shoveling of heavy snow during and following winter storms. Sometimes, these very hospitals and clinics have difficulty getting their own staff to report to work because of the storm, which increases the work load for the staff who is already there (double shifts, etc.). Police department staff needs to respond to more accidents. Utility and telephone companies need to respond to downed electrical and telephone lines, especially in the case of ice storms. Rescue services can receive more calls because of accidents or health related circumstances. Schools may need to have early dismissal or cancel classes altogether. Shelters may take in additional homeless persons during winter storm events as well, although this has been less of an issue in Manitowoc than it has been in larger cities.

## Economic Impacts

Loss of power often means that businesses and manufacturing concerns must close down. Loss of access due to snow or ice covered roads can have a similar effect, especially when trucks cannot travel on major thoroughfares to make “just in time” deliveries to business and industry in the planning area. The effects are particularly difficult when the storm is widespread. Additional economic costs of winter storms include snow removal (exceeds \$2 billion/yr for U.S.), road closures that cause lost retail trade, wages, and tax revenue (exceeds \$10 billion/day for closures in eastern U.S.), flight delays (\$3.2 billion annually for U.S. carriers), damage to utilities (up to \$2 billion per event), flooding from snowmelt (\$4.3 billion for 1997 floods), and cost to agriculture and timber from frost and ice (up to \$1.6 billion per ice storm).

## Estimate of Potential Dollar Losses

An estimate of potential dollar losses cannot be calculated for winter storm events, since no vulnerable structures have been identified. Based on previous damages reported by the NCD, property damages from winter storms has been minimal over the past 18 years.



## Flooding

### Description of Hazard

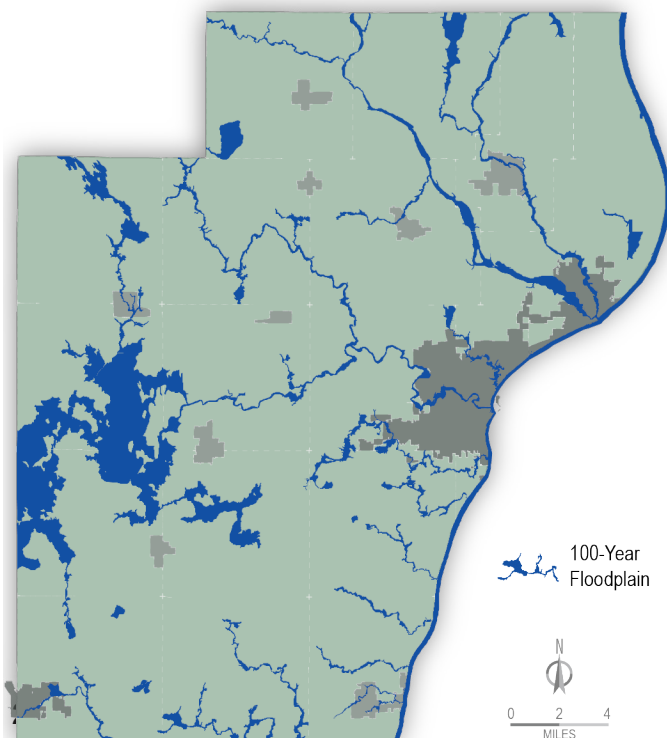
Floods happen when the water draining from a watershed, whether from rainfall or melting snow, exceeds the capacity of the river or stream channel to hold it. Water overflows onto the nearby low-lying lands (floodplains). In hilly and mountainous areas flooding is likely to be rapid, deep, and dangerous. In relatively flat floodplains, land may stay covered with shallow, slow moving water for days or even weeks.

### Stormwater Flooding

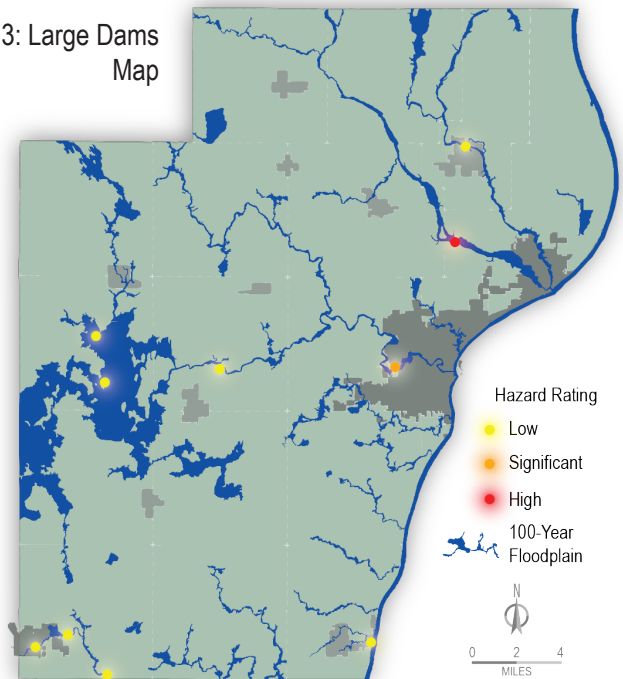
Flooding often occurs in urban areas due to stormwater management issues. Stormwater drainage systems have been designed to manage most storms. However, occasionally larger storms that occur in a short time period, such as flash floods, are of such intensity that the drains cannot handle all the stormwater and flooding occurs. Such intense storms are generally beyond the capacity of any drain, and it would not be economically feasible to design drains to cater for these very large, but infrequent storms. Localized stormwater flooding can also occur if drains in the area are blocked. It is important to keep the drainage system clear of litter and debris to avoid blocked drains. This is also necessary to protect and improve the health of waterways.

Today, new developments and redevelopments incorporate stormwater management measures such as stormwater detention and retention basins that provide greater flood protection. Detention basins slow the flow of stormwater being carried in the drainage system by storing it for a time, while retention basins (i.e. ponds) hold water during most of the year. Detention basins often double as parks and playing fields.

Map 3.2: 100-Year Floodplain Map



Map 3.3: Large Dams Map



### Dam Failure Flooding

Flooding can also result from dam failure. A “dam” is an artificial barrier, together with its appurtenant works, constructed in or across a waterway for the primary purpose of impounding or diverting water. Dam failure can occur for a number of reasons, including overtopping caused by floods that exceed the capacity of the dam, deliberate acts of sabotage, structural failure of materials used in dam construction, movement and/or failure of the foundation supporting the dam, settlement and cracking of concrete or embankment dams, piping and internal erosion of soil in embankment dams, or inadequate maintenance and upkeep. In extreme cases, dam failure can occur with little warning and can result in the loss of life and significant property damage in areas downstream of the dam.

As identified by the WDNR, there are a total of 24 dams in Manitowoc County. Of these, nine are classified as large dams. A large dam has a structural height of over 6 feet and impounding 50 acre-feet or more, or having a structural height of 25 feet or more and impounding more than 15 acre-feet is classified as a large dam. The rest of the dams located in the county are regarded as small dams. Map 3.3 displays the large dams in the county. The areas of greatest risk from dam failure are those areas within the hydraulic shadow of dam of these two high and significant risk dams. The hydraulic shadow of the dam is the area of land downstream from a dam that would be inundated by water upon failure of the dam during the regional flood (100-year flood).

### Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Manitowoc County has experienced 15 significant flooding events (including flash floods, and dam failure flooding) over the last 18 years from January 1, 2000 to October 1, 2018. Some of these reported occurrences may not have been specific to Manitowoc County, and may have been recorded for a larger regional area.

### Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant flooding event every year.

### Probability of Hazard Occurring in the Future

FEMA uses the “base” flood as the basis for its regulatory requirements and flood insurance ratings. The hazards mitigation plan also uses the base flood for planning purposes. The base flood is the one percent chance flood, or the flood that has a one percent (one out of 100) chance of occurring in any given year. The one percent chance flood is commonly referred to as the “100-year flood.” Based on the hazard frequency, Manitowoc County is considered to have a medium probability of sustaining a 100-year flood in any given year.

### Areas at Greatest Risk

The areas at greatest risk from flooding include the “100-year floodplain” areas of Manitowoc County. FEMA Flood Insurance Rate Maps also call this the Special Flood Hazard Area, or “A Zone.” The base floodplains for the planning area are shown in Map 3.2. Properties that potentially lie within the floodplain and would be affected by the 100-year flood are shown in Map 3.4.

### Impacts from Hazard

#### Death and Injury

No death or injuries from flooding has been reported for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018, according to NCDC data.

#### Structures at Risk

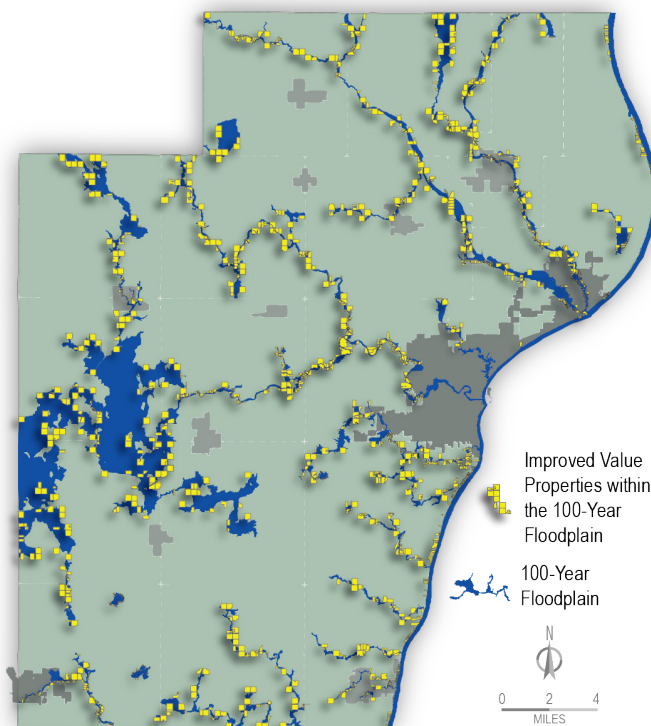
Analysis of the data used to produce Map 3.2 indicates that 2,788 buildings could potentially be impacted by the base flood in the planning area.

A review of FEMA flood loss statistics from January 1, 1978 through September 30, 2018, indicates that there were six paid claims in Manitowoc County in the amount of \$37,766.97 (FEMA National Flood Insurance Program, W2RC1040).

### Repetitive Loss Properties

Repetitive loss structure describes a structure, covered by a contract of flood insurance under the NFIP, that has suffered flood damage on two or more occasions over a 10-year period ending on the date when a second claim is made, in which the cost to repair the flood damage, on average, equals or exceeds 25 percent of the market-value of the structure at the time of each flood loss event. For the Community Rating System (CRS) of the NFIP, a repetitive loss property is any property, which the NFIP has paid two or more flood claims of \$1,000 or more in any, given 10-year period since 1978. A repetitive loss structure is important to the NFIP, since structures that flood frequently put a strain on the flood insurance fund. According to FEMA, there are no repetitive loss properties in Manitowoc County.

Map 3.4: Improved Properties within the 100-Year Floodplain Map



### Critical Facilities

Analysis of the GIS data used to produce Map 3.3, indicates that there are 199 critical facilities located within 100-year floodplains in Manitowoc County. Table 3.6 lists the critical facility types of those facilities potentially within the 100-year floodplains.

Table 3.6: Critical Facilities within Floodplain Breakdown by Type

| Type                             | # Of Critical Facilities |
|----------------------------------|--------------------------|
| Administrative Building          | 1                        |
| Bridge                           | 167                      |
| Communication Facility           | 1                        |
| Dam                              | 9                        |
| Fire and Safety                  | 14                       |
| Licensed Childcare Facility      | 0                        |
| Licensed Healthcare Facility     | 0                        |
| Manufactured Housing             | 0                        |
| Military Installation            | 0                        |
| Post-Disaster Recovery Site      | 1                        |
| Power Facility/Bulk Fuel Storage | 0                        |
| School                           | 0                        |
| Transportation Facility          | 0                        |
| Wastewater Treatment Facility    | 6                        |
| Water Supply                     | 0                        |
| <b>Total</b>                     | <b>199</b>               |



Source: Bay-Lake Regional Planning Commission, 2019.

## Critical Facilities

Table 3.7: Number of Critical Facilities by Municipality, Manitowoc County

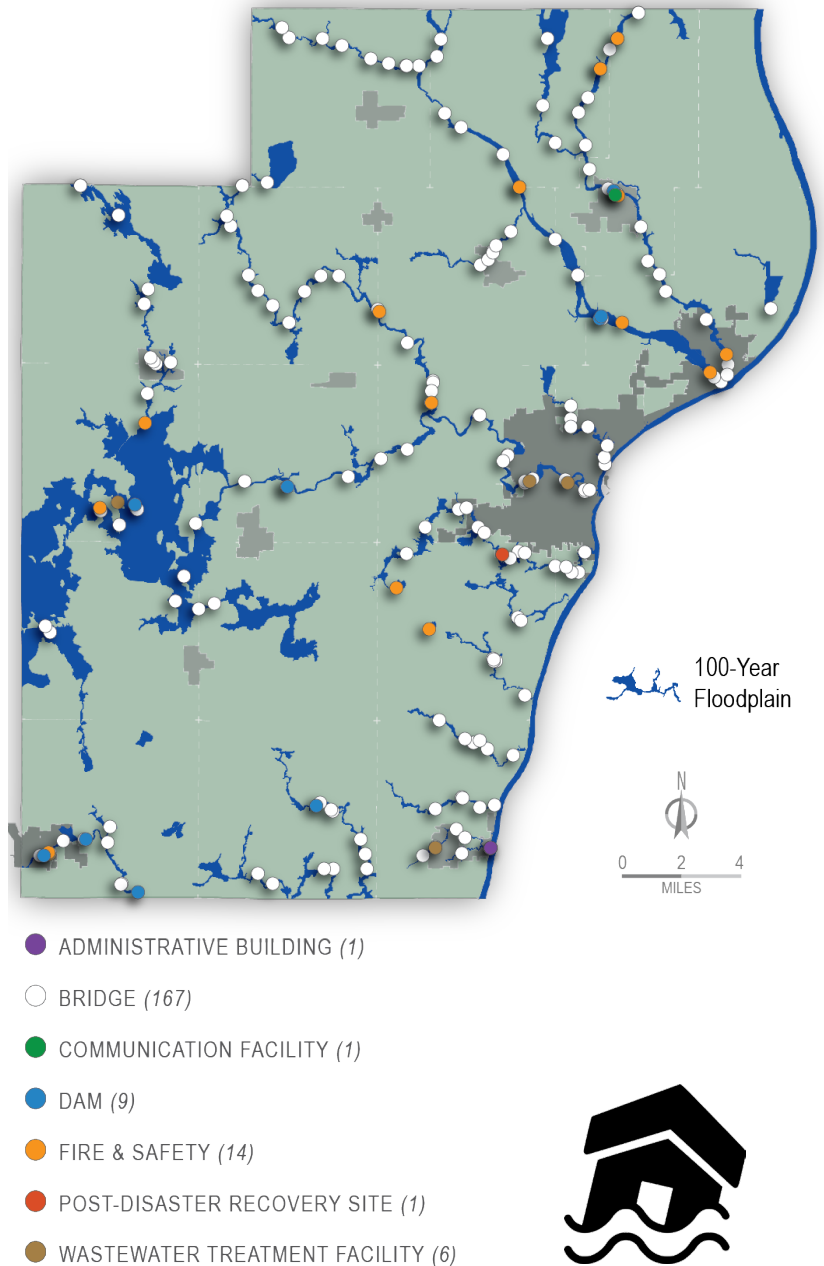
| Municipality             | # Of Critical Facilities |
|--------------------------|--------------------------|
| City of Kiel             | 6                        |
| City of Manitowoc        | 16                       |
| City of Two Rivers       | 7                        |
| Town of Cato             | 4                        |
| Town of Centerville      | 15                       |
| Town of Cooperstown      | 10                       |
| Town of Eaton            | 4                        |
| Town of Franklin         | 11                       |
| Town of Gibson           | 14                       |
| Town of Kossuth          | 9                        |
| Town of Liberty          | 2                        |
| Town of Manitowoc        | 7                        |
| Town of Manitowoc Rapids | 16                       |
| Town of Maple Grove      | 5                        |
| Town of Meeme            | 11                       |
| Town of Mishicot         | 6                        |
| Town of Newton           | 14                       |
| Town of Rockland         | 9                        |
| Town of Schleswig        | 7                        |
| Town of Two Creeks       | 0                        |
| Town of Two Rivers       | 7                        |
| Village of Cleveland     | 7                        |
| Village of Francis Creek | 2                        |
| Village of Kellnersville | 0                        |
| Village of Maribel       | 0                        |
| Village of Mishicot      | 6                        |
| Village of Reedsville    | 4                        |
| Village of St. Nazianz   | 0                        |
| Village of Valders       | 0                        |
| Village of Whitelaw      | 0                        |
| <b>Total</b>             | <b>199</b>               |

Source: Bay-Lake Regional Planning Commission, 2019.

## Economic Impacts Property Damage

Reported significant public property and crop damage from flooding in Manitowoc County has totaled \$20,452,000 over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data. Most of the damage cost (\$20 million) was to crops on June 12, 2008 when torrential rain, including over five inches in Valders, caused the Manitowoc River to rise three feet in four hours.

Map 3.5: Critical Facilities within the 100-Year Floodplain Map



## Value of Structures at Risk

The value of all at-risk structures is estimated at \$394.6 million. This information was obtained from Manitowoc County database on improved values of real property. The parcel map and the 100-year floodplains were merged to determine at-risk structures in the planning area.



### Transportation Route Interruptions

Loss of road access is a major flood impact that affects all residents and businesses, not just those who own property in the floodplain. Sometimes, the loss is temporary, such as during a flood. However, on some occasions, the loss of transportation lasts well after the disaster. When roads, bridges, or railroads are washed out by a flood, it can be weeks or months before they are repaired and reusable. A key evacuation and safety concern is when roads and bridges go under water. Generally, the larger the road, the more likely it will not flood, but this is not always the case. Analysis of the GIS data used to produce Map 3.5, indicates that there are 167 bridges that could potentially be underwater during a base flood. In addition to the sites shown on the map, there may be a number of additional bridges in areas that are not included in the mapped 100-year flood zones, such as areas located along small tributary streams.

### Estimate of Potential Dollar Losses

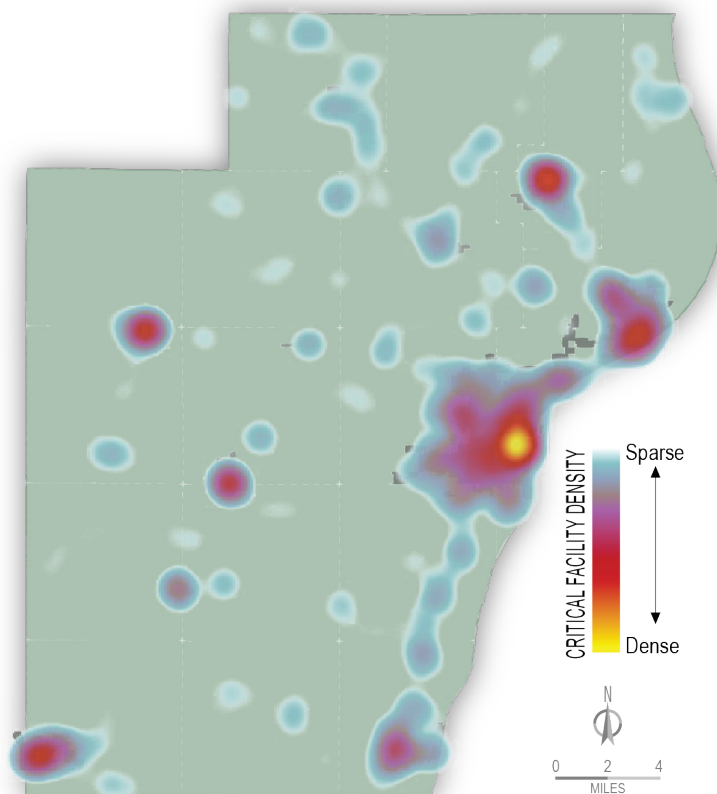
“Vulnerable structures” are those structures located in the 100-year flood hazard area identified in Map 3.5. Since there is no reliable building height data for buildings in these flood hazard areas, a “worst case scenario” of total structural damage for buildings in all of the flood zones of the planning area was assumed in estimating potential dollar losses to vulnerable structures. Building height/elevation data should be collected in the future in order to better assess the risks of damage to structures because of the flood hazard.

It is estimated that over \$394.6 million in losses would occur with the 100-year flood in zones projected to be impacted by the 100-year flood in a “worst case scenario” of total structural damage for all buildings in the county flood zones. This information was obtained from a Manitowoc County database on assessed values of real property. This only involves damage to structures themselves, and may not account for damage to personal property inside or adjacent to vulnerable structures. In addition, there may be areas outside the 100-year flood zones that will flood during an event of that magnitude (or even of lesser magnitude); this planning process has no way of knowing the susceptibility of flooding outside of flood events that have been previously mapped by other governmental agencies.

### Development in Areas Subject to Flooding

Development in floodplains, watersheds, and natural resource areas are kept to a minimum through zoning. Manitowoc County has shoreland and floodplain zoning. This ordinance is a useful tool in keeping inappropriate development out of flood hazard zones in the county.

Map 3.6: Critical Facilities Heat Map



### NFIP Participation

Manitowoc County has participated in the FEMA National Floodplain Insurance Program (NFIP) since September 1978 by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in the county.

Additionally, the following incorporated communities are also participating in the NFIP:

- City of Manitowoc since April 1977
- City of Two Rivers since April 1978
- City of Kiel since January 1985
- Village of Cleveland since May 1978
- Village of Francis Creek since August 2011
- Village of Kellnersville since August 2011
- Village of Mishicot since May 1972
- Village of Reedsville since September 1988

### Not Participating in NFIP

The villages of Maribel, St. Nazianz, Valders and Whitelaw are not participating in NFIP. Since there are no special flood hazard areas (SFHAs) within their municipal boundaries, these communities were not provided a floodplain map, and have not been asked to participate in the NFIP

## Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Manitowoc County has experienced three significant extreme cold events over the last 13 years from January 1, 2000 to October 1, 2018.

## Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County has experienced 6 significant extreme cold events in the last 18 years.

## Probability of Hazard Occurring in the Future

Based on the hazard frequency, Manitowoc County is considered to have a low probability of experiencing an extreme cold event in any given year.

## Areas at Greatest Risk

Extreme cold events have no defined hazard area within the planning area. Past events have been relatively uniform across the planning area.

## Impacts from Hazard

### *Death and Injury*

No deaths or injuries have been reported from significant extreme cold events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

### *Structures at Risk*

Extreme cold conditions can result in burst water pipes. In addition, it is more expensive to heat homes and other buildings during extreme cold events. Sometimes, residents of the planning area might consider use of space heaters during an extreme cold event. However, use of space heaters comes with its own risks, including a higher probability of fire to a structure if used improperly.

Public domain water pipes can burst in extreme cold conditions, which can also ruin the street above the water pipes. In addition, damage to fiber optic cables can occur during extreme cold episodes, which can negatively affect commerce and hospitals in the planning area.

### *Critical Facilities*

All buildings involving critical facilities will have greater heating expenses during an extreme cold event. Increased demand will also affect electric and natural gas utilities. Hospitals and clinics may be asked to treat patients exposed to the extreme cold conditions. Emergency shelters may take in additional individuals during the extreme cold event. Area schools may cancel classes or call for early dismissal in extreme cold events. Water utilities may need to repair damaged water mains caused by the extreme cold. Local fire departments and rescue services may also deal with direct or indirect consequences of the extreme cold event.

## Economic Impacts

Economic impacts of extreme cold events can include lack of motivation to participate in the local economy unless absolutely necessary during the event. Utility bills following the event will be higher, which will give the consumer less ability to purchase discretionary goods about a month after the event (unless that consumer is on a monthly even payment plan with the local utility). If area school districts need to call off school early on extremely cold days, there may be expenses involved with early busing and with paying staff for a full day while only having the benefit of a partial day of instruction. Non-profit organizations will incur expenses in the provision of emergency shelters. The private sector incurs economic losses and production decreases during an extreme cold event.

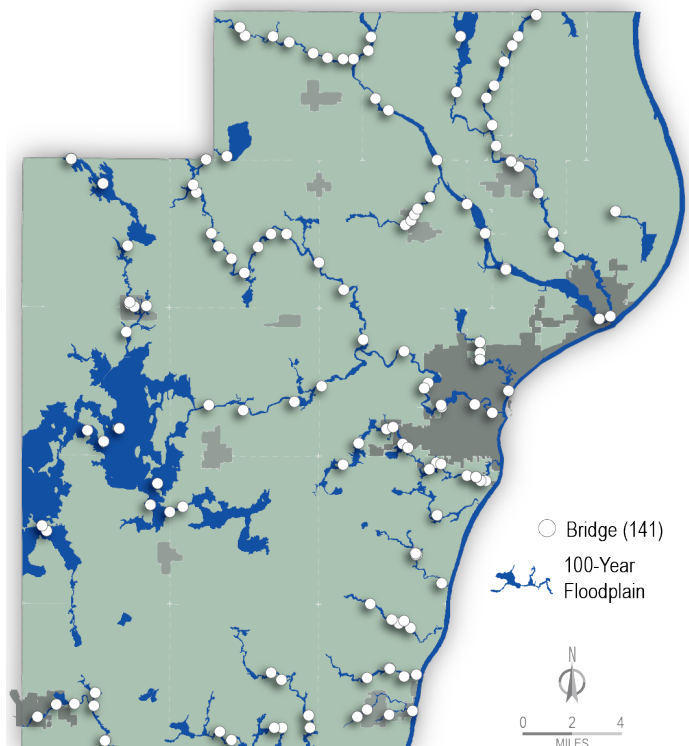
## Property Damage

No significant public property damages have been reported from extreme cold events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

## Estimate of Potential Dollar Losses

An estimate of potential dollar losses cannot be calculated for extreme cold events, since no vulnerable structures have been identified. Based on previous damages reported by the NCDC, property damages from extreme cold has been minimal over the past 18 years.

Map 3.7: Bridges within the Floodplain Map





**Extreme Cold**

**Description of Hazard**

Dangerously cold conditions can be the result of extremely cold temperatures, or the combination of cold temperatures and high winds. The combination of cold temperatures and wind creates a perceived temperature known as “wind chill.” Whenever temperatures drop well below normal and as wind speed increases, heat can leave your body more rapidly. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature. This weather related condition may lead to serious health problems. Extreme cold is a dangerous situation that can cause health emergencies for susceptible people, such as those without shelter, those who are stranded outdoors or in a disabled car, or those who live in a home that is poorly insulated or without heat.

**Previous Significant Hazard Occurrences**

According to National Climatic Data Center (NCDC), Manitowoc County has experienced three significant extreme cold events over the last 13 years from January 1, 2000 to January 31, 2013.

**Hazard Frequency**

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant extreme cold event every five years.

**Probability of Hazard Occurring in the Future**

Based on the hazard frequency, Manitowoc County is considered to have a low probability of experiencing an extreme cold event in any given year.

**Areas at Greatest Risk**

Extreme cold events have no defined hazard area within the planning area. Past events have been relatively uniform across the planning area.

**Impacts from Hazard**

**Death and Injury**

No deaths or injuries have been reported from significant extreme cold events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

**Structures at Risk**

Extreme cold conditions can result in burst water pipes. In addition, it is more expensive to heat homes and other buildings during extreme cold events. Sometimes, residents of the planning area might consider use of space heaters during an extreme cold event. However, use of space heaters comes with its own risks, including a higher probability of fire to a structure if used improperly. Public domain water pipes can burst in extreme cold conditions, which can also ruin the street above the water pipes. In addition, damage to fiber optic cables can occur during extreme cold episodes, which can negatively affect commerce and hospitals in the planning area.

**Critical Facilities**

All buildings involving critical facilities will have greater heating expenses during an extreme cold event. Increased demand will also affect electric and natural gas utilities. Hospitals and clinics may be asked to treat patients exposed to the extreme cold conditions. Emergency shelters may take in additional individuals during the extreme cold event. Area schools may cancel classes or call for early dismissal in extreme cold events. Water utilities may need to repair damaged water mains caused by the extreme cold. Local fire departments and rescue services may also deal with direct or indirect consequences of the extreme cold event.

**Economic Impacts**

Economic impacts of extreme cold events can include lack of motivation to participate in the local economy unless absolutely necessary during the event. Utility bills following the event will be higher, which will give the consumer less ability to purchase discretionary goods about a month after the event (unless that consumer is on a monthly even payment plan with the local utility). If area school districts need to call off school early on extremely cold days, there may be expenses involved with early busing and with paying staff for a full day while only having the benefit of a partial day of instruction. Non-profit organizations will incur expenses in the provision of emergency shelters. The private sector incurs economic losses and production decreases during an extreme cold event.

**Property Damage**

No significant public property damages have been reported from extreme cold events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

**Estimate of Potential Dollar Losses**

An estimate of potential dollar losses cannot be calculated for extreme cold events, since no vulnerable structures have been identified. Based on previous damages reported by the NCDC, property damages from extreme cold has been minimal over the past 18 years.



## Extreme Heat

### Description of Hazard

Extreme heat (often referred to as a heat wave) is primarily a public health concern. During extended periods of very high temperatures or high temperatures with high humidity, individuals can suffer from several ailments, including heat exhaustion and heat stroke. Heat stroke is a particularly life-threatening condition that requires immediate medical attention. In addition to posing a public health hazard, periods of excessive heat usually result in high electrical consumption, which can cause power outages and brown outs. A by-product of this hazard in Manitowoc County often involves periods of high heat with loss of power. The elderly, disabled, and other vulnerable populations are especially susceptible to extreme heat.

### Previous Significant Hazard Occurrences

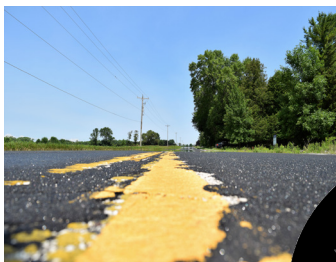
According to National Climatic Data Center (NCDC), Manitowoc County has experienced 4 significant extreme heat events over the last 18 years from January 1, 2000 to October 1, 2018.

### Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant extreme cold event every five years.

### Probability of Hazard Occurring in the Future

Based on the hazard frequency, Manitowoc County is considered to have a *low* probability of experiencing an extreme heat event in any given year.



### Areas at Greatest Risk

Extreme heat events have no defined hazard area within the planning area. Past events have been relatively uniform across the planning area.

### Impacts from Hazard

#### Death and Injury

One death (of an elderly lady), and no injuries, has been reported from significant extreme heat events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

#### Structures at Risk

While there are no direct impacts on buildings, periods of excessive heat can impact the ability of buildings to be comfortable and safe for human habitation. Periods of excessive heat usually result in high electrical consumption for air conditioning, which can cause power outages and brown outs. There are few impacts of extreme heat on publicly owned infrastructure. One impact that extreme heat can have on publicly owned infrastructure involves the buckling of certain streets and highways, which need to be repaired immediately.

### Critical Facilities

Utilities may see peak demand for electricity during extreme heat episodes. There have been fears that an extreme heat episode could cause the power grid to collapse. Hospitals and clinics will like experience an increased demand due to heat related illnesses during an extreme heat episode. In some cases, rescue services will experience an increased demand due to these same heat related illnesses. If school is in session during the extreme heat episode, area school districts may dismiss classes early in the day, at least in older schools without air conditioning. Emergency shelters will experience higher demand during the extreme heat episode, with some emergency shelters being set up specifically in response to the episode. Finally, there is likely to be increased water demand during the episode, both for human consumption as well as for lawn watering in the event that the extreme heat episode includes a drought.

### Economic Impacts

Economic impacts of an extreme heat episode which can affect private businesses and consumers include higher electrical consumption and increased demands for medical treatment. Local governments may need to incur expenses when repairing streets and highways in the planning area that have been damaged due to buckling. If area school districts need to call off school early on extreme heat days, there may be expenses involved with early busing and with paying staff for a full day while only having the benefit of a partial day of instruction. Non-profit organizations will incur expenses in the provision of emergency shelters. Water utilities will incur the expenses involved with additional demand for water during extreme heat episodes, and these expenses will be passed on to area consumers.



**(Cont'd Extreme Heat Economic Impacts)**

**Property Damage**

No significant public property damages have been reported from extreme heat events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

**Estimate of Potential Dollar Losses**

An estimate of potential dollar losses cannot be calculated for extreme heat events, since no vulnerable structures have been identified. Based on previous damages reported by the NCDC, property damages from extreme heat has been minimal over the past 18 years.

**Lightning**

**Description of Hazard**

Lightning, which occurs during all thunderstorms, can strike anywhere. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with the best conducting object or surface on the ground. The air in the channel of a lightning strike reaches temperatures higher than 50,000 degrees Fahrenheit. The rapid heating and cooling of the air near the channel causes a shock wave which produces thunder. Lightning primarily occurs when warm air is mixed with colder air masses resulting in atmospheric disturbances necessary for polarizing the atmosphere. However, it can also occur during dust storms, forest fires, tornadoes, volcanic eruptions, and even in the cold of winter, where the lightning is known as thundersnow.

**Previous Significant Hazard Occurrences**

According to National Climatic Data Center (NCDC), Manitowoc County has experienced 3 significant lightning events over the last 18 years from January 1, 2000 to October 1, 2018.

**Hazard Frequency**

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant lightning event every five years.

**Probability of Hazard Occurring in the Future**

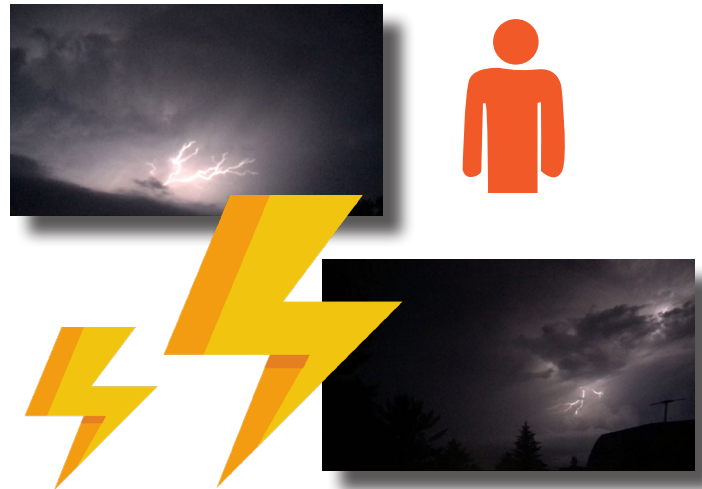
Based on the hazard frequency, Manitowoc County is considered to have a low probability of experiencing a lightning storm and/or thunderstorm event in any given year.

**Areas at Greatest Risk**

Based on review of the historic patterns of lightning event occurrences, there are no specific areas that are a higher than average risk. The events are relatively uniform throughout Manitowoc County.

**Structures at Risk**

Lightning can cause direct damage to structures, especially those without lightning protection systems.



Buildings or tall structures hit by lightning may be damaged as the lightning seeks unintended paths to ground. By safely conducting a lightning strike to ground, a lightning protection system can greatly reduce the probability of severe property damage. Lightning strikes can result in fires that damage structures, property, and land.

**Critical Facilities**

Hospitals can see increases in patient load with sufficiently severe lightning events. Schools can sustain damage, and if they do not sustain damage. Police and fire departments often see an increased workload during and after lightning events. Emergency operations can be disrupted as lightning events affect radio and cellular communications, as antennas are a prime target for lightning.

**Economic Impacts**

Nationwide, lightning causes \$4 to 5 billion in losses each year (Source: Kithil, R., 21st Century Lightning Safety for Facilities & Structures, 2002) and about \$2 billion annually in airline operating costs and passenger delays (Source: Northeast States Emergency Consortium, Wakefield, Mass., 2002).

**Property Damage**

Reported property damage from significant lightning for Manitowoc County has totaled approximately \$3,010 over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

**Estimate of Potential Dollar Losses**

An estimate of potential dollar losses cannot be calculated for lightning events, since no vulnerable structures have been identified. Based on previous damages reported by the NCDC, property damages from extreme heat has been minimal over the past 18 years.

## **Drought**

### **Description of Hazard**

A drought is an extended period of unusually dry weather, which may be accompanied by extreme heat. There are basically two types of drought in Wisconsin: agricultural drought and hydrologic drought. Agricultural drought is a dry period of sufficient length and intensity that markedly reduces crop yields. Hydrologic drought is a dry period of sufficient length and intensity to affect lake and stream levels as well as the height of the groundwater table. These two types of drought may, but do not necessarily, occur at the same time. The severity of a drought depends on a number of factors including duration, intensity, geographic extent, and regional water supply demands by humans and vegetation.

In general, droughts have the greatest impact on agriculture. Small droughts of limited duration can significantly reduce crop growth and yields. More substantial drought events can decimate croplands and can result in a total loss. Droughts can also greatly increase the risk of forest fires and wildfires because of extreme dryness. In addition, the loss of vegetation in the absence of sufficient water can result in flooding, even from average rainfall, following drought conditions.

### **Previous Significant Hazard Occurrences**

According to National Climatic Data Center (NCDC), Manitowoc County has experienced three significant drought events over the last 18 years from January 1, 2000 to October 1, 2018.

### **Hazard Frequency**

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant drought event every five years.

### **Probability of Hazards Occurring in the Future**

The future incidence of drought is highly unpredictable, as its occurrence is based on weather patterns, making it difficult to determine probability with any accuracy. Droughts tend to be a regional phenomenon in that it affects much of eastern Wisconsin on nearly all of the occasions in which it affects Manitowoc County. However, based strictly on the hazard frequency, Manitowoc County is considered to have a low probability of experiencing a drought event in any given year.

### **Areas at Greatest Risk**

Droughts have no defined hazard area within the planning area. Past events have been relatively uniform across the planning area. However, agricultural croplands are most vulnerable to losses from drought events. Manitowoc County contains 220,393 acres of agricultural lands (based on land use data shown in Table 2.2).



### **Impacts from Hazard**

#### ***Death and Injury***

No deaths or injuries have been reported from significant drought events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018, according to NCDC data.

#### ***Structures at Risk***

There are no direct impacts to structures from a drought event. In terms of infrastructure, droughts have the most impact on municipal water supplies. Droughts will likely cause a shortage of water for human, industrial, and agricultural consumption, as wells and other water reserves may dry up. Also, water quality is often an issue before and after a drought event, which may place an additional burden on wastewater treatment facilities.

#### ***Critical Facilities***

In drought conditions, water shortages may occur and affect the amount of water available for human consumption. Hospitals may be called upon to treat individuals suffering from dehydration as a result. Parks that provide recreational water facilities are likely to experience increased usage during times of drought as well.

#### ***Economic Impacts***

Wisconsin is most susceptible to agricultural drought. Even small droughts of limited duration can significantly reduce crop growth and yields, which adversely affects farm income. Substantial drought events can lead to complete crop decimation, resulting in total loss. During severe drought periods farmers are often forced to seek financial assistance from the government to supplement lost income. No significant public property damages have been reported from drought events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018 according to NCDC data.

#### ***Estimate of Potential Dollar Losses***

Agricultural croplands are most vulnerable to losses from drought events. A “worst case scenario” would involve the total destruction of all 219,368 acres of agricultural lands in the county (based on land use data shown in Table 2.2). The USDA conducts a Census of Agriculture every 5 years based on a sample of farms to estimate the market value of agricultural land and buildings. It can be estimated that if this “worst case scenario” were to occur, the total destruction of all agricultural land in Manitowoc County would cause a loss of \$769,832,749.

## Dense Fog

### Description of Hazard

Fog is a collection of liquid water droplets or ice crystals suspended in the air at or near the ground. While fog is a type of stratus cloud, the term "fog" is typically distinguished from the more generic term "cloud" in that fog is low-lying, and the moisture in the fog is often generated locally (such as from a nearby body of water, like a lake or stream, or from nearby moist ground or marshes). Fog is distinguished from mist because it has greater density and lower visibility than mist.

Fog is a hazard mainly because of reduced visibility. Airport delays, automobile accidents, ship wrecks, plane crashes, and many other problems are frequently caused by fog. The National Weather Service forecasts fog and issues dense fog advisories when visibility is decreased to less than one quarter of a mile. These advisories alert travelers to potentially dangerous conditions. Traveling in fog requires reduced speed and careful navigation. At night, traveling in fog is especially dangerous because darkness combines with fog to reduce visibility even more. In addition, light from automobile headlights and other navigational lights is scattered off the water droplets of the fog, limiting sight to only a short distance. In response to this problem, automobiles are often equipped with specially designed lights that illuminate a usually dry (and therefore clear) area just above the roadway surface.

### Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Manitowoc County has experienced two significant dense fog events over the last 18 years from January 1, 2000 to October 1, 2018.

### Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant dense fog event every five years.

### Probability of Hazard Occurring in the Future

Based on the hazard frequency, Manitowoc County is considered to have a low probability of experiencing a significant dense fog event in any given year.

### Areas at Greatest Risk

Portions of the planning area along waterways, wetlands, and low lying areas can be at greater risk for fog under certain meteorological conditions. However, no portion of the planning area is free of the possibility of experiencing fog events. Fog events can often be a regional phenomenon in that they affect much of the eastern Wisconsin on many of the occasions in which they affect Manitowoc County, especially near Lake Michigan.

### Structures at Risk

There are no direct impacts to buildings from a fog event. The main structures impacted are those associated with infrastructure during a fog event from vehicle accidents. This can result in rescue services helping injured drivers and passengers, clean-up of the affected portions of the street and highway network, and temporary rerouting of motorists after some incidents. In addition, motorists often must travel at slower speeds when fog is in the area, which adds travel time and can lead to vehicular congestion in cases where it would normally not occur. In fog events during the winter, icing can sometimes be a problem. Power lines and tree limbs can be coated with heavy ice in some winter fog events, resulting in disrupted power and telephone service. In addition, in fog events during the winter, even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

### Critical Facilities

Law enforcement will be asked to respond to an increased number of accidents during many fog events. Hospitals and clinics may be asked to treat individuals injured in accidents that likely would have not occurred in the absence of the fog event. Rescue services may be called to respond to accidents that resulted from the fog event. The starting time for schools may be delayed by the fog event for the safety of students and all involved. Courtrooms may see increased adjudication of traffic law violations resulting from accidents occurring during the fog event. Municipal public works and county highway departments may need to perform emergency repairs to streets and highways in worst-case scenario accidents resulting from the fog event. Airports can experience flight delays and cancellations during certain fog events.

### Economic Impacts

There are economic costs in the accidents caused by fog events. Vehicular accidents almost always involve property damage, and some vehicular accidents during fog events involve injuries and/or fatalities. All of these consequences to vehicular accidents have costs both to the individual involved and to society. Airline delays due to fog have economic impacts for travelers as well as for commerce. There are additional economic impacts if the fog event occurs in conjunction with the icing of power lines in cases where the power lines are damaged and residents lose power.

### Property Damage

No significant public property damages have been reported from dense fog events for Manitowoc County over the last 18 years from January 1, 2000 to January 31, 2013 according to NCDC data.

### Estimate of Potential Dollar Losses

An estimate of potential dollar losses cannot be calculated for dense fog events, since no vulnerable structures have been identified. Based on previous damages reported by the NCDC, property damages from fog have been minimal over the past 18 years.

### **Wildland Fires**

#### **Description of Hazard**

A wildland fire is any instance of unplanned burning in brush, marshes, grasslands, or field lands. Typical causes of these fires are lightning, human carelessness, or arson. The county has large expanses of forested areas that could be susceptible to wildland fires. Wildland fires can occur at any time of the year and during any time of the day. The primary factors that can contribute to the start of a wildland fire are land use, vegetation, amount of combustible materials present, and weather conditions such as wind, low humidity, and lack of precipitation. Generally, fires are more likely when vegetation is dry from a winter with little snow or a spring and summer with sparse rainfall. As fires remain a possibility, fire stations in the county are prepared to respond in accordance with established response procedures, while local zoning setback controls and building codes provide additional mitigation measures.

#### **Previous Significant Hazard Occurrences**

There have been no significant wildland fires in Manitowoc County since 1995.

#### **Hazard Frequency**

No adequate records are available at this time in order to determine a hazard frequency.

#### **Probability of Hazard Occurring in the Future**

According to the U.S. Forest Service Wildland Fire Assessment System, Manitowoc County regularly falls within a low to moderate fire danger class. A low rating indicates that fuels do not ignite readily from small firebrands, while a moderate rating means that fires will likely start from most accidental causes. With the exception of lightning fires in some areas, the number of starts is generally low. Additionally, because Manitowoc County is not extensively forested and does not contain the hazards and risks necessary to warrant intensive or extensive fire protection, it is designated as a Cooperative Fire Protection Area. Therefore, there are no Wisconsin DNR ranger stations or suppression resources located in the county. Additionally, the Forestry Division of the Wisconsin DNR has determined that there are no "Communities-at-Risk" and no "Communities-of-Concern" within Manitowoc County. The likelihood that any wildland fire in Manitowoc County would be catastrophic is low as most susceptible areas lack enough acreage to allow for continuous burning. Invasive Species such as Phragmites should be monitored as the dry stalks can often cause fire to spread similar to other dry plants and debris burning.

#### **Areas at Greatest Risk**

Manitowoc County contains approximately 77,314 acres of woodlands (based on current land use). Of these, few contain timbers that are very susceptible to burning. Therefore, lands covered in grass fuels pose the highest risk for the planning area. Furthermore, grasslands that abut heavy residential development present an even greater danger, especially when residents practice unapproved outdoor burning of leaves, garbage, and other items which they wish to dispose of by incineration. Point Beach State Forest, the county's largest area of contiguous woodlands with more than 2,500 acres of forestlands, poses some risk for wildland fire.

#### **Impacts from Hazard**

##### **Death and Injury**

No data on deaths or injuries is available for significant wildland fire events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018.

##### **Structures at Risk**

Homes and other structures located within the Wildland Urban Interface (WUI) are at high risk to damage from wildland fires. The WUI refers to the zone of transition between forestland/wildland and human development. The wildland fire risk increases in the WUI because buildings are typically surrounded by fuel sources such as unmowed grass, unraked leaves, flammable vegetation, and dead branches. Structures constructed from materials that may melt or ignite when exposed to a fire present a high risk. In general, the potential for property damage from wildland fires increases as more development occurs on wooded lands.

Residential housing is typically the most dominant type of structure found within the WUI. Though many parts of a home can be affected by wildfire damage, the roof is the most exposed portion of the building and is more at risk from flying embers. Attics may also be affected by airborne embers that enter through open eaves and vents. Structures attached to homes, such as decks, garages, and fences, can also carry a fire into a home.



Photo by the Wisconsin DNR, 2016.

### Critical Facilities

Police, fire, and emergency response personnel are greatly affected by wildland fires – suffering increased workloads during and after events. Hospitals can see increases in patient load resulting from burn related injuries and individuals suffering from the effects of smoke inhalation. Schools, if not affected by a fire, could potentially be used as temporary shelter for individuals that can not return to their homes. All critical facilities located in the path of a wildland fire can be affected structurally and functionally if evacuation is deemed necessary.

### Economic Impacts

Fires can have an extensive impact on the economy of an affected area by causing thousands of dollars in damages to citizens through loss of private property. Major direct costs associated with wildland fires are incurred by the salvage and removal of downed timber and debris; restoration of the burned area; and reconstruction. Wildland fires can also have a significant impact on local agriculture. Fires will strip the land of vegetation as well as harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life.

### Property Damage

No property damage data is available for wildland fire events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018.

### Estimate of Potential Dollar Losses

An estimate of potential dollar losses is not needed for the wildland fire hazard as no specific vulnerable structures or geographic areas have been identified.



### Coastal Hazards

#### Description of Hazard

In northeastern Wisconsin, coastal hazards can be described as natural hazards occurring along the shores of Lake Michigan. The coastal hazards of concern in Wisconsin include:

- Erosion of coastal bluffs, banks, beaches and near shore lake beds (including erosion from freezing and thawing of lake ice);
- Flooding from upland runoff, high lake levels and storm-induced surge (temporary water level changes); and
- Damage to shorelines and shoreline structures from storm waves and ice shoves and dams.

#### Previous Significant Hazard Occurrences

There is no record of significant coastal hazards for Manitowoc County and sources for past coastal hazard occurrences could not be found. However, Manitowoc County has experienced occurrences of ice shoves along Lake Michigan.

#### Hazard Frequency

There is no record of significant coastal hazards for Manitowoc County in order to develop a hazard frequency. It is important to note the fluctuating water levels and impact in 2018 and 2019. These levels should be monitored annually.

#### Probability of Hazard Occurring in the Future

According to the Resource Guide for Great Lakes Coastal Hazards in Wisconsin website (<http://coastal.lic.wisc.edu/urpl999.htm>), Manitowoc County is most at risk for coastal erosion. Overall, the probability of coastal hazards is medium for the planning area.

#### Areas at Greatest Risk

Portions of the county situated along Lake Michigan are at risk for coastal hazards.

#### Impacts from Hazard

##### Death and Injury

No data on deaths or injuries is available for significant coastal hazard events for Manitowoc County over the last 18 years from January 1, 2000 to October 1, 2018.

##### Structures at Risk

Homes and other structures located along Lake Michigan are at risk to damage from coastal hazards. This risk increases where structures are closer to the shoreline, especially over high bluffs. There are 213 improved privately-owned structures directly adjacent to Lake Michigan in Manitowoc County.

### Critical Facilities

There are 18 critical facilities located along Lake Michigan at risk of damage from coastal hazards. Most of these facilities are intentionally located adjacent to Lake Michigan; however, there are three critical facilities that are not dependent on a location with proximity to the lake. Two of the critical facilities are administrative buildings in the City of Two Rivers, including a public works facility and a maintenance shop. The third is a childcare facility in the City of Manitowoc, the YMCA Child Development Center Daycare.

### Economic Impacts

Coastal hazards can have an extensive impact on the economy of an affected area by causing thousands of dollars in damages to public property and structures, as well a private property and houses.

### Property Damage

No significant public property damages have been reported from coastal hazard events for Manitowoc County over the last 13 years from January 1, 2000 to January 31, 2013 according to NCDC data.

### Estimate of Potential Dollar Losses

A “worst case scenario” for potential dollar losses from coastal hazards in Manitowoc County would involve the total destruction of all private structures along Lake Michigan, which would cause a loss of \$46.4 in private damages. There are no assessed values available for public properties. This information was obtained from the Manitowoc County database on assessed values of real property (structures and land). This only involves damage to structures themselves, and may not account for damage to personal property inside or adjacent to vulnerable structures.

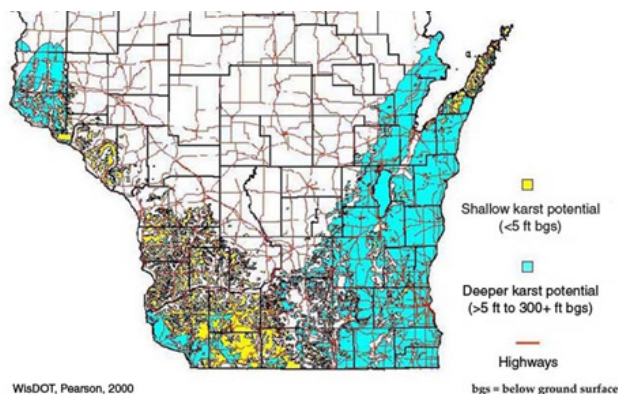
## Land Subsidence

### Description of Hazard

Land subsidence is an event in which a portion of the land surface collapses or settles. Subsidence or sinkholes in Wisconsin typically occurs in areas of karst terrain (dolomite and limestone bedrock areas). Subsidence in karst terrains occurs where dissolution of bedrock by groundwater flow causes the creation of voids (i.e. caves). The land above these underground voids often appears normal until a critical amount below has been washed away and the soil surface can no longer support the weight and collapses, causing subsidence at the surface (i.e. sinkholes).

Manitowoc County lies within the area of risk in Wisconsin that has been identified by the Wisconsin Geologic and Natural History Survey. This area is delineated as a V-shaped swath across Wisconsin that extends southeast from St. Croix County along the Mississippi River, across the bottom two tiers of counties, and northeast along Lake Michigan up to Marinette County (Figure 1).

Wisconsin subsidence occurrences are unlikely to be significant events. Sinkholes in Wisconsin are relatively small – they tend to be smaller than 10 feet across. The depth of sinkholes can be highly variable, although most are about as deep as they are wide.



### Previous Significant Hazard Occurrences

There is no record of significant subsidence occurrences for Manitowoc County and sources for past subsidence occurrences could not be found.

### Hazard Frequency

There is no record of significant subsidence occurrences for Manitowoc County in order to develop a hazard frequency.

### Probability of Hazard Occurring in the Future

Although Manitowoc County is within the area of risk for subsidence in Wisconsin as identified by the Wisconsin Geologic and Natural History Survey (Figure 1), being in an area of deeper karst potential (instead of the shallow karst areas) with dolomite bedrock reduces the risk of subsidence in the county. Overall, the probability of a significant subsidence occurrence is low for the planning area.

### Areas at Greatest Risk

The deeper karst potential is mostly uniform throughout Manitowoc County; therefore, the risk for subsidence is uniform throughout the county.

### Impacts from Hazard

#### Death and Injury

No data on deaths or injuries is available for significant subsidence occurrences for Manitowoc County over the last 138 years from January 1, 2000 to October 1, 2018.

## Structures at Risk

Although subsidence occurrences in other parts of the world can be large enough to swallow structures, in Wisconsin subsidence sinkholes are relatively small due to the differences in geology. In Wisconsin, the karst bedrock forms in dolomite. Dolomite is much less easily dissolved than the limestone that forms large subsidence occurrences in other areas. As a result, Wisconsin has fewer and smaller subsidence occurrences and there is minimal risk to structures.

However, the cracks and crevasses in karst act as direct conduits for pollutants to enter groundwater, wells, springs, and streams. Therefore, mindfulness of what is being spread or put on the ground in these areas is warranted to prevent groundwater contamination.

## Critical Facilities

There are no critical facilities at a greater risk for damage from subsidence than any other structures in the county.

## Economic Impacts

Subsidence can have an impact on the economy of an affected area by causing groundwater contamination that can be costly to treat and affect a large area of groundwater dependent businesses and residents.

## Estimate of Potential Dollar Losses

An estimate of potential dollar losses cannot be calculated for subsidence, since no vulnerable structures have been identified.

## Information on Karst below:

# Karst

**What is it?**

Karst refers to an area where bedrock such as limestone is easily dissolved by water. Karst regions are generally characterized by connecting cracks and layers between rocks that easily transport water and pollutants to the groundwater. Sinkholes, shallow soils, sinking streams and springs are found in areas of karst bedrock.



Bentonite being used to seal an unused well.

**In karst areas, groundwater is threatened by:**

**Contaminated water from**

- ✓ Barnyards and other areas where manure accumulates.
- ✓ Cropland where chemicals and manure are applied.
- ✓ Septic systems and household waste disposal.
- ✓ Roads and other paved areas.

This is a typical karst spring, but not all springs bubble out of karst areas. Many springs in Wisconsin flow out of deep gravel and sand deposited by the glaciers.



The fractures in the bedrock under shallow soil can be seen during a drought. The alfalfa was able to send deep roots down into the moist soil that had accumulated through the cracks.



Sinkholes like the one above are often used to dispose of unwanted junk. Sometimes this junk can contaminate a well miles away.



Caves such as this one can be an important home for bats and hibernating animals.



**Groundwater**

If you dig a hole and water begins to seep in, you have hit groundwater. It is simply the area between soil particles, or in rocks, are filled with water.

Deep soils help filter out sediment and pollutants as water from rain and melting snow percolates downward. Shallow soils are not as effective and, in karst areas, surface water may flow into the groundwater with little or no soil filtration.




In karst areas, groundwater can move 100 feet or more per day (in other areas, groundwater typically moves less than 1 foot per day). The water follow cracks in the limestone, moving deep and spreading out under the ground.

Eventually this water returns to the surface at a spring, river or lake. It can also be held deep underground for thousands of years, only reaching the surface again when pumped out of wells.

**Karst:**

**Why be concerned?**

Where soils are shallow, karst conditions make it easier for groundwater to be contaminated with bacteria, nitrate and pesticides.

Even wells that are hundreds of feet deep can be contaminated.



■ Shallow Karst Potential (less than 5 ft. below ground surface)  
■ Deeper Karst Potential (5 ft. to 300+ feet below ground surface)

**Take action to prevent groundwater contamination in karst areas**

**In the community**

- Use care when planning and constructing roads and ditches to avoid runoff draining into cracks in the bedrock.
- Provide "clean sweep" programs to properly dispose of home, business and farm chemicals.
- Consider geology and groundwater in land use planning.

**On the farm**

- Grow a grass buffer 10-200 feet wide, depending on site conditions, around sinkholes and crevices.
- Do not apply manure, fertilizers, pesticides or other agricultural chemicals near sinkholes.
- Any manure applied near sinkholes should be incorporated into the soil as soon as possible. See your NRCS or LCD office for site-specific guidelines.
- Divert water away from sinkholes and crevices.
- Do not dispose of chemical containers, dead animals, or anything else in sinkholes.

**Around the home**

- Properly seal unused wells.
- Test wells annually for nitrate and bacteria.
- Pump your septic system at least every three years.

The water along this ditch disappears into a sinkhole, carrying with it oils, lead, salt and other chemicals from roadways.



A sinkhole without a protective berm before and during flooding. A berm would have prevented runoff containing fertilizers and pesticides from draining into the sinkhole.



**Help is available**

**For more information about bedrock concerns, drinking water or cost-share programs, contact:**  
 County Land and Water Conservation Departments  
 Public Health Departments  
 University of Wisconsin - Extension  
 USDA Natural Resources Conservation Department  
 Wis. Dept. of Natural Resources Service Centers  
 Wis. Geological and Natural History Survey  
 Wis. Dept. of Agriculture, Trade and Consumer Protection

**Or web sites:**  
[clean-water.uwex.edu/rockriver/](http://clean-water.uwex.edu/rockriver/)  
[groundwater.uwex.edu/wgrhs/karst.htm](http://groundwater.uwex.edu/wgrhs/karst.htm)

**What can be done?**

Once contaminants enter the groundwater, little can be done to remove them. The best, easiest and cheapest thing to do is to prevent contamination in the first place.

Specific suggestions can be found on the other side of this brochure.

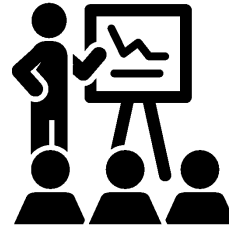
## Chapter 4 - Mitigation Strategy

### Introduction

As defined by the Disaster Mitigation Act of 2000, mitigation is a "sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects." Mitigation planning is the systematic process of learning about the hazards that can affect the planning area, setting clear goals, identifying appropriate actions, and following through with an effective mitigation strategy. Mitigation encourages long-term reduction of hazard vulnerability and can reduce the enormous cost of disasters to the government and property owners. Mitigation can also protect critical community facilities and infrastructure; reduce exposure to liability; and minimize community disruption.

The mitigation strategy outlines the general goals to be achieved through the implementation of the Manitowoc County, Wisconsin Hazard Mitigation Plan. From the identified hazard mitigation goals, a mitigation strategy was developed to identify specific projects and activities that could help achieve the County's hazard mitigation goals to make them safer and better prepared for disasters.

This chapter includes a discussion of the mitigation efforts that are currently underway, the County's plan to implement the mitigation actions, an assessment of the County's pre- and post-disaster hazard management policies, programs, and capability to mitigate hazards, and an evaluation of the current and potential sources of federal, state, or private funding to implement mitigation activities.



### **Mitigation Goals**

The following mitigation goals are intended to be used by public officials and emergency management personnel as general guidelines to mitigate natural hazards in Manitowoc County. These goals are broad in order to apply to all of the hazards addressed in the plan.

**Goal #1: Implement policies and programs that are designed to reduce or eliminate the impacts of hazards on people and property.**

**Goal #2: Collect and utilize data needed to improve policy making and the identification of appropriate mitigation projects.**

**Goal #3: Build and support local capacity and commitment to continuously lessen the impacts of hazards on people and property.**

**Goal #4: Promote enforcement measures to reduce the impacts of hazards on people and property.**

**Goal #5: Promote the use of natural resource protection measures as a means to reduce the impacts of hazards on people and property.**

**Goal #6: Obtain and maximize additional resources that are necessary to reduce the impact of hazards on people and property.**

**Goal #7: Enhance training, education and outreach efforts that describe potential effects of hazards and ways to reduce their impact.**

**Goal #8: Promote intergovernmental coordination and cooperation in planning for and implementing hazard mitigation strategies.**



### **Mitigation Action Plan**

Mitigation actions form the core of the mitigation plan. Table 4.1 lists the mitigation action plan developed for Manitowoc County. The table lists the hazard type, associated mitigation actions, the estimated costs of each project (where known), responsible agencies, the project timetable, and potential funding sources available for each mitigation action identified. The identified actions and projects address reducing the effects of hazards on the population, services, and existing and new buildings and infrastructure.

The County Emergency Management Department will track the implementation of mitigation actions over time. Information on completed or revised actions will be documented in future five-year updates of the County hazard mitigation plan.

### **Prioritization Process**

In developing this mitigation strategy, members of the plan steering committee considered, from their perspective, the various proposed action items and came to consensus on how each would be ranked, “high,” “medium” or “low,” based on need, funding, cost-benefit, and anticipated political support.

### **Cost-Benefit Review**

In developing this mitigation strategy, members of the plan steering committee considered, from their perspective, the costs and benefits of the various proposed action items. The cost-benefit review was a factor of the prioritization process. Full-blown cost-benefit calculations were not prepared for each action item included in the plan. The cost effectiveness of each action item will be addressed and completed through the project development process.

### **Completed Mitigation Actions**

Since the preparation of the 2009 hazard mitigation plan for Manitowoc County, some of mitigation actions identified in the action plan have been completed. The following lists those actions that have been completed in Manitowoc County.

- Mutual Aid Agreements have been established for communications systems.
- Building footprints have been collected for all structures in the City of Manitowoc (plus three miles) to allow for analysis of facility/structure locations.
- LIDAR data was acquired and should be updated in 2023
- Code Red was replaced with RAVE
- Building footprints were collected in 2015 from LIDAR for buildings in the towns.
- Weather radios removed
- Individual sirens are tested and repaired manually
- Added capability for the Dispatch Center to accept text messages
- Updated 20-Year County Comprehensive Plan



Table 4.1 Manitowoc County Hazard Mitigation Action Plan 2020-2025

| All Hazards                                                                                                                                                                                                                  |          |                   |                                                |                                                                                        |                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Project                                                                                                                                                                                                                      | Priority | Project Timetable | Estimated Cost                                 | Responsible Party                                                                      | Notes                                                                            |
| Update air photos and LIDAR data                                                                                                                                                                                             | High     | 2023              | Covered by existing budgets                    | Land Information Officer                                                               | Change Acquire to update. Cost covered by existing budgets.                      |
| Outage management software to help triage outage repairs                                                                                                                                                                     | High     | 2020-2025         | Costs to be determined                         | Manitowoc, Two Rivers, and Kiel public utilities                                       |                                                                                  |
| Maintain RAVE (i.e. Reverse 911) capability                                                                                                                                                                                  | High     | Ongoing           | \$20,000/year                                  | Joint Dispatch Center                                                                  |                                                                                  |
| Work with County, State, and Federal agencies to maintain a consistent critical facility database                                                                                                                            | High     | Ongoing           | Costs to be determined                         | Manitowoc County Hazard Mitigation Plan Steering Committee                             |                                                                                  |
| Promote use of NOAA weather radios which continually broadcast National Weather Service forecasts, warnings, and other crucial weather information as well as warnings regarding natural, man-made, or technological hazards | High     | Ongoing           | No cost; radios are purchased and sold at cost | County Emergency Services and American Red Cross                                       | Still promote, but no longer have them for sale at the County Emergency Services |
| Develop a central data collection process to report hazard incidences and resulting deaths, injuries, and property or crop damages                                                                                           | Medium   | 2020-2025         | Covered by existing budgets                    | County Emergency Management                                                            |                                                                                  |
| Develop comprehensive safety plan for all municipal-owned buildings                                                                                                                                                          | Medium   | 2020-2025         | Covered by existing budgets                    | Local jurisdictions                                                                    |                                                                                  |
| Encourage residents to prepare themselves by stocking up with necessary items and planning for how family members should respond if any emergency or disaster events strike                                                  | Medium   | Ongoing           | Covered by existing budgets                    | County Emergency Services, American Red Cross, and County Health Department            |                                                                                  |
| Collect remaining building footprints for all structures in the villages and cities to allow for analysis of where facilities/structures are located                                                                         | Low      | 2020-2025         | Costs to be determined                         | County Planning and Park Commission                                                    | Complete collection by focusing on villages and cities                           |
| Collect building height data for all structures in the County                                                                                                                                                                | Low      | 2020-2025         | Costs to be determined                         | County Planning and Park Commission                                                    |                                                                                  |
| Use of early warning system through pagers and NOAA weather radios                                                                                                                                                           | Medium   | As needed         | Covered by existing budgets                    | County Emergency Services, Joint Dispatch Center, fire depts, EMS, and law enforcement |                                                                                  |



Table 4.1 Manitowoc County Hazard Mitigation Action Plan 2020-2025

| Tornado and Strong Wind                                                                                                                                                                            |          |                   |                             |                                                                                                        |                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-----------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Project                                                                                                                                                                                            | Priority | Project Timetable | Estimated Cost              | Responsible Party                                                                                      | Notes                                             |
| Continued investment and use of early warning system through pagers, NOAA weather radios, sirens, social media, and Code Red                                                                       | Medium   | Ongoing           | Covered by existing budgets | County Emergency Services, Joint Dispatch Center, local fire depts and EMTs, and County Sheriff's Dept |                                                   |
| Assist personnel in schools and businesses, public facility managers, mobile home park managers, and citizens in determining "best available" tornado safety areas or need to construct safe rooms | Medium   | As needed         | Covered by existing budgets | County Emergency Services and American Red Cross                                                       | A plan is in place for the fairgrounds as of 2011 |
| Review and update Comprehensive Safety Plan for all county-owned buildings                                                                                                                         | Medium   | Annually          | Covered by existing budgets | County Emergency Services                                                                              | Last updated in 2019-2020                         |
| Consider adoption of ordinances requiring construction of safe shelters for mobile home parks, fairgrounds, or other vulnerable public places                                                      | Low      | 2020-2025         | Covered by existing budgets | County Planning and Park Commission and local zoning officials                                         |                                                   |

| Winter Storm                                                                            |          |                   |                             |                                                                                                             |       |
|-----------------------------------------------------------------------------------------|----------|-------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------|-------|
| Project                                                                                 | Priority | Project Timetable | Estimated Cost              | Responsible Party                                                                                           | Notes |
| Ensure that plow and sanding equipment is operational and available                     | High     | Ongoing           | Covered by existing budgets | County Highway Dept and local public works departments                                                      |       |
| Utilization of the media to disseminate emergency information                           | High     | As needed         | Covered by existing budgets | National Weather Service, Joint Dispatch Center, highway depts, and all participating jurisdictions         |       |
| Provide educational materials to the public regarding safety during winter storm events | Medium   | Ongoing           | Covered by existing budgets | County Emergency Services and State EM ( <a href="http://readywisconsin.wi.gov">readywisconsin.wi.gov</a> ) |       |

| Hail                                          |          |                   |                             |                                             |       |
|-----------------------------------------------|----------|-------------------|-----------------------------|---------------------------------------------|-------|
| Project                                       | Priority | Project Timetable | Estimated Cost              | Responsible Party                           | Notes |
| Animal protection                             | High     | Ongoing           | Costs to be determined      | County UW-Extension and Farm Service Agency |       |
| Provide information about hail crop insurance | Medium   | Ongoing           | Covered by existing budgets | County UW-Extension and Farm Service Agency |       |

Table 4.1 Manitowoc County Hazard Mitigation Action Plan 2020-2025

| Flooding                                                                                                                         |          |                         |                                                  |                                                                                                                              |                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Project                                                                                                                          | Priority | Project Timetable       | Estimated Cost                                   | Responsible Party                                                                                                            | Notes                                                           |
| Land use planning                                                                                                                | Low      | 2018 - 2020             | Covered by existing budgets                      | All participating jurisdictions with assistance (when feasible) from County Planning and Resources Department                | Will update with Comprehensive Plan                             |
| Study effects of current and future development in the approximate floodplain and any other areas that have not yet been studied | High     | As funding is available | Costs to be determined                           | County Planning and Park Commission and GIS                                                                                  | Updated, but still unstudied areas. Need LIDAR and 2' contours. |
| Maintain information regarding, and coordination of, congregate care facilities                                                  | High     | Ongoing                 | Covered by existing budgets                      | County Emergency Services and American Red Cross                                                                             |                                                                 |
| Continue to issue early warnings through flood advisory bulletins                                                                | High     | Ongoing                 | Covered by existing budgets                      | Wisconsin DNR and public works/engineering                                                                                   |                                                                 |
| Stormwater retention/detention facilities                                                                                        | High     | Ongoing                 | Costs to be determined based on specific project | Wisconsin DNR and public works/engineering                                                                                   |                                                                 |
| Erosion control zoning                                                                                                           | High     | Ongoing                 | Covered by existing budgets                      | Wisconsin DNR                                                                                                                |                                                                 |
| Dissemination of instructions to the public through the media                                                                    | High     | As needed               | Covered by existing budgets                      | National Weather Service, Joint Dispatch Center, and local jurisdictions                                                     |                                                                 |
| Handle the evacuation of people and property in the case of a severe flood event                                                 | High     | As needed               | Covered by existing budgets                      | Local law enforcement, fire depts, County Emergency Services, County Highway Dept, County Aging Dept, and County Health Dept |                                                                 |
| Review and update floodplain zoning ordinances as necessary                                                                      | Medium   | As needed               | Covered by existing budgets                      | County Planning and Park Commission                                                                                          | Updated in 2010; approved by FEMA and WDNR                      |
| Sand-bagging when necessary                                                                                                      | Medium   | As needed               | Covered by existing budgets                      | County Highway Dept, County Emergency Services, local public works depts                                                     |                                                                 |
| Protection of new buildings and other structures through floodplain zoning                                                       | Medium   | As needed               | Costs to be determined based on specific project | County Planning and Park Commission                                                                                          |                                                                 |
| Review and update evacuation procedures for persons located in affected area as needed                                           | Low      | Annually                | Covered by existing budgets                      | County Emergency Services                                                                                                    |                                                                 |
| Issue or deny floodplain development/building permits                                                                            | Medium   | Ongoing                 | Covered by existing budgets                      | County Planning and Park Commission, and cities and villages                                                                 | Addresses NFIP Compliance                                       |
| Inspect all development to assure compliance with local ordinance                                                                | Medium   | Ongoing                 | Covered by existing budgets                      | County Planning and Park Commission, and cities and villages                                                                 | Addresses NFIP Compliance                                       |

Table 4.1 Manitowoc County Hazard Mitigation Action Plan 2020-2025

| Flooding (cont'd)                                                                                                         |          |                   |                             |                                                              |                           |
|---------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-----------------------------|--------------------------------------------------------------|---------------------------|
| Project                                                                                                                   | Priority | Project Timetable | Estimated Cost              | Responsible Party                                            | Notes                     |
| Maintain records of floodplain development                                                                                | Medium   | Ongoing           | Covered by existing budgets | County Planning and Park Commission, and cities and villages | Addresses NFIP Compliance |
| Assist in the preparation and revision of floodplain maps                                                                 | Medium   | Ongoing           | Covered by existing budgets | County Planning and Park Commission, and cities and villages | Addresses NFIP Compliance |
| Help residents obtain information on flood hazard, floodplain map data, flood insurance, and proper construction measures | Medium   | Ongoing           | Covered by existing budgets | County Planning and Park Commission, and cities and villages | Addresses NFIP Compliance |

| Extreme Cold                                                                                                                                                                           |          |                   |                             |                                                                       |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-----------------------------|-----------------------------------------------------------------------|-------|
| Project                                                                                                                                                                                | Priority | Project Timetable | Estimated Cost              | Responsible Party                                                     | Notes |
| Continue to provide safety information to the public during periods of extreme temperature                                                                                             | Medium   | Ongoing           | Covered by existing budgets | American Red Cross, County Emergency Services, and County Health Dept |       |
| Organize outreach to vulnerable populations during periods of extreme temperature, including the establishment and promotion of accessible heating or cooling centers in the community | Medium   | As needed         | Covered by existing budgets | County Health Dept, American Red Cross, and local jurisdictions       |       |

| Extreme Heat                                                                                                                                                                           |          |                   |                             |                                                                       |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-----------------------------|-----------------------------------------------------------------------|-------|
| Project                                                                                                                                                                                | Priority | Project Timetable | Estimated Cost              | Responsible Party                                                     | Notes |
| Continue to provide safety information to the public during periods of extreme temperature                                                                                             | Medium   | Ongoing           | Covered by existing budgets | American Red Cross, County Emergency Services, and County Health Dept |       |
| Organize outreach to vulnerable populations during periods of extreme temperature, including the establishment and promotion of accessible heating or cooling centers in the community | Medium   | As needed         | Covered by existing budgets | County Health Dept, American Red Cross, and local jurisdictions       |       |

| Lightning                                                                                                                   |          |                   |                                                          |                                                  |       |
|-----------------------------------------------------------------------------------------------------------------------------|----------|-------------------|----------------------------------------------------------|--------------------------------------------------|-------|
| Project                                                                                                                     | Priority | Project Timetable | Estimated Cost                                           | Responsible Party                                | Notes |
| Continue to distribute awareness/educational materials to inform public of safety procedures to follow in a lightning storm | Medium   | Ongoing           | Covered by existing budgets                              | County Emergency Services and American Red Cross |       |
| Provide information about protecting structures through use of fire resistant materials                                     | Low      | Ongoing           | Costs to be determined based on project and jurisdiction | Local Building and Fire Inspectors               |       |

Table 4.1 Manitowoc County Hazard Mitigation Action Plan 2020-2025

| Drought                                                                                                                                               |          |                   |                                                 |                                                             |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-------------------------------------------------|-------------------------------------------------------------|-------|
| Project                                                                                                                                               | Priority | Project Timetable | Estimated Cost                                  | Responsible Party                                           | Notes |
| Identification of areas with potential ground water level problems and inspection of shallow wells in those areas for adequate depth and construction | Low      | 2020-2025         | Costs to be determined based on pending studies | WDNR, UW-Extension, County Land and Water Conservation Dept |       |
| Development of water usage regulations during periods of drought by local communities                                                                 | Low      | As needed         | Covered by existing budgets                     | All participating jurisdictions                             |       |
| Encourage citizens to take water-saving measures during periods of drought where regulations are not in place                                         | Low      | As needed         | Covered by existing budgets                     | All participating jurisdictions                             |       |

| Dense Fog                                                    |          |                   |                             |                                  |       |
|--------------------------------------------------------------|----------|-------------------|-----------------------------|----------------------------------|-------|
| Project                                                      | Priority | Project Timetable | Estimated Cost              | Responsible Party                | Notes |
| Dissemination of fog advisories                              | High     | As needed         | Covered by existing budgets | National Weather Service         |       |
| Upkeep existing signage in areas of high fog event incidence | Medium   | As needed         | Covered by existing budgets | County Traffic Safety Commission |       |

| Wildland Fires                                                                                                                                                                                       |          |                   |                                                       |                                                                            |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-------------------------------------------------------|----------------------------------------------------------------------------|-------|
| Project                                                                                                                                                                                              | Priority | Project Timetable | Estimated Cost                                        | Responsible Party                                                          | Notes |
| Encourage citizens to install and maintain smoke detectors and fire extinguishers on each floor of their homes or other buildings                                                                    | High     | Ongoing           | Covered by existing budgets                           | Local fire depts, all participating jurisdictions, and building inspectors |       |
| Schedule regular training and exercise sessions for response personnel                                                                                                                               | High     | Ongoing           | Covered by existing budgets                           | All participating jurisdictions and WDNR                                   |       |
| Develop local ordinances to require burn permits and restriction of campfires and outdoor burning                                                                                                    | Medium   | 2020-2025         | Costs to be determined based on needs of jurisdiction | All participating jurisdictions and WDNR                                   |       |
| Coordinate public outreach efforts to promote such things as non-combustible roof covering, fire safe construction, safe burning, and the importance of clearing brush and grass away from buildings | Low      | As needed         | Covered by existing budgets                           | Local fire depts, and all participating jurisdictions                      |       |

| Coastal Hazards                                                                                                           |          |                   |                             |                            |       |
|---------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-----------------------------|----------------------------|-------|
| Project                                                                                                                   | Priority | Project Timetable | Estimated Cost              | Responsible Party          | Notes |
| Continue to enforce greater setbacks for properties adjacent to Lake Michigan under the county shoreland zoning ordinance | Medium   | As needed         | Covered by existing budgets | County Planning Department |       |

| Land Subsidence                            |          |                   |                             |                                |       |
|--------------------------------------------|----------|-------------------|-----------------------------|--------------------------------|-------|
| Project                                    | Priority | Project Timetable | Estimated Cost              | Responsible Party              | Notes |
| Provide information to residents as needed | Low      | Ongoing           | Covered by existing budgets | Dependent on assistance needed |       |

Table 4.2 Mitigation Strategies for Communities in Manitowoc County 2020-2025

| Hazard Type              | Mitigation Measures                                                                                                                                                                    | Costs of Project                            | Responsible Parties                                                                       | Project Timetable  | Priority |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------|--------------------|----------|
| City of Manitowoc        |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Acquire, promote and make available 10-year smoke detectors and 7-year CO detectors to in-need residents                                                                               | \$10,000 initial startup, then \$3,000/year | Manitowoc City Fire Department                                                            | Ongoing            | Medium   |
| All Hazards              | Standby power generation for drinking water facilities                                                                                                                                 | \$3,000,000                                 | Manitowoc Public Utilities                                                                | 2023               | Medium   |
| Extreme Cold             | Add protection against frazil ice and water intake freezing                                                                                                                            | \$2,500,000                                 | Manitowoc Public Utilities                                                                | 2023               | Medium   |
| City of Two Rivers       |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Increase the number of warming shelters with working kitchens and sufficient restrooms and showers                                                                                     | \$46,771                                    | City of Two Rives and Two Rivers Water & Light                                            | Completed          | High     |
| City of Kiel             |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Severe weather education; promote planning by residents on how to respond, protect and endure emergency weather events                                                                 | Covered by existing budgets                 | City of Kiel Emergency Management, Fire Department, and Police Department                 | Ongoing            | High     |
| Village of Cleveland     |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Install motion sensors at wells No. 1 and 2 and the water tower                                                                                                                        | To be determined                            | Village of Cleveland Public Works                                                         | 2020               | Medium   |
| Village of Francis Creek |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Utilize media for emergency information                                                                                                                                                | Covered by existing budgets                 | Village President/Clerk                                                                   | Ongoing            | Low      |
| Village of Kellnersville |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Expand and harden fire station to be used as emergency shelter/center                                                                                                                  | To be determined                            | Village of Kellnersville, Kellnersville Fire Department, and EMS Volunteer Responder      | 2020               | High     |
| Village of Maribel       |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Promote the use of NOAA weather radios                                                                                                                                                 | \$1,000                                     | Village of Maribel and Manitowoc County Emergency Management                              | Ongoing            | High     |
| Village of Mishicot      |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| Extreme Heat/ Cold       | Organize outreach to vulnerable populations during periods of extreme temperature, including the establishment and promotion of accessible heating or cooling centers in the community | Covered by existing budgets                 | Village of Mishicot and Mishicot Police Department                                        | As needed          | Medium   |
| Village of Reedsville    |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| Tornado and Strong Wind  | Continue to hold tornado safety drills, with siren testing, and schools practicing tornado safety                                                                                      | Covered by existing budgets                 | County Emergency Management, Reedsville Fire and Police Departments, and First Responders | Annually in Spring | High     |
| Village of St. Nazianz   |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Install a second storm siren (received from closed Kewaunee Nuclear plant)                                                                                                             | Covered by existing budgets                 | Village of St. Nazianz and St. Nazianz Fire Department                                    | Completed          | Medium   |
| Village of Valders       |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| Flooding                 | Dredge creek along Eisenhower Street to remove debris                                                                                                                                  | \$250,000                                   | Valders Police Department                                                                 | 2020-2025          | Medium   |
| Flooding                 | Create stormwater runoff waterway along field north of Kennedy Street                                                                                                                  | \$50,000                                    | Valders Police Department                                                                 | 2020-2025          | Medium   |
| Village of Whitelaw      |                                                                                                                                                                                        |                                             |                                                                                           |                    |          |
| All Hazards              | Continued investment in state of the art early warning system                                                                                                                          | \$3,000                                     | Village of Whitelaw and Whitelaw Fire Department                                          | 2020-2025          | Medium   |

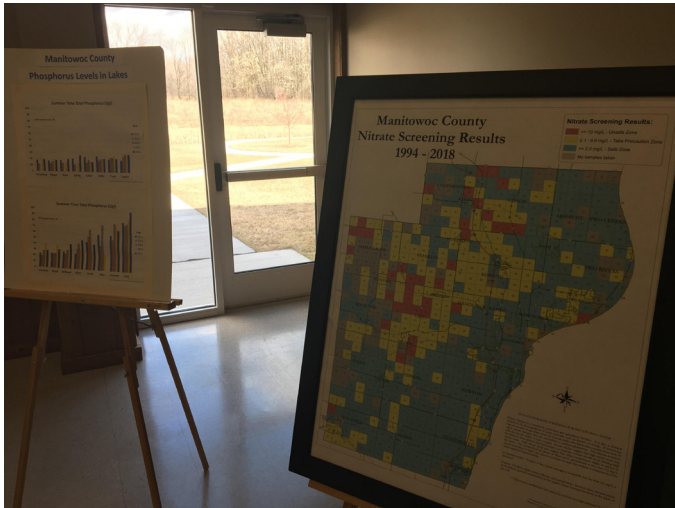
Table 4.3 Manitowoc Public Utilities Mitigation Recommendations & Strategy

| Action Description                                                                                                                                                                                                     | Hazards/Threats                 | Preliminary Cost | Timeframe   | Priority         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------|-------------|------------------|
| Develop unified signage that orientation tools so that employees have clear navigation and direction before, during and after hazard/threats                                                                           | All Hazards                     | \$2,000          | 2019-2024   | Low              |
| Purchase NOAA All-Hazard Radios to notify employees of emergency alerts and hazardous conditions                                                                                                                       | All Hazards                     | \$500            | 2019-2024   | Low              |
| Develop unified signage and materials promoting health and safety of employees; ensure seasonal hazards (such as influenza) are addressed                                                                              | Emerging Infectious Diseases    | \$2,000          | 2019-2024   | Low              |
| Participate in community, county, regional, and other exercises and training for all hazards and threats as available but at a minimum annually, including storm scenarios and threat exercises                        | All Hazards                     | To be determined | Ongoing     | Medium           |
| Engage outage management software to help triage outage repairs                                                                                                                                                        | All Hazards                     | \$200,000        | 2019-2021   | Medium           |
| Purchase and install standby power generation equipment for drinking water facilities (including plants), such as a blackstart generator                                                                               | All Hazards                     | \$3,000,000      | 2019-2024   | High             |
| Study Feasibility                                                                                                                                                                                                      | Winter Storm & Extreme Cold     | \$25,000         | 2019-2024   | Low              |
| Purchase and install emergency steam production for heating jail (life safety for custodial care facility) and sheriff's office and city/county EOC                                                                    | All Hazards                     | \$100,000        | Ongoing     | To be determined |
| Purchase and install emergency steam production for heating Lincoln High School                                                                                                                                        | Winter Storm & Extreme Cold     | \$100,000        | 2019-2024   | Low              |
| Study feasibility of boiler operation during limestone shortage                                                                                                                                                        | All Hazards                     | To be determined | 2019-2024   | Medium           |
| Install backup power to entire main office building so that all equipment will be backed up by standby power to ensure network, phone system, business services, and engineering, and GM availability during an outage | All Hazards                     | \$300,000        | 2019-2024   | High             |
| Identify facilities or spaces in need of portable chiller connections, such as equipment and server rooms: purchase portable chiller units and install connections                                                     | Drought & Extreme Heat          | To be determined | 2019-2024   | Medium           |
| Purchase internal alternate communications equipment in the event phone lines and cell towers are down; train staff on operation and use                                                                               | All Hazards                     | \$5,000          | 2019-2024   | Low              |
| Investigate protection against frazil ice and water intake freezing                                                                                                                                                    | Winter Storm & Extreme Cold     | \$2,500,000      | 2019-2024   | Medium           |
| Bank stabilization for Collector well station                                                                                                                                                                          | Coastal Erosion & Bluff Failure | \$250,000        | 2019-2024   | Medium           |
| Safe room (new construction or retrofit) for control room at power plant                                                                                                                                               | All Hazards & Threats           | \$300,000+       | 2019-2024   | Medium           |
| Install new backup targets to accommodate the additional data storage requirements for backing up all the essential programs                                                                                           | Cyber Incident; Severe Weather  | \$50,000         | 2019-2024   | High             |
| Install lightning protection on MPU assets, including, stacks and other high points                                                                                                                                    | Severe Weather                  | \$250,000        | 2019-2024   | Medium           |
| Study feasibility                                                                                                                                                                                                      | Solar Flares                    | \$20,000         | 2019-2024   | Low              |
| Harden/protect sensitive electrical and communications equipment from the effects of solar storms and other geomagnetic interference                                                                                   | All Hazards                     | \$500,000        | Ongoing     | To be determined |
| Harden/Protect buildings from hazards and threats, to ensure operational capability and structural integrity during and after occurrences                                                                              | All Hazards & Threats           | \$300,000        | 2019-2024   | Medium           |
| Develop/maintain a hazard and risk data repository, which details all MPU assets including location and replacement cost for both asset and contents                                                                   | All Hazards                     | \$5,000+         | In-progress | Medium           |
| Fireproof Main Office to protect files, paper archives, and data                                                                                                                                                       | Wildfire                        | \$40,000+        | 2019-2024   | Low              |
| Develop and exercise a business continuity plan for all departments and activities                                                                                                                                     | All Hazards                     | \$50,000+        | 2019-2024   | High             |



Table 4.3 Manitowoc Public Utilities Mitigation Recommendations & Strategy (Cont'd)

| Action Description                                                                                                                                                                                                                                                                                                                                                                                   | Hazards/Threats                                                          | Preliminary Cost | Timeframe | Priority |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|------------------|-----------|----------|
| Study feasibility for installation of standby generation equipment and procedures to ensure that its power plant and distribution system can function independently of the electrical grid and transmission network during severe storm, winter storm, and excessive heat hazards. This would ensure a power source remains available for electrical distribution, water plant, and district heating | Severe Storms, Winter Weather & Extreme Cold, and Drought & Extreme Heat | To be determined | 2019-2024 | High     |
| Install standby generation                                                                                                                                                                                                                                                                                                                                                                           | Severe Storms, Winter Weather & Extreme Cold, and Drought & Extreme Heat | \$10,000,000     | 2019-2024 | High     |
| Install security cameras at critical locations which do not have coverage following 2017 upgrades                                                                                                                                                                                                                                                                                                    | All Hazards                                                              | To be determined | 2019-2024 | Low      |



# Hazard Plan

### **Policies, Programs, and Resources for Mitigation**

Manitowoc County has a number of authorities that enforce policies, execute programs, and provide resources that support the mitigation action plan for reducing potential losses identified in the risk assessment. These authorities have been identified under the responsible parties (where applicable) in the mitigation action plan (Table 4.1), and include the following;

- **Manitowoc County Planning and Park Commission**

Policies and programs include planning and zoning (including enforcement of county shoreland and floodplain management regulations).

- **Manitowoc County Emergency Services**

Policies and programs include coordinating effective disaster response and recovery efforts in the county through response, recovery, planning, training, and exercises, and mitigation.

- **Fire Departments and Emergency Medical Services**

Policies and programs include coordinating emergency preparedness, mitigation, response, and recovery efforts.

- **Law Enforcement**

Policies and programs include coordinating emergency preparedness, mitigation, response, and recovery efforts.

- **Manitowoc County Joint Dispatch Center**

Policies and programs include coordinating emergency response and recovery efforts with regard to communication between the public and police, fire, and EMS.

- **Manitowoc County Highway Department**

Policies and programs include road maintenance, stormwater management, and management of salt storage for winter storms.

- **Manitowoc County Health Department**

Policies and programs focus on protecting and promoting the health and safety of the people in the county in cooperation with community partners (includes assisting citizens with emergency preparedness).

- **Wisconsin Emergency Management**

Policies and programs include supporting effective disaster response and recovery efforts in support of local government through planning, training, and exercises.

- **Wisconsin Department of Natural Resources**

Relevant policies and programs include regulation enforcement of state shoreland and floodplain management rules, and wildland fire response and education.

- **Power Utilities (Manitowoc Public Utilities, Kiel Utilities, Two Rivers Water & Light, Wisconsin Public Service, WE Energies)**

Policies and programs include maintaining electrical power and transmission facilities.

- **American Red Cross**

Policies and programs include disaster relief and educational programs that promote health and safety.

- **National Weather Service (Green Bay Regional Office)**

Policies and programs include publicizing information, and providing outreach and education about hazardous weather.

These authorities have the ability to expand or modify their programs when needed to improve existing tools to address mitigation. Manitowoc County has taxing authority through property taxes to raise funds for the purpose hazard mitigation. Additional funding sources for hazard mitigation actions are available from a number of federal and state grant programs.

### **Potential Funding Sources for Mitigation Activities**

Funding for hazard mitigation programs and projects can come from a number of sources both public and private. Non-local funding can come from a number of sources, either in the form of a grant or a loan. The following text provides a description of a number of potential grant programs available to Manitowoc County (or other entities seeking to carry out hazard mitigation actions) in funding future mitigation actions identified in this plan:

#### ***EDA Public Works and Development Facilities***

These funds are available for local units of government to enhance regional competitiveness and promote long-term economic development in regions experiencing substantial economic distress. EDA provides Public Works investments to help distressed communities and regions revitalize, expand, and upgrade their physical infrastructure to attract new industry, encourage business expansion, diversify local economies, and generate or retain long-term private sector jobs and investment.



**FEMA Assistance to Firefighters Grant**

The primary goal of the Assistance to Firefighters Grants (AFG) is to meet the firefighting and emergency response needs of fire departments and non-affiliated emergency medical services organizations. The AFG program helps firefighters and other first responders to obtain critically needed equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. The National Preparedness Directorate in the Federal Emergency Management Agency administers the grants in cooperation with the U.S. Fire Administration. The Fire Prevention and Safety Grants (FP&S) are part of the Assistance to Firefighters Grants (AFG) and are under the purview of the National Preparedness Directorate in the Federal Emergency Management Agency. FP&S grants support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and mitigate high incidences of death and injury.

**FEMA Flood Mitigation Assistance Program**

The Flood Mitigation Assistance (FMA) program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program. Eligible activities include: acquisition, relocation, elevation, and flood-proofing of flood-prone insured properties; flood mitigation planning; and technical assistance. In order to be eligible for funding through this program the local government must be in compliance with the National Flood Insurance Program.

**FEMA Hazard Mitigation Grant Program**

The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. Eligible activities include: flood proofing; acquisition and relocation of flood prone properties; elevation of flood prone properties; retrofitting properties to be wind resistant; stormwater improvements; and education and awareness. In order to be eligible for funding through this program, the local government must be in compliance with the National Flood Insurance Program. All projects must be cost-effective, environmentally sound, and solve a problem. Funds are available anytime after a Presidential Disaster Declaration has been made in the State of Wisconsin.

**FEMA Pre-Disaster Mitigation Program**

The Pre-Disaster Mitigation (PDM) program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds. Grant funds can be used to cover management costs, information dissemination, planning, technical assistance, and mitigation projects. In order to be eligible for funding through this program the local government must be in compliance with the National Flood Insurance Program. All projects must be cost-effective and environmentally sound.

**Pipeline and Hazardous Materials Safety Administration, Hazardous Materials Emergency Preparedness**

The Hazardous Materials Emergency Preparedness (HMEP) grant program is intended to provide financial and technical assistance as well as national direction and guidance to enhance State, Territorial, Tribal, and local hazardous materials emergency planning and training. The HMEP Grant Program distributes fees collected from shippers and carriers of hazardous materials to emergency responders for hazmat training and to Local Emergency Planning Committees (LEPCs) for hazmat planning.

**U.S. Department of Education School Emergency Response and Crisis Management Plan Discretionary Grant Program**

This grant program is designed to provide funds to Local Education Agencies (LEA) to strengthen and improve their emergency response and crisis plans, at the district and school-building level. Grantees are required to address all four phases of crisis planning: prevention and mitigation, preparedness, response, and recovery. In addition, LEAs are required to form partnerships and collaborate with community organizations, local law enforcement agencies, heads of local governments, and offices of public safety, health, and mental health as they review and revise school crisis plans. Plans must be coordinated with state or local homeland security plans and support implementation of the National Incident Management System (NIMS). Grant funds may be used for the following activities: training school safety teams and students; conducting building and facilities audits; communicating emergency response policies to parents and guardians; implementing an Incident Command System (ICS); purchasing school safety equipment (to a limited extent); conducting drills and tabletop simulation exercises; and preparing and distributing copies of crisis plans.

### **State of Wisconsin Programs**

#### ***WDNR Lake Planning Grant Program***

Counties, towns, cities, villages, tribes, qualified non-profit conservation organizations, qualified lake associations, school districts (in partnership with another eligible party), public inland lake protection and rehabilitation districts, town sanitary districts, and other local governmental units that are established for the purpose of lake management, are eligible to apply for funding to collect and analyze information needed to protect and restore lakes and their watersheds.

Eligible activities include: gathering and analysis of physical, chemical, and biological information on lakes; describing present and potential land uses within lake watersheds and on shorelines; reviewing jurisdictional boundaries and evaluating ordinances that relate to zoning, sanitation, or pollution control or surface use; assessments of fish, aquatic life, wildlife, and their habitats; and developing, evaluating, publishing, and distributing alternative courses of action and recommendations in a lake management plan.

#### ***WDNR Municipal Flood Control Grant Program***

The Wisconsin Department of Natural Resources, Bureau of Community Financial Assistance and Bureau of Watershed Management, offers this grant assistance package to all cities, villages, towns, Indian Tribes, and metropolitan sewerage districts concerned with municipal flood control management in the State of Wisconsin. Assistance is provided with the availability of Acquisition and Development grants to purchase property or vacant land, structure removal, construction or other development costs and with Local Assistance Grants for providing administrative support activities.

#### ***WDNR River Planning Grant Program***

Under this grant program, counties, cities, towns, villages, tribes, other local governmental units, qualified river management organizations, and qualified nonprofit conservation organizations are eligible to apply for funding under this program. Projects funded by this program must be designed to collect, assess and disseminate information on riverine ecosystems; assist in developing organizations to help manage rivers; assist the public in understanding riverine ecosystems; and/or create management plans for the long term protection and improvement of riverine ecosystems. Eligible activities include: organizational development for existing river protection/improvement organizations; assistance with the formation of a qualified river management organization; public education projects; and planning and assessment projects. Capital improvement projects are not eligible for funding under this grant.

#### ***WDNR Volunteer Fire Assistance Grant***

Volunteer Fire Assistance (VFA) grants are available to Wisconsin county/area fire associations statewide. Grant funding is intended to support wildland fire suppression capabilities in an area through broad-ranging projects of benefit to all of the local fire departments. Successful applications will have a positive impact on the prevention, detection, and suppression of wildland fires in all of the communities served by a county/area fire association. Grant funds can be used for: fire fighter safety; fire fighter training; fire prevention (particularly in the Wildland Urban Interface); dry hydrants and other water resources; mapping; enhanced communications; wildland fire suppression equipment; and the organization of a new fire department.

#### ***WDOA Comprehensive Planning Grant Program***

The Division of Intergovernmental Relations administers the Wisconsin Comprehensive Planning Grant Program to assist local governments in the development and adoption of comprehensive plans. The Comprehensive Planning Grant Program has established a framework that promotes cooperation, collaboration and the exchange of ideas relating to planning and land use issues.

#### ***WDOA, Division of Housing and Intergovernmental Relations, Emergency Housing Grant Program***

This program makes available funds for acquisition, rehabilitation, and/or demolition projects after a disaster event has occurred. These funds can be used as a local match to receive FEMA mitigation funds. The project must be used to benefit low and moderate income individuals.



## Chapter 5 - Plan Adoption and Maintenance

### **Plan Adoption Process**

The Manitowoc County, Wisconsin Hazard Mitigation Plan development process was guided by the County Hazard Mitigation Plan Steering Committee over an 18-month time-frame, with professional planning support from the Bay-Lake Regional Planning Commission. A list of Steering Committee members is located in Chapter 1 - Introduction of this document, page 9.

WEM reviewed a final draft of the County's hazard mitigation plan prior to adoption by the Manitowoc County Board. Comments received from WEM and no changes were required.

The plan was adopted by resolution by the Manitowoc County Board on January 21, 2020. The resolution adopting the plan can be found on page (I) just before the Table of Contents. After the plan was adopted by the Manitowoc County Board, it was approved by WEM and FEMA. Approval letters from WEM and FEMA can be found on pages (II, III, IV).

### **Plan Maintenance**

Planning is an ongoing process, and this plan should grow and adapt in order to keep pace with growth and change in the planning area and its local jurisdictions. The Disaster Mitigation Act of 2000 requires that local plans be evaluated and updated at least every five years in order to remain eligible for assistance.

### **Plan Monitoring, Evaluation, and Updating**

This Manitowoc County, Wisconsin Hazard Mitigation Plan is an update to the 2014 plan, and will continue to be monitored, evaluated, and updated by Manitowoc County. Every five years, the plan will be comprehensively reviewed, and fully updated. The update shall involve the collection of the most current data to support the plan and the development of new mitigation strategies and an implementation plan. This planning effort will be comprehensive, and will incorporate opportunities for public involvement to meet all requirements of 44 CFR Part 201.6 and/or any applicable requirements or regulations developed over the next five years.

The five-year plan update will be coordinated by either the Manitowoc County Planning Department or the Emergency Management Director for County Board approval. All meetings to update the plan shall be subject to the Wisconsin Open Meeting Law, and shall be properly noticed to allow for public involvement and comment.

### **Additional Plan Review**

Within three to six months following a significant natural hazard event, a special post-disaster review will occur. Information concerning the disaster shall be collected by the Manitowoc County Emergency Services from local law enforcement personnel, fire department personnel, disaster response personnel, Wisconsin Emergency Management staff, FEMA staff, affected citizens, and any other pertinent entities. This information shall be provided to the Steering Committee for its review.

At a public meeting, the Steering Committee will analyze the contributing factors to the impact(s) of the hazard event, the likelihood of the event recurring, and any strategies that should be implemented to mitigate the impact(s) in the future. The County Emergency Management Director will have primary responsibility for establishing post-disaster review meeting dates, distributing related materials, facilitating the meetings, and advertising these special meetings to affected county department heads and citizens and community groups, so that additional input and comment can be received. Special post-disaster review meetings shall be subject to the Wisconsin Open Meeting Law and shall be properly noticed to allow for public involvement and comment.

The Steering Committee may choose to revise or amend the existing County plan based on what is learned in the review process. Any recommended changes to the plan shall be forwarded to the Manitowoc County Board for its action and consideration.



## **Plan Coordination**

The mitigation action plan (provided in Chapter 4) ties the mitigation strategies to related plans or policies. As the county and jurisdictions in the planning area develop or update their comprehensive plans, incorporation of this Hazard Mitigation Plan is highly recommended. The Wisconsin comprehensive planning law includes a detailed description of elements that need to be addressed in all comprehensive plans. The following items must be considered when incorporating this Hazard Mitigation Plan into the required elements of local comprehensive plans for jurisdictions in the planning area:

- **Issues and Opportunities Element**

A summary of major hazards that local governments are vulnerable to, and what is proposed to be done to mitigate future losses from the hazards.

- **Housing Element**

An inventory of the properties that are in the floodplain boundaries, the location of mobile homes, recommendations concerning building codes, shelter opportunities, and a survey of homeowners that may be interested in a voluntary buyout and relocation program.

- **Transportation Element**

Identify any transportation routes or facilities that are more at risk during flooding or winter storms.

- **Agricultural, and Natural and Cultural Resources Element**

Identify the floodplains and agricultural areas that are at risk during hazardous events. Incorporate recommendations on how to mitigate future losses to these areas.

- **Economic Development Element**

Describe the impacts that past hazards have had on area businesses.

- **Intergovernmental Cooperation Element**

Identify intergovernmental police, fire and rescue service sharing agreements that are in effect or which may merit further investigation, and consider cost sharing and resource pooling of government services and facilities.

- **Land Use Element**

Describe how flooding has impacted land uses and what is being done to mitigate negative land use impacts from flooding; map and identify natural hazard areas, such as floodplains and soils with limitations.

- **Implementation Element**

Recommended actions from this plan included in the implementation element of comprehensive plans of all jurisdictions in the planning area.

To maximize coordination with other related plans for Manitowoc County, mitigation strategies recommended in this plan have been and should continue to be considered when developing capital improvement plans, stormwater management plans, or flood mitigation plans.

A number of plans, reports, and technical data were referenced and incorporated into the Manitowoc County, Wisconsin Hazard Mitigation Plan. The following is a comprehensive list of the data and reports that were utilized in plan development:

- Population, housing, and employment data from the Bureau of the Census (2010), and American Community Survey Estimates
- Bay-Lake Regional Planning Commission land use inventory data (2015);
- State of Wisconsin Hazard Mitigation Plan (2016) was used to develop hazard descriptions for the risk assessment;
- FEMA Local Mitigation Plan Review Guide (2011) was used to ensure the plan contained all required information;
- Past hazard occurrences were obtained from National Oceanic and Atmospheric Administration (NOAA) – National Climatic Data Center – severe weather event data (January 2000 – October 2018);
- U.S. Geological Survey maps on landslides, land subsidence and earthquakes were used to describe those hazards;
- FEMA Flood Insurance Studies and FEMA Flood Insurance Rate Maps (FIRMs) were used to map floodplain areas;
- Parcel data from Manitowoc County was used to determine impacts of hazards with defined areas;
- Assessed valuation data from Manitowoc County was used to derive estimates of potential dollar losses;
- Manitowoc County Emergency Operations Plan contributed to the development of the mitigation action plan;
- Manitowoc County Comprehensive Plan was used to develop the community profile and contributed to the development of the mitigation action plan;
- Local municipal comprehensive plans contributed to the development of the mitigation action plan; and
- FEMA Mitigation Ideas: A Resource Risk to Natural Hazards (2013) contributed to the development of the mitigation action plan.

It is recommended that similar materials be referenced when completing any updates to the hazard mitigation plan.

# APPENDIX A - Steering Committee Sign-in Sheets

Sign-In Sheet: PDM Kick-Off Meeting – February 11, 2019

| Name                    | Agency                     |
|-------------------------|----------------------------|
| Amanda Fox              | Manity Co EM               |
| Steve Bacalzo           | MPU                        |
| Matt Payette            | Village of Francis Creek   |
| Angela Kawalzek-Adrians | Bay-Lake RPC               |
| Tim Ryan                | Manitowoc City Planning    |
| Cathy Delain            | " " "                      |
| Gerry Neuser            | Manitowoc County DPW       |
| Denise Smith            | Point Beach Nuclear EM     |
| Jed Blaser              | Manitowoc Fire Rescue      |
| Mary Halado             | Manitowoc Co. Health Dept. |
| Lexi Otis               | Manitowoc Co. Health Dept. |
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Sign-In Sheet: Hazard Mitigation Steering Committee – 5/16/19

| Name             | Agency                      |
|------------------|-----------------------------|
| Amanda Fox       | Manitowoc Co Emg Svcs       |
| Travis Waack     | MANITOWOC Co Emg Svcs       |
| Mary Halado      | Health Dept.                |
| Lexi Otis        | Health Department           |
| Cathy Delain     | M.C. GIS office             |
| Andrea Raymakers | Manitowoc Planning & Zoning |
| Matt Payette     | Village of Francis Creek    |
| Madison Smith    | BLRPC                       |
| Steve Bacalzo    | Manitowoc Public Utilities  |
| Gerry Neuser     | Manitowoc County DPW        |
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Sign-In Sheet: Hazard Mitigation Planning Committee – July 17, 2019

| Name             | Agency                             |
|------------------|------------------------------------|
| Amanda Fox       | Manitowoc County EM                |
| Jamie Aulok      | City of Kiel                       |
| Lexi Otis        | Manitowoc County Health Department |
| Mary Halado      | " "                                |
| STEVE BACALZO    | MANITOWOC PUBLIC UTILITIES         |
| Gerry Neuser     | Manitowoc County DPW               |
| Andrea Raymakers | Manitowoc County P&Z               |
| Cathy Delain     | " " "                              |
| TRAVIS WAACK     | MANITOWOC COUNTY EM                |
| Madison Smith    | Bay-Lake RPC                       |
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Sign-In Sheet: Hazard Mitigation Meeting – October 3, 2019

| Name          | Agency                              |
|---------------|-------------------------------------|
| Amanda Fox    | Manitowoc County Emg Svcs           |
| Madison Smith | Bay-Lake RPC                        |
| Cathy Delain  | M.C. GIS office                     |
| GERRY NEUSER  | MC DPW                              |
| Mary Halado   | Manitowoc Co Health Dept.           |
| Lexi Otis     | " "                                 |
| Jamie Aulok   | City of Kiel                        |
| TRAVIS WAACK  | Manitowoc County Emergency Services |
| Tim Ryan      | Manitowoc Planning                  |
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Sign-In Sheet: Hazard Mitigation Plan Public Meeting  
November 11<sup>th</sup>, 2019

| Name          | Organization        |
|---------------|---------------------|
| TRAVIS WAACK  | MANITOWOC COUNTY EM |
| Madison Smith | Bay-Lake RPC        |
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## AGENDA

MANITOWOC COUNTY  
HAZARD MITIGATION PLAN UPDATE  
STEERING COMMITTEE MEETING  
**MONDAY, FEBRUARY 11, 2018**  
1:00 PM – 3:00 PM

MANITOWOC COUNTY EMERGENCY OPERATIONS CENTER (EOC)  
1024 S 9TH STREET, MANITOWOC, WI 54220

1. Introduction
2. Public comment
3. Project description - overview of planning process and plan content
4. Review project schedule/expectations of steering committee
5. Review/update the following elements from previous plan (2014)
  - a) goals
  - b) hazard risks and ratings
  - c) critical facilities categories
  - d) mitigation strategies
6. Discuss next steps
7. Schedule next meeting

**Project Contacts:**  
Travis Waack, Emergency Management: [traviswaack@co.manitowoc.wi.us](mailto:traviswaack@co.manitowoc.wi.us); 920-323-4207  
Amanda Fox, Emergency Management: [amandafox@co.manitowoc.wi.us](mailto:amandafox@co.manitowoc.wi.us); 920-483-4360  
Angela Kowalski-Adams, Bay-Lake Regional Planning Commission: [akowalski@baylake.org](mailto:akowalski@baylake.org); 920-448-2820, Ext. 106

Any person wishing to attend this meeting who, because of a disability, requires special accommodations should contact County Emergency Management at (920) 459-3360 two working days prior to the meeting so that arrangements can be made.



## AGENDA

MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE  
STEERING COMMITTEE MEETING

**THURSDAY, MAY 16, 2019**  
2:00 PM – 4:00 PM

MANITOWOC COUNTY EMERGENCY OPERATIONS CENTER (EOC)  
1024 S 9TH STREET, MANITOWOC, WI 54220

1. Introduction
2. Public comment
3. Recap of previous meeting
4. Review goals and hazard risks and ratings
5. Discuss potential man-made/technological hazard additions
6. Review critical facilities
7. Review Draft Chapters 1-2 of the plan
8. Continue updating the mitigation strategies
9. Discuss next steps
10. Schedule next meeting

**Project Contacts:**  
Travis Waack, Emergency Management: [traviswaack@co.manitowoc.wi.us](mailto:traviswaack@co.manitowoc.wi.us); 920-323-4207  
Amanda Fox, Emergency Management: [amandafox@co.manitowoc.wi.us](mailto:amandafox@co.manitowoc.wi.us); 920-483-4360  
Madison Smith, Bay-Lake Regional Planning Commission: [msmith@baylake.org](mailto:msmith@baylake.org); 920-448-2820, Ext. 106

Any person wishing to attend this meeting who, because of a disability, requires special accommodations should contact County Emergency Management at (920) 459-3360 two working days prior to the meeting so that arrangements can be made.



## AGENDA

MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE  
STEERING COMMITTEE MEETING

**WEDNESDAY, JULY 17, 2019**  
2:00 PM – 4:00 PM

MANITOWOC COUNTY EMERGENCY OPERATIONS CENTER (EOC)  
1024 S 9TH STREET, MANITOWOC, WI 54220

1. Introduction
2. Public comment
3. Recap of previous meeting
  - Updated demographics
  - City of Kiel discussion
4. Review critical facilities
  - Discuss mobile homes
  - Discuss communication facilities
5. Review Chapter 3 and Maps
  - Modify prioritization of hazards from previous plan
  - Review historical summary of hazard events
  - Review villages not participating in the NFP
6. Review Chapter 4 and 5 next meeting
  - Goals
  - Mitigation action plan

Schedule next meeting

**Project Contacts:**  
Travis Waack, Emergency Management: [traviswaack@co.manitowoc.wi.us](mailto:traviswaack@co.manitowoc.wi.us); 920-323-4207  
Amanda Fox, Emergency Management: [amandafox@co.manitowoc.wi.us](mailto:amandafox@co.manitowoc.wi.us); 920-483-4360  
Madison Smith, Bay-Lake Regional Planning Commission: [msmith@baylake.org](mailto:msmith@baylake.org); 920-448-2820, Ext. 106

Any person wishing to attend this meeting who, because of a disability, requires special accommodations should contact County Emergency Management at (920) 459-3360 two working days prior to the meeting so that arrangements can be made.



## AGENDA

MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE  
STEERING COMMITTEE MEETING

**WEDNESDAY, OCTOBER 3, 2019**  
2:00 PM – 4:00 PM

MANITOWOC COUNTY EMERGENCY OPERATIONS CENTER (EOC)  
1024 S 9TH STREET, MANITOWOC, WI 54220

1. Introduction
2. Public comment
3. Recap of previous meeting
  - Minutes
  - Review updated critical facilities, number of events, cost of events
4. Review & approve Chapter 4
  - Follow up discussion with individual municipalities mitigation measures
  - Discuss additions to mitigation measures
5. Review Chapter 5
  - Review Chapter 5
  - Review plan entirely
  - Move to adapt plan as final draft (F)
6. Plan and Discuss Open House
  - Discuss Resolution & Adoption Process
  - Review press notice and open house

**Project Contacts:**  
Travis Waack, Emergency Management: [traviswaack@co.manitowoc.wi.us](mailto:traviswaack@co.manitowoc.wi.us); 920-323-4207  
Amanda Fox, Emergency Management: [amandafox@co.manitowoc.wi.us](mailto:amandafox@co.manitowoc.wi.us); 920-483-4360  
Madison Smith, Bay-Lake Regional Planning Commission: [msmith@baylake.org](mailto:msmith@baylake.org); 920-448-2820, Ext. 106

Any person wishing to attend this meeting who, because of a disability, requires special accommodations should contact County Emergency Management at (920) 459-3360 two working days prior to the meeting so that arrangements can be made.

### Meeting Notes

#### Manitowoc County Hazard Mitigation Plan Steering Committee

**February 11, 2019**  
1 – 3 pm

##### Steering Committee Members Present:

Amanda Fox – Manitowoc Co Emergency Services  
Angela Kowalski-Adams – Bay-Lake RPC  
Cathy Delain – Manitowoc County GIS  
Cathy Ley – Manitowoc County Aging and Disability Resource Center  
Denny Smith – Point Beach Nuclear – NextEra Energy  
Gerry Neuser – Manitowoc County Public Works  
Mary Halada – Manitowoc County Public Health  
Lexi Otis – Manitowoc County Public Health  
Matt Payette – Village of Francis Creek  
Steve Bacalzo – Manitowoc Public Utilities  
Tim Ryan – Manitowoc County Planning & Zoning  
Todd Blaser – Manitowoc Fire & Rescue

- Introductions were made.
- An overview of the hazard mitigation planning process and plan content was provided along with some informational handouts.
  - o The current county hazard mitigation plan (2014) is available here: <https://baylake.org/wp-content/uploads/2014/02/HMP-2014.pdf>
- The project schedule and expectations of the steering committee was reviewed and discussed. There will be approximately 4-5 meetings of the steering committee and a public informational meeting. The steering committee will update the critical facilities list, the mitigation goals and action plan, and review the plan chapters.
- The plan goals and hazard risks and rankings from the previous plan were reviewed along with a handout providing NCEC (National Climatic Data Center) data on natural hazard events occurring in Manitowoc County between 2000 and 2018. The Steering Committee re-ranked the hazards based on consideration of past occurrences and their impacts.
- A hand-out listing the critical facilities identified in the previous plan was reviewed. Some changes were made to the naming of types. The Steering Committee will continue to work on the critical facilities list at the next meeting.
- A hand-out listing the mitigation strategies developed in the previous plan was reviewed and updates were made to some of the projects, target dates, costs, and responsible parties. The Steering Committee will continue to work on the mitigation action plan at the next meeting.

### Meeting Notes

#### Manitowoc County Hazard Mitigation Plan Steering Committee

**May 16, 2019**  
2 - 4 pm

##### Steering Committee Members Present:

Amanda Fox – Manitowoc County Emergency Services  
Madison Smith – Bay-Lake RPC  
Cathy Delain – Manitowoc County GIS  
Gerry Neuser – Manitowoc County Public Works  
Mary Halada – Manitowoc County Public Health  
Lexi Otis – Manitowoc County Public Health  
Matt Payette – Village of Francis Creek  
Steve Bacalzo – Manitowoc Public Utilities  
Andrea Raymakers – Manitowoc County Planning & Zoning (in place of Tim Ryan)  
Travis Waack – Manitowoc County Emergency Services

- Introductions were made.
- No public comment.
- Recap of previous meeting and minutes.
- The steering committee reviewed chapters 1 and 2 of the plan. Bay-Lake RPC will research more recent demographic statistics to go with the 2010 Census data for population, projected population, and housing units. Bay-Lake RPC will add additional information data pertaining to industries in Manitowoc County.
- Steering committee reviewed the location map, and land-use map. Questions about City of Kiel entirely added or partially. BLRPC will contact Jamie Aulik.
- The steering committee reviewed the critical facilities list. Discussed updating schools and daycares. Discussed cell towers, and any additional critical facilities that need to be included and mapped. Add the Manitowoc County Emergency Operations Center (EOC), and radio towers within communication towers. The Steering Committee decided to not add man-made/technological hazards. Discussed Climate Change impacts, decided against adding that this plan.
- The Steering Committee updated all mitigation strategies, and will work on the mitigation action plan at the next meeting.
- Chapter 3 will be reviewed at the next meeting.

##### Action Items:

- First week of December the public comment meeting will be held
- December 17, County Board Meeting

### Meeting Notes

#### Manitowoc County Hazard Mitigation Plan Steering Committee

**July 17, 2019**  
2 - 4 pm

##### Steering Committee Members Present:

Amanda Fox – Manitowoc County Emergency Services  
Madison Smith – Bay-Lake RPC  
Cathy Delain – Manitowoc County GIS  
Gerry Neuser – Manitowoc County Public Works  
Jamie Aulik – City of Kiel  
Lexi Otis – Manitowoc County Public Health  
Steve Bacalzo – Manitowoc Public Utilities  
Andrea Raymakers – Manitowoc County Planning & Zoning (in place of Tim Ryan)  
Travis Waack – Manitowoc County Emergency Services

- Introductions were made.
- No public comment.
- Recap of previous meeting and minutes.
  - Updated Demographics
  - Madison will send the committee electronically to view
  - Industry data was added.
  - The committee has chosen to include the entirety of the City of Kiel in its Hazard Mitigation Plan rather than split the City between Manitowoc and Calumet Counties.
  - City of Kiel Administrator Jamie Aulik was in attendance; he will notify Calumet County's Emergency Manager Bernie Sorenson.
- Review Critical Facilities
  - Used online web app created to view critical facilities
  - Reviewed list of mobile home parks in the County
  - Determined some mobile home parks may be missing or no longer active; Mary Halada will provide a current list of licensed mobile home parks in the County.
  - Cathy Delain will compare past comprehensive list of communications facilities to current list to determine if any changes should be made
  - The committee chose to label communications facilities generically and not label each individual tower's usage
  - Critical facilities and maps were approved.
- Review Chapter 3 and Maps
  - Review Historical Summary of Hazard Events
  - Review Villages Not Participating in the NFP
  - Determined that Marbel, St. Nazianz, Valders, and Whitelaw are not participating as they do not have special hazard areas for flooding

### Meeting Notes

#### Manitowoc County Hazard Mitigation Plan Steering Committee

**October 3, 2019**  
2 - 4 pm

##### Steering Committee Members Present:

Amanda Fox – Manitowoc County Emergency Services  
Madison Smith – Bay-Lake RPC  
Cathy Delain – Manitowoc County GIS  
Gerry Neuser – Manitowoc County Public Works  
Jamie Aulik – City of Kiel  
Mary Halada – Manitowoc County Public Health  
Lexi Otis – Manitowoc County Public Health  
Tim Ryan – Manitowoc County Planning & Zoning  
Travis Waack – Manitowoc County Emergency Services

- Introductions were made.
- No public comment.
- Recap of previous meeting and minutes.
  - Review Critical Facilities
  - Review historic events and cost of events
  - Include link to online critical facilities maps
  - Approved all updates and new maps for chapter 3
  - Revisions of Table, Map, and Figure headings to be made
- Review and approved Chapter 4
  - Discussed individual municipalities mitigation measure updates
  - Continued to update mitigation measures
  - Add City of Manitowoc's mitigation measures following other municipalities
  - Approved Chapter 4
- Review Chapter 5
  - No changes made, move to approve with small grammar changes
- Discussions about next steps
  - Open House – circulate invite; public notice, social media.
  - 30 day public review prior to open house, plan will be available online.

##### Action Items:

- Draft Plan approved by the steering committee
- Public Open House on November 11, 2019
- December 17, County Board Meeting?



## APPENDIX B - Multi-Jurisdictional Cooperation

As a way to ensure accurate data and multi-jurisdictional cooperation in the update of the county's hazard mitigation plan, the steering committee and Bay-Lake Regional Planning Commission engaged the local communities in a cooperation exercise to review and provide input on plan materials.

Communities were provided a listing of their critical facilities, goals identified in the plan, and hazards mitigation actions, and were asked to review and comment on the materials. Additionally, they were asked to identify mitigation actions specific to their community. The following is the letter that was sent to the municipalities in Manitowoc County.



December 20, 2018

RE: Request for Review of Hazard Mitigation Materials

(Please forward to the Plan Commission or Council/Board)

The Manitowoc County Emergency Management and the Bay-Lake Regional Planning Commission have been working with a local steering committee to update the Hazard Mitigation Plan for Marinette County and the municipalities.

The Federal Disaster Mitigation Act of 2000 established a requirement for local governments to prepare a hazard mitigation plan to be eligible for funding from FEMA through the Pre-Disaster Mitigation Grant Program, the Flood Mitigation Assistance Program, the Hazard Mitigation Grant Program, and disaster assistance.

The hazard mitigation planning process is being conducted at the county level. In order to be covered by the plan, cities and villages will need to provide input on the plan, and adopt it once complete. The following materials have been enclosed to facilitate this participation in development of the plan, and ensure that the plan contains accurate municipal information:

**EXERCISE #1:** Using the current inventory of the critical facilities found in your municipality, plus a list of the critical facility types/categories that are to be included, review the information for accuracy and write in any edits.

- o Ensure that there is an address or lat/long coordinates provided for each critical facility that you add.
- o Only include publicly owned facilities.

**EXERCISE #2:** Review and sign the sheet of county mitigation strategies.

**EXERCISE #3:** Identify at least one mitigation strategy specific to your municipality that the community would like to implement if grant funding were available.

Please return your information (with or without edits) no later than February 8, 2019 to Madison Smith at [msmith@baylakerpc.org](mailto:msmith@baylakerpc.org) or 425 S. Adams Street, Suite 201, Green Bay, WI 54301.

If you have any questions or need any additional information, please contact Madison at email or phone at (920) 448-2820, Ext. 106. Thank you for your participation in reviewing the enclosed materials.

**PLEASE NOTE THAT THIS IS THE ONLY REQUEST THAT WILL BE MADE FOR THIS INFORMATION. IF CITY/VILLAGE MATERIALS ARE NOT RECEIVED, THE MUNICIPALITY WILL NOT BE A PART OF THE PLAN.** Not participating in this plan will require the development of a municipal plan in order to be eligible for FEMA funding – including disaster assistance.

Sincerely,

Travis Waack  
Emergency Management Director

Enclosures (3): Exercise #1 - Critical Facility Categories and Municipal Critical Facilities List; Exercise #2 - County Mitigation Strategies; and Exercise #3 - Municipal Mitigation Strategy Form

# APPENDIX C - Critical Facilities By Municipality

The Manitowoc County Hazard Mitigation Plan Steering Committee and community representatives identified critical infrastructure assets for all the communities in the county. Tables adjacent and on the following pages are each of the critical facilities by municipality for Manitowoc County.

| NAME                                            | ADDRESS                                           | Source                       | Type                          | MCD                      | Floodplain |
|-------------------------------------------------|---------------------------------------------------|------------------------------|-------------------------------|--------------------------|------------|
| Mehicot                                         | East Twin River                                   | DNR 2019                     | Dam                           | Village of Mehicot       | Yes        |
| Mehicot Fire Department                         | 214 S Main St                                     | Village                      | Fire and Safety               | Village of Mehicot       | Yes        |
| Reifs Mills (dry hydrant / Branch River access) | 6801 CTH T                                        | Manitowoc County Fire Assoc. | Fire and Safety               | Town of Kossuth          | Yes        |
| CTH Y / West Twin River (dry hydrant)           | 4339 CTH Y                                        | Manitowoc County Fire Assoc. | Fire and Safety               | Town of Kossuth          | Yes        |
| Collins Marsh                                   | Mud Creek                                         | DNR 2019                     | Dam                           | Town of Rockland         | Yes        |
| Water Pumping Station                           | 20708 Main St                                     |                              | Wastewater Treatment Facility | Town of Rockland         | Yes        |
| Clarks Mill                                     | Manitowoc River                                   | DNR 2019                     | Dam                           | Town of Cato             | Yes        |
| Neshota - South                                 | West Twin River                                   | DNR 2019                     | Dam                           | Town of Two Rivers       | Yes        |
| Mililthone                                      | Sheboygan River                                   | DNR 2019                     | Dam                           | Town of Schleswig        | Yes        |
| Rockville                                       | Sheboygan River                                   | DNR 2019                     | Dam                           | Town of Schleswig        | Yes        |
| Kiel                                            | Sheboygan River                                   | DNR 2019                     | Dam                           | City of Kiel             | Yes        |
| Kiel Fire Department                            | 99 E Fremont St                                   | Hazus MH                     | Fire and Safety               | City of Kiel             | Yes        |
| Sewage Lift Station                             | 1162 N Westview St                                | Village                      | Wastewater Treatment Facility | Village of Cleveland     | Yes        |
| Village of Cleveland                            | 1151 Lakeshore Dr                                 | County                       | Administrative Building       | Village of Cleveland     | Yes        |
| Emergency Siren                                 | Salvage Rd & S Rockway St                         | County                       | Communication Facility        | Village of Mehicot       | Yes        |
| Village of Cleveland                            | 1151 Lakeshore Dr                                 |                              | Wastewater Treatment Facility | Village of Cleveland     | Yes        |
| Sewage Lift Station                             | 619 STH 67                                        | City                         | Wastewater Treatment Facility | City of Kiel             | Yes        |
| City of Manitowoc Gravel Pit                    | Gravel Pit Ln                                     | County                       | Post-Disaster Recovery Site   | City of Manitowoc        | Yes        |
| Homes Rd / East Twin River (from bridge)        | 503 Holmes Rd                                     | Town                         | Fire and Safety               | Town of Gibson           | Yes        |
| Sewage Lift Station                             | 600 S 19th St                                     | City                         | Wastewater Treatment Facility | City of Manitowoc        | Yes        |
| Sewage Lift Station                             | 4001 Archer St                                    | City                         | Wastewater Treatment Facility | City of Manitowoc        | Yes        |
| B360001                                         | OLD Y RD / WEST TWIN RIVER                        | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360006                                         | N RAPIDS RD / MANITOWOC RIVER                     | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360011                                         | STH 32 NB-STH 57 NB / SHEBOYGAN RIVER             | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360012                                         | DAIRYLAND DR / NORTH BRANCH OF CENTERVILLE CREEK  | County/HSI 2019              | Bridge                        | Village of Cleveland     | Yes        |
| B360015                                         | STH 32-STH 57 / SHEBOYGAN RIVER                   | County/HSI 2019              | Bridge                        | City of Kiel             | Yes        |
| B360019                                         | CTH JJ / MANITOWOC RIVER                          | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360020                                         | N CTH S / MANITOWOC RIVER                         | County/HSI 2019              | Bridge                        | Town of Cato             | Yes        |
| B360021                                         | CTH W / WEST TWIN RIVER                           | County/HSI 2019              | Bridge                        | Town of Kossuth          | Yes        |
| B360022                                         | ROCKVILLE RD / SHEBOYGAN RIVER                    | County/HSI 2019              | Bridge                        | City of Kiel             | Yes        |
| B360023                                         | ROCKVILLE RD / SHEBOYGAN RIVER                    | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360025                                         | LAX CHAPEL RD / TRIBUTARY OF SHEBOYGAN RIVER      | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360026                                         | USH 151 / SILVER CREEK                            | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360028                                         | STURM RD / EAST TWIN RIVER                        | County/HSI 2019              | Bridge                        | Town of Mehicot          | Yes        |
| B360032                                         | ROSECRANS RD / DEVILS RIVER                       | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360033                                         | CTH LS / PINE CREEK                               | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360035                                         | CTH B / LITTLE MANITOWOC RIVER                    | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360036                                         | I-43 / FISCHER CREEK                              | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360038                                         | GASS LAKE RD / PINE CREEK                         | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360047                                         | I-43 NB / POINT CREEK                             | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360050                                         | I-43 SB / CTH C                                   | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360051                                         | I-43 NB / CTH C                                   | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360054                                         | CTH C / PINE CREEK                                | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360055                                         | I-43 / CALVIN CREEK                               | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360060                                         | I-43 / SILVER CREEK                               | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360064                                         | I-43 SB Off Ramp to CTH C / PINE CREEK            | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360072                                         | I-43 SB-USH 10 EB / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360073                                         | I-43 NB-USH 10 WB / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360075                                         | STH 67 / CEDAR CREEK                              | County/HSI 2019              | Bridge                        | Town of Eaton            | Yes        |
| B360076                                         | CTH R / DEVILS RIVER                              | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360082                                         | I-43 / FRANCIS CREEK                              | County/HSI 2019              | Bridge                        | Village of Francis Creek | Yes        |
| B360087                                         | I-43 SB / DEVILS RIVER                            | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360088                                         | I-43 NB / DEVILS RIVER                            | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360105                                         | USH 151 / SILVER CREEK                            | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360109                                         | STH 147 / EAST TWIN RIVER                         | County/HSI 2019              | Bridge                        | Town of Mehicot          | Yes        |
| B360110                                         | I-43 SB / CENTER ROAD                             | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360111                                         | I-43 NB / CENTER ROAD                             | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360112                                         | USH 10 WB-STH 42 SB-WALDO BLVD / MANITOWOC RIVER  | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360113                                         | USH 10 EB-STH 42 NB-WALDO BLVD / MANITOWOC RIVER  | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360117                                         | STH 42-WASHINGTON ST / WEST TWIN RIVER            | County/HSI 2019              | Bridge                        | City of Two Rivers       | Yes        |
| B360118                                         | GRIMMS RD / BRANCH RIVER                          | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360119                                         | WESTVIEW RD / FISCHER CREEK                       | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360120                                         | CTH O / MOLASH CREEK                              | County/HSI 2019              | Bridge                        | Town of Two Rivers       | Yes        |
| B360121                                         | CTH R IN PACKER DR / FRANCIS CREEK                | County/HSI 2019              | Bridge                        | Village of Francis Creek | Yes        |
| B360123                                         | STH 147-S MAIN ST / EAST TWIN RIVER               | County/HSI 2019              | Bridge                        | Village of Mehicot       | Yes        |
| B360124                                         | BROADWAY ST / MANITOWOC RIVER                     | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360125                                         | DANMAR RD / BRANCH RIVER                          | County/HSI 2019              | Bridge                        | Town of Kossuth          | Yes        |
| B360126                                         | MILL ST / MUD CREEK                               | County/HSI 2019              | Bridge                        | Village of Reedsville    | Yes        |
| B360127                                         | E ZANDER RD / EAST TWIN RIVER                     | County/HSI 2019              | Bridge                        | Town of Mehicot          | Yes        |
| B3601280001                                     | USH 10 EB-10TH ST / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B3601280002                                     | USH 10 EB-10TH ST / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360129                                         | CTH F / POINT CREEK                               | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360131                                         | S CTH J / MANITOWOC RIVER                         | County/HSI 2019              | Bridge                        | Town of Cato             | Yes        |
| B360132                                         | STH 67 / SHEBOYGAN RIVER                          | County/HSI 2019              | Bridge                        | City of Kiel             | Yes        |
| B360133                                         | HOLMES RD / EAST TWIN RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360134                                         | STH 42 / MEEME RIVER                              | County/HSI 2019              | Bridge                        | Town of Meeme            | Yes        |
| B360135                                         | STH 147 W / WEST TWIN RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360136                                         | CTH VV-45TH ST / EAST TWIN RIVER                  | County/HSI 2019              | Bridge                        | City of Two Rivers       | Yes        |
| B360137                                         | STH 32 SB-STH 57 SB / SHEBOYGAN RIVER             | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360139                                         | W HILLCREST RD / BRANCH RIVER                     | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360140                                         | S 21ST ST NB / MANITOWOC RIVER                    | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360141                                         | MARITIME DR / LITTLE MANITOWOC RIVER              | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360142                                         | USH 10 WB-8TH ST / MANITOWOC RIVER                | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360144                                         | USH 10 / EAST BRANCH OF MUD CREEK                 | County/HSI 2019              | Bridge                        | Town of Maple Grove      | Yes        |
| B360145                                         | REIFS MILLS RD / BRANCH RIVER                     | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360146                                         | CTH CR / SILVER CREEK                             | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360147                                         | S CTH W / MANITOWOC RIVER                         | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360151                                         | N WESTVIEW ST / NORTH BRANCH OF CENTERVILLE CREEK | County/HSI 2019              | Bridge                        | Village of Cleveland     | Yes        |
| B360152                                         | W TAPAWINGO RD / EAST TWIN RIVER                  | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360153                                         | NACHTWEY RD / NESHOTA RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360154                                         | CTH B / WEST TWIN RIVER                           | County/HSI 2019              | Bridge                        | Town of Two Rivers       | Yes        |
| B360155                                         | STH 42-2ND ST / EAST TWIN RIVER                   | County/HSI 2019              | Bridge                        | City of Two Rivers       | Yes        |
| B360157                                         | COLLINS RD / MANITOWOC RIVER                      | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360160                                         | CTH A / TRIB. OF MANITOWOC RIVER                  | County/HSI 2019              | Bridge                        | Town of Liberty          | Yes        |
| B360161                                         | W ZANDER RD / NESHOTA RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360162                                         | MELNIK RD / W TWIN RIVER                          | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360163                                         | QUARRY RD / MANITOWOC R                           | County/HSI 2019              | Bridge                        | Town of Eaton            | Yes        |
| B360164                                         | VILLAGE DRIVE / BRANCH RIVER                      | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360165                                         | SILVER CREEK RD / SILVER CREEK                    | County/HSI 2019              | Bridge                        | Town of Manitowoc        | Yes        |
| B360166                                         | CTH T / BRANCH R                                  | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360167                                         | E SPRING VALLEY RD / MEEME RIVER                  | County/HSI 2019              | Bridge                        | Town of Meeme            | Yes        |
| B360168                                         | POINT CREEK RD / POINT CREEK                      | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360169                                         | MICHIGAN AVE / MANITOWOC RIVER                    | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360172                                         | STEINTHAL RD / SHEBOYGAN RIVER                    | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360173                                         | CTH JJ / MUD CREEK                                | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360174                                         | CTH LS-LAKESHORE RD / POINT CREEK                 | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |

| NAME                                            | ADDRESS                                           | Source                       | Type                          | MCD                      | Floodplain |
|-------------------------------------------------|---------------------------------------------------|------------------------------|-------------------------------|--------------------------|------------|
| Mishicot                                        | East Twin River                                   | DNR 2019                     | Dam                           | Village of Mishicot      | Yes        |
| Mishicot Fire Department                        | 214 S Main St                                     | Village                      | Fire and Safety               | Village of Mishicot      | Yes        |
| Reifs Mills (dry hydrant / Branch River access) | 6801 CTH T                                        | Manitowoc County Fire Assoc. | Fire and Safety               | Town of Kossuth          | Yes        |
| CTH Y / West Twin River (dry hydrant)           | 4339 CTH Y                                        | Manitowoc County Fire Assoc. | Fire and Safety               | Town of Kossuth          | Yes        |
| Collins Marsh                                   | Mud Creek                                         | DNR 2019                     | Dam                           | Town of Rockland         | Yes        |
| Water Pumping Station                           | 20708 Main St                                     |                              | Wastewater Treatment Facility | Town of Rockland         | Yes        |
| Clarks Mill                                     | Manitowoc River                                   | DNR 2019                     | Dam                           | Town of Cato             | Yes        |
| Neshota - South                                 | West Twin River                                   | DNR 2019                     | Dam                           | Town of Two Rivers       | Yes        |
| Millhome                                        | Sheboygan River                                   | DNR 2019                     | Dam                           | Town of Schleswig        | Yes        |
| Rockville                                       | Sheboygan River                                   | DNR 2019                     | Dam                           | Town of Schleswig        | Yes        |
| Kiel                                            | Sheboygan River                                   | DNR 2019                     | Dam                           | City of Kiel             | Yes        |
| Kiel Fire Department                            | 99 E Fremont St                                   | Hazus MH                     | Fire and Safety               | City of Kiel             | Yes        |
| Sewage Lift Station                             | 1162 N Westview St                                | Village                      | Wastewater Treatment Facility | Village of Cleveland     | Yes        |
| Village of Cleveland                            | 1151 Lakeshore Dr                                 | County                       | Administrative Building       | Village of Cleveland     | Yes        |
| Emergency Siren                                 | Salvage Rd & S Rockway St                         | County                       | Communication Facility        | Village of Mishicot      | Yes        |
| Village of Cleveland                            | 1151 Lakeshore Dr                                 |                              | Wastewater Treatment Facility | Village of Cleveland     | Yes        |
| Sewage Lift Station                             | 619 STH 67                                        | City                         | Wastewater Treatment Facility | City of Kiel             | Yes        |
| City of Manitowoc Gravel Pit                    | Gravel Pit Ln                                     | County                       | Post-Disaster Recovery Site   | City of Manitowoc        | Yes        |
| Homes Rd / East Twin River (from bridge)        | 503 Holmes Rd                                     | Town                         | Fire and Safety               | Town of Gibson           | Yes        |
| Sewage Lift Station                             | 600 S 19th St                                     | City                         | Wastewater Treatment Facility | City of Manitowoc        | Yes        |
| Sewage Lift Station                             | 4001 Archer St                                    | City                         | Wastewater Treatment Facility | City of Manitowoc        | Yes        |
| B360001                                         | OLD Y RD / WEST TWIN RIVER                        | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360006                                         | N RAPIDS RD / MANITOWOC RIVER                     | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360011                                         | STH 32 NB STH 57 NB / SHEBOYGAN RIVER             | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360012                                         | DAIRYLAND DR / NORTH BRANCH OF CENTERVILLE CREEK  | County/HSI 2019              | Bridge                        | Village of Cleveland     | Yes        |
| B360015                                         | STH 33 STH 57 / SHEBOYGAN RIVER                   | County/HSI 2019              | Bridge                        | City of Kiel             | Yes        |
| B360019                                         | CTH JJ / MANITOWOC RIVER                          | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360020                                         | N CTH S / MANITOWOC RIVER                         | County/HSI 2019              | Bridge                        | Town of Cato             | Yes        |
| B360021                                         | CTH V / WEST TWIN RIVER                           | County/HSI 2019              | Bridge                        | Town of Kossuth          | Yes        |
| B360022                                         | ROCKVILLE RD / SHEBOYGAN RIVER                    | County/HSI 2019              | Bridge                        | City of Kiel             | Yes        |
| B360023                                         | ROCKVILLE RD / SHEBOYGAN RIVER                    | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360025                                         | LAX CHAPEL RD / TRIBUTARY OF SHEBOYGAN RIVER      | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360026                                         | USH 151 / SILVER CREEK                            | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360028                                         | STURM RD / EAST TWIN RIVER                        | County/HSI 2019              | Bridge                        | Town of Mishicot         | Yes        |
| B360032                                         | ROSECRANS RD / DEVILS RIVER                       | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360033                                         | CTH LS / PINE CREEK                               | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360035                                         | CTH B / LITTLE MANITOWOC RIVER                    | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360036                                         | I-43 / FISCHER CREEK                              | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360038                                         | GASS LAKE RD / PINE CREEK                         | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360047                                         | I-43 SB / POINT CREEK                             | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360050                                         | I-43 SB / CTH C                                   | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360051                                         | I-43 NB / CTH C                                   | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360054                                         | CTH C / PINE CREEK                                | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360055                                         | I-43 / CALVIN CREEK                               | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360060                                         | I-43 / SILVER CREEK                               | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360064                                         | I-43 SB Off Ramp to CTH C / PINE CREEK            | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360072                                         | I-43 SB-USH 10 EB / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360073                                         | I-43 NB-USH 10 WB / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360075                                         | STH 67 / CEDAR CREEK                              | County/HSI 2019              | Bridge                        | Town of Eaton            | Yes        |
| B360076                                         | CTH R / DEVILS RIVER                              | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360082                                         | I-43 / FRANCIS CREEK                              | County/HSI 2019              | Bridge                        | Village of Francis Creek | Yes        |
| B360097                                         | I-43 SB / DEVILS RIVER                            | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360098                                         | I-43 NB / DEVILS RIVER                            | County/HSI 2019              | Bridge                        | Town of Cooperstown      | Yes        |
| B360105                                         | USH 151 / SILVER CREEK                            | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360109                                         | STH 147 / EAST TWIN RIVER                         | County/HSI 2019              | Bridge                        | Town of Mishicot         | Yes        |
| B360110                                         | I-43 SB / CENTER ROAD                             | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360111                                         | I-43 NB / CENTER ROAD                             | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360112                                         | USH 10 WB-STH 42 SB-WALDO BLVD / MANITOWOC RIVER  | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360113                                         | USH 10 EB-STH 42 NB-WALDO BLVD / MANITOWOC RIVER  | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360117                                         | STH 42-WASHINGTON ST / WEST TWIN RIVER            | County/HSI 2019              | Bridge                        | City of Two Rivers       | Yes        |
| B360118                                         | GRIMMS RD / BRANCH RIVER                          | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360119                                         | WESTVIEW RD / FISCHER CREEK                       | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360120                                         | CTH C / MOLASH CREEK                              | County/HSI 2019              | Bridge                        | Town of Two Rivers       | Yes        |
| B360121                                         | CTH R IN PACKER DR / FRANCIS CREEK                | County/HSI 2019              | Bridge                        | Village of Francis Creek | Yes        |
| B360123                                         | STH 147 S MAIN ST / EAST TWIN RIVER               | County/HSI 2019              | Bridge                        | Village of Mishicot      | Yes        |
| B360124                                         | BROADWAY ST / MANITOWOC RIVER                     | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360125                                         | DANNAR RD / BRANCH RIVER                          | County/HSI 2019              | Bridge                        | Town of Kossuth          | Yes        |
| B360126                                         | MILL ST / MUD CREEK                               | County/HSI 2019              | Bridge                        | Village of Reedsville    | Yes        |
| B360127                                         | E ZANDER RD / EAST TWIN RIVER                     | County/HSI 2019              | Bridge                        | Town of Mishicot         | Yes        |
| B3601280001                                     | USH 10 EB-10TH ST / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B3601280002                                     | USH 10 EB-10TH ST / MANITOWOC RIVER               | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360129                                         | CTH F / POINT CREEK                               | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360131                                         | S CTH J / MANITOWOC RIVER                         | County/HSI 2019              | Bridge                        | Town of Cato             | Yes        |
| B360132                                         | STH 67 / SHEBOYGAN RIVER                          | County/HSI 2019              | Bridge                        | City of Kiel             | Yes        |
| B360133                                         | HOLMES RD / EAST TWIN RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360134                                         | STH 42 / MEEME RIVER                              | County/HSI 2019              | Bridge                        | Town of Meeme            | Yes        |
| B360135                                         | STH 147 W / WEST TWIN RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360136                                         | CTH VV-45TH ST / EAST TWIN RIVER                  | County/HSI 2019              | Bridge                        | City of Two Rivers       | Yes        |
| B360137                                         | STH 32 SB-STH 57 SB / SHEBOYGAN RIVER             | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360139                                         | W HILLCREST RD / BRANCH RIVER                     | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360140                                         | S 21ST ST NB / MANITOWOC RIVER                    | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360141                                         | MARITIME DR / LITTLE MANITOWOC RIVER              | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360142                                         | USH 10 WB-8TH ST / MANITOWOC RIVER                | County/HSI 2019              | Bridge                        | City of Manitowoc        | Yes        |
| B360144                                         | USH 10 / EAST BRANCH OF MUD CREEK                 | County/HSI 2019              | Bridge                        | Town of Maple Grove      | Yes        |
| B360145                                         | REIFS MILLS RD / BRANCH RIVER                     | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360146                                         | CTH CR / SILVER CREEK                             | County/HSI 2019              | Bridge                        | Town of Newton           | Yes        |
| B360147                                         | S CTH W / MANITOWOC RIVER                         | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360151                                         | N WESTVIEW ST / NORTH BRANCH OF CENTERVILLE CREEK | County/HSI 2019              | Bridge                        | Village of Cleveland     | Yes        |
| B360152                                         | W TAPAWINGO RD / EAST TWIN RIVER                  | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360153                                         | NACHTWEY RD / NESHOTA RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360154                                         | CTH B / WEST TWIN RIVER                           | County/HSI 2019              | Bridge                        | Town of Two Rivers       | Yes        |
| B360155                                         | STH 42-22ND ST / EAST TWIN RIVER                  | County/HSI 2019              | Bridge                        | City of Two Rivers       | Yes        |
| B360157                                         | COLLINS RD / MANITOWOC RIVER                      | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360160                                         | CTH A / TRIB. OF MANITOWOC RIVER                  | County/HSI 2019              | Bridge                        | Town of Liberty          | Yes        |
| B360161                                         | W ZANDER RD / NESHOTA RIVER                       | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360162                                         | MELNIK RD / W TWIN RIVER                          | County/HSI 2019              | Bridge                        | Town of Gibson           | Yes        |
| B360163                                         | QUARRY RD / MANITOWOC R                           | County/HSI 2019              | Bridge                        | Town of Eaton            | Yes        |
| B360164                                         | VILLAGE DRIVE / BRANCH RIVER                      | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360165                                         | SILVER CREEK RD / SILVER CREEK                    | County/HSI 2019              | Bridge                        | Town of Manitowoc        | Yes        |
| B360166                                         | CTH T / BRANCH R                                  | County/HSI 2019              | Bridge                        | Town of Franklin         | Yes        |
| B360167                                         | E SPRING VALLEY RD / MEEME RIVER                  | County/HSI 2019              | Bridge                        | Town of Meeme            | Yes        |
| B360168                                         | POINT CREEK RD / POINT CREEK                      | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |
| B360169                                         | MICHIGAN AVE / MANITOWOC RIVER                    | County/HSI 2019              | Bridge                        | Town of Manitowoc Rapids | Yes        |
| B360172                                         | STEMTAL RD / SHEBOYGAN RIVER                      | County/HSI 2019              | Bridge                        | Town of Schleswig        | Yes        |
| B360173                                         | CTH JJ / MUD CREEK                                | County/HSI 2019              | Bridge                        | Town of Rockland         | Yes        |
| B360174                                         | CTH LS-LAKESHORE RD / POINT CREEK                 | County/HSI 2019              | Bridge                        | Town of Centerville      | Yes        |

| NAME                                               | ADDRESS                                           | Source                       | Type                             | MCD                      | Floodplain |
|----------------------------------------------------|---------------------------------------------------|------------------------------|----------------------------------|--------------------------|------------|
| B360176                                            | STH 310 MADISON ST / W TWIN RIVER                 | County/HSI 2019              | Bridge                           | City of Two Rivers       | Yes        |
| B360177                                            | CTH J / BRANCH RIVER                              | County/HSI 2019              | Bridge                           | Town of Franklin         | Yes        |
| B360182                                            | VALLEY DR / SILVER CREEK                          | County/HSI 2019              | Bridge                           | Town of Manitowoc        | Yes        |
| B360183                                            | CTH T / DEVILS RIVER                              | County/HSI 2019              | Bridge                           | Town of Cooperstown      | Yes        |
| B360185                                            | S CLEVELAND RD / MEEME RIVER                      | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| B360186                                            | MEADOW LN / FRANCIS CREEK                         | County/HSI 2019              | Bridge                           | Town of Kossuth          | Yes        |
| B360187                                            | CTH CR / CALVIN CREEK                             | County/HSI 2019              | Bridge                           | Town of Newton           | Yes        |
| B360188                                            | PIONEER RD / MEEME RIVER                          | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| B360189                                            | 17TH ST / E TWIN RIVER                            | County/HSI 2019              | Bridge                           | City of Two Rivers       | Yes        |
| B360191                                            | S CLEVELAND RD / PIGEON RIVER                     | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| B360192                                            | S CLEVELAND RD / PIGEON RIVER                     | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| B360193                                            | USH 10 / BRANCH R                                 | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| B360210                                            | USH 151 / CEDAR CREEK                             | County/HSI 2019              | Bridge                           | Town of Eaton            | Yes        |
| B360211                                            | USH 151 / TRIB. OF MANITOWOC RIVER                | County/HSI 2019              | Bridge                           | Town of Eaton            | Yes        |
| B360213                                            | MANITOWOC ST / MUD CREEK                          | County/HSI 2019              | Bridge                           | Village of Reedsville    | Yes        |
| B360214                                            | HILLCREST RD / BRANCH RIVER                       | County/HSI 2019              | Bridge                           | Town of Franklin         | Yes        |
| B360216                                            | PLEASANT RD / DEVILS RIVER                        | County/HSI 2019              | Bridge                           | Town of Cooperstown      | Yes        |
| B360217                                            | N 4TH ST / MUD CREEK                              | County/HSI 2019              | Bridge                           | Village of Reedsville    | Yes        |
| B360218                                            | MINERAL SPRINGS RD / PIGEON RIVER                 | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| B360220                                            | HILLCREST RD / BRANCH RIVER                       | County/HSI 2019              | Bridge                           | Town of Franklin         | Yes        |
| B360221                                            | CENTER RD / NORTH BRANCH OF CENTERVILLE CREEK     | County/HSI 2019              | Bridge                           | Town of Centerville      | Yes        |
| B360230                                            | I43 NB / POINT CREEK                              | County/HSI 2019              | Bridge                           | Town of Centerville      | Yes        |
| B360237                                            | HICKORY HILLS RD / MUD CREEK                      | County/HSI 2019              | Bridge                           | Town of Maple Grove      | Yes        |
| B360318                                            | CTH B-S STATE ST / EAST TWIN RIVER                | County/HSI 2019              | Bridge                           | Village of Mishicot      | Yes        |
| B360511                                            | TISCH MILLS RD / EAST TWIN RIVER                  | County/HSI 2019              | Bridge                           | Town of Mishicot         | Yes        |
| B360892                                            | USH 10-MAIN ST / MUD CREEK                        | County/HSI 2019              | Bridge                           | Village of Reedsville    | Yes        |
| B360900                                            | STH 42-WALDO BLVD / LITTLE MANITOWOC RIVER        | County/HSI 2019              | Bridge                           | City of Manitowoc        | Yes        |
| B360910                                            | CTH XX / MEEME RIVER                              | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| B360913                                            | CTH XX-E WASHINGTON AVE / S BR. CENTERVILLE CREEK | County/HSI 2019              | Bridge                           | Village of Cleveland     | Yes        |
| B360915                                            | CTH B / EAST TWIN RIVER                           | County/HSI 2019              | Bridge                           | Town of Gibson           | Yes        |
| C360017                                            | I43 / CENTERVILLE CREEK                           | County/HSI 2019              | Bridge                           | Town of Centerville      | Yes        |
| C360044                                            | KOCIAN RD / TRIB. TO BRANCH RIVER                 | County/HSI 2019              | Bridge                           | Town of Cooperstown      | Yes        |
| P360022                                            | MILL RD (PEDESTRIAN BRIDGE) / MANITOWOC RIVER     | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| P360066                                            | CTH M / PIGEON RIVER                              | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| P360069                                            | CTH Q / WEST TWIN RIVER                           | County/HSI 2019              | Bridge                           | Town of Mishicot         | Yes        |
| P360082                                            | W ZANDER RD / JAMBO CREEK                         | County/HSI 2019              | Bridge                           | Town of Gibson           | Yes        |
| P360085                                            | TWIN BRIDGE RD / JAMBO CREEK                      | County/HSI 2019              | Bridge                           | Town of Gibson           | Yes        |
| P360086                                            | HILLVIEW RD / E TWIN RIVER                        | County/HSI 2019              | Bridge                           | Town of Gibson           | Yes        |
| P360087                                            | ROCKLEDGE RD / EAST TWIN RIVER                    | County/HSI 2019              | Bridge                           | Town of Gibson           | Yes        |
| P360090                                            | JAMBO CREEK RD / JAMBO CREEK                      | County/HSI 2019              | Bridge                           | Town of Gibson           | Yes        |
| P360097                                            | ZANDER RD / TRIB. OF DEVILS RIVER                 | County/HSI 2019              | Bridge                           | Town of Cooperstown      | Yes        |
| P360100                                            | ZANDER RD / DEVILS RIVER                          | County/HSI 2019              | Bridge                           | Town of Cooperstown      | Yes        |
| P360104                                            | HEROLD RD / DEVILS RIVER                          | County/HSI 2019              | Bridge                           | Town of Cooperstown      | Yes        |
| P360108                                            | TAUS ROAD / MUD CREEK                             | County/HSI 2019              | Bridge                           | Town of Maple Grove      | Yes        |
| P360109                                            | REIFS MILLS RD / MUD CREEK                        | County/HSI 2019              | Bridge                           | Town of Maple Grove      | Yes        |
| P360118                                            | TAUS RD / BRANCH RIVER                            | County/HSI 2019              | Bridge                           | Town of Franklin         | Yes        |
| P360119                                            | E TAUS RD / BRANCH RIVER                          | County/HSI 2019              | Bridge                           | Town of Franklin         | Yes        |
| P360121                                            | CTH Y / WEST TWIN RIVER                           | County/HSI 2019              | Bridge                           | Town of Kossuth          | Yes        |
| P360123                                            | DEVILS RIVER STATE TRAIL / MEADOW LN              | County/HSI 2019              | Bridge                           | Town of Kossuth          | Yes        |
| P360125                                            | PARKWAY RD / FRANCIS CREEK                        | County/HSI 2019              | Bridge                           | Town of Kossuth          | Yes        |
| P360126                                            | FRANCIS CREEK RD / FRANCIS CREEK                  | County/HSI 2019              | Bridge                           | Town of Kossuth          | Yes        |
| P360133                                            | STEINERS CORNERS RD / EAST TWIN RIVER             | County/HSI 2019              | Bridge                           | Village of Mishicot      | Yes        |
| P360134                                            | E HILLCREST RD / EAST TWIN RIVER                  | County/HSI 2019              | Bridge                           | Town of Two Rivers       | Yes        |
| P360135                                            | MAPLEWOOD RD / EAST TWIN RIVER                    | County/HSI 2019              | Bridge                           | Town of Two Rivers       | Yes        |
| P360144                                            | N UNION RD / BRANCH RIVER                         | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| P360145                                            | CTH CS-W CUSTER ST / SILVER CREEK                 | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| P360146                                            | N UNION RD / MANITOWOC RIVER                      | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| P360147                                            | BRANCH RIVER RD / BRANCH RIVER                    | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| P360148                                            | S ALVERNO RD / SILVER CREEK                       | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| P360151                                            | HIGHWAY H RD / MANITOWOC RIVER                    | County/HSI 2019              | Bridge                           | Town of Manitowoc Rapids | Yes        |
| P360158                                            | W GOODWIN RD / MUD CREEK                          | County/HSI 2019              | Bridge                           | Town of Rockland         | Yes        |
| P360165                                            | TOMKINS RD / TRIB. OF MANITOWOC RIVER             | County/HSI 2019              | Bridge                           | Town of Liberty          | Yes        |
| P360168                                            | HECKER RD / SILVER CREEK                          | County/HSI 2019              | Bridge                           | Town of Newton           | Yes        |
| P360174                                            | CTH LS / SILVER CREEK                             | County/HSI 2019              | Bridge                           | City of Manitowoc        | Yes        |
| P360176                                            | SILVER CREEK RD / SILVER CREEK                    | County/HSI 2019              | Bridge                           | Town of Manitowoc        | Yes        |
| P360177                                            | S 26TH ST / SILVER CREEK                          | County/HSI 2019              | Bridge                           | Town of Manitowoc        | Yes        |
| P360182                                            | CENTER RD / POINT CREEK                           | County/HSI 2019              | Bridge                           | Town of Centerville      | Yes        |
| P360184                                            | CENTERVILLE RD / FISCHER CREEK                    | County/HSI 2019              | Bridge                           | Town of Centerville      | Yes        |
| P360185                                            | CENTERVILLE RD / POINT CREEK                      | County/HSI 2019              | Bridge                           | Town of Centerville      | Yes        |
| P360187                                            | CTH LS-LAKESHORE RD / FISCHER CREEK               | County/HSI 2019              | Bridge                           | Town of Centerville      | Yes        |
| P360193                                            | W WASHINGTON RD / MEEME RIVER                     | County/HSI 2019              | Bridge                           | Town of Meeme            | Yes        |
| P360700                                            | CTH LS-LAKESHORE DR / CENTERVILLE CREEK           | County/HSI 2019              | Bridge                           | Village of Cleveland     | Yes        |
| P360707                                            | REED AVE / LITTLE MANITOWOC RIVER                 | County/HSI 2019              | Bridge                           | City of Manitowoc        | Yes        |
| P360904                                            | CTH K / BRANCH RIVER                              | County/HSI 2019              | Bridge                           | Town of Franklin         | Yes        |
| P360910                                            | S UNION RD / SILVER CREEK                         | County/HSI 2019              | Bridge                           | Town of Newton           | Yes        |
| P360912                                            | CTH Q / LITTLE MANITOWOC RIVER                    | County/HSI 2019              | Bridge                           | Town of Manitowoc        | Yes        |
| P360913                                            | CTH Q / LITTLE MANITOWOC RIVER                    | County/HSI 2019              | Bridge                           | Town of Manitowoc        | Yes        |
| P360914                                            | CTH Q / LITTLE MANITOWOC RIVER                    | County/HSI 2019              | Bridge                           | City of Manitowoc        | Yes        |
| P360915                                            | MANCAL RD / TRIB. OF BRANCH RIVER                 | County/HSI 2019              | Bridge                           | Town of Franklin         | Yes        |
| P360917                                            | S 19TH ST / SILVER CREEK                          | County/HSI 2019              | Bridge                           | Town of Manitowoc        | Yes        |
| P360919                                            | LEIST RD / MANITOWOC RIVER                        | County/HSI 2019              | Bridge                           | Town of Cato             | Yes        |
| P360925                                            | CTH K / MUD CREEK                                 | County/HSI 2019              | Bridge                           | Town of Maple Grove      | Yes        |
| Nesholo - North                                    | West Twin River                                   | DNR 2019                     | Dam                              | Town of Two Rivers       | Yes        |
| Meeme                                              | Meeme River                                       | County 2019                  | Dam                              | Town of Meeme            | Yes        |
| Branch River Fill Site (float)                     | 7901 N Union Rd                                   | Manitowoc County Fire Assoc. | Fire and Safety                  | Town of Manitowoc Rapids | Yes        |
| Carstens Lake Public Access (lake access)          | 6205 Carstens Lake Rd                             | Manitowoc County Fire Assoc. | Fire and Safety                  | Town of Newton           | Yes        |
| Collins / Manitowoc River (dry hydrant)            | 1184 Collins Rd                                   | Manitowoc County Fire Assoc. | Fire and Safety                  | Town of Rockland         | Yes        |
| E Zander Rd / East Twin River (river access)       | 522 E Zander Rd                                   | Manitowoc County Fire Assoc. | Fire and Safety                  | Town of Mishicot         | Yes        |
| English Lake Public Access (lake access)           | 9348 S Lake Dr                                    | Manitowoc County Fire Assoc. | Fire and Safety                  | Town of Newton           | Yes        |
| Hilltop Dry Hydrant (at Mud Creek)                 | 19586 Hilltop Rd                                  | Manitowoc County Fire Assoc. | Fire and Safety                  | Town of Rockland         | Yes        |
| Paddlers Park (draft, East Twin River access)      | 1223 27th St                                      | Manitowoc County Fire Assoc. | Fire and Safety                  | City of Two Rivers       | Yes        |
| Shoto Boat Landing (draft, West Twin River access) | 921 CTH VV                                        | Manitowoc County Fire Assoc. | Fire and Safety                  | Town of Two Rivers       | Yes        |
| Vet's Park & Marina (draft at boat ramp)           | 1818 18th St                                      | Manitowoc County Fire Assoc. | Fire and Safety                  | City of Two Rivers       | Yes        |
| Fels Pond (dry hydrant)                            | CTH Z                                             | Town                         | Fire and Safety                  | Town of Cooperstown      | No         |
| Cooperstown Maintenance Shop                       | 11626 CTH Z                                       | Town                         | Administrative Building          | Town of Cooperstown      | No         |
| Cooperstown Town Hall                              | 11626 CTH Z                                       | Town                         | Administrative Building          | Town of Cooperstown      | No         |
| Gibson Town Hall                                   | 14920 CTH Q                                       | Town                         | Administrative Building          | Town of Gibson           | No         |
| Tower                                              | 11811 Saxonburg Rd                                | Town                         | Communication Facility           | Town of Mishicot         | No         |
| Power Facility                                     | 6610 Nuclear Rd                                   | ATC                          | Power Facility/Bulk Fuel Storage | Town of Two Creeks       | No         |
| Power Facility                                     | 4802 CTH V                                        | ATC                          | Power Facility/Bulk Fuel Storage | Town of Two Creeks       | No         |
| Point Beach Nuclear Plant                          | 6610 Nuclear Rd                                   | Hazus MH                     | Power Facility/Bulk Fuel Storage | Town of Two Creeks       | No         |
| Two Creeks Town Hall                               | 5128 E Tapawingo Rd                               | County                       | Administrative Building          | Town of Two Creeks       | No         |
| Two Creeks Fire Department                         | 5128 E Tapawingo Rd                               | Town                         | Fire and Safety                  | Town of Two Creeks       | No         |
| Water Treatment Facility                           | 14701 Plessant Rd                                 | Town                         | Wastewater Treatment Facility    | Village of Maribel       | No         |
| Water Storage Tower                                | 10416 E Belmar Ave                                |                              | Water Supply                     | Village of Maribel       | No         |
| Maribel Fire Department                            | 15127 N Maribel Rd                                | Village                      | Fire and Safety                  | Village of Maribel       | No         |
| Maribel Village Hall                               | 15127 N Maribel Rd                                | Village                      | Administrative Building          | Village of Maribel       | No         |

| NAME                                          | ADDRESS                                            | Source      | Type                             | MCD                    | Floodplain |
|-----------------------------------------------|----------------------------------------------------|-------------|----------------------------------|------------------------|------------|
| New York Ave Pump Station                     | 1906 New York Ave                                  |             | Water Supply                     | City of Manitowoc      | No         |
| Water Storage Tower                           | Reed Ave & N 8th St                                |             | Water Supply                     | City of Manitowoc      | No         |
| Manitowoc Fire Station 2                      | 1410 N 8th St                                      | County      | Fire and Safety                  | City of Manitowoc      | No         |
| Valders Police Department                     | 207 S Liberty St                                   | Hazus MH    | Fire and Safety                  | Village of Valders     | No         |
| Valders Fire Department                       | 103 Eisenhower St                                  | Hazus MH    | Fire and Safety                  | Village of Valders     | No         |
| Village of Valders                            | 340 N Adams St                                     | Hazus MH    | Wastewater Treatment Facility    | Village of Valders     | No         |
| Valders Elementary                            | 331 W Wilson St                                    | County 2019 | School                           | Village of Valders     | No         |
| Valders High                                  | 201 W Wilson St                                    | County 2019 | School                           | Village of Valders     | No         |
| Valders Middle                                | 138 Jefferson St                                   | County 2019 | School                           | Village of Valders     | No         |
| Natural Gas Substation                        | 108 Brennan Rd                                     |             | Power Facility/Bulk Fuel Storage | Village of Valders     | No         |
| Nordic Lands                                  | 141 Jackson St                                     | County 2019 | Manufactured Housing             | Village of Valders     | No         |
| Water Storage Tower                           | 250 N Calumet Dr                                   | Village     | Water Supply                     | Village of Valders     | No         |
| Valders Village Hall                          | 207 S Liberty St                                   | County      | Administrative Building          | Village of Valders     | No         |
| Water Well 1                                  | 207 S Liberty St                                   | Village     | Water Supply                     | Village of Valders     | No         |
| Water Well 2                                  | 314 S Adams St                                     | Village     | Water Supply                     | Village of Valders     | No         |
| Country Visions Coop                          | 511 S Calumet Dr                                   | Village     | Power Facility/Bulk Fuel Storage | Village of Valders     | No         |
| Power Facility                                | 5109 CTH A                                         | ATC         | Power Facility/Bulk Fuel Storage | Town of Liberty        | No         |
| Liberty Town Hall                             | 13812 English Lake Rd                              | Village     | Administrative Building          | Town of Liberty        | No         |
| Building                                      | 7520 English Lake Rd (Lakefield Telephone Co. LLC) | County      | Communication Facility           | Town of Newton         | No         |
| Building                                      | Newton Rd (Lakefield Telephone Co. LLC)            | County      | Communication Facility           | Town of Newton         | No         |
| Newtown Fire Department                       | 6528 Carstens Lake Rd                              | Hazus MH    | Fire and Safety                  | Town of Newton         | No         |
| Saint John's Evangelical Lutheran School      | 7531A English Lake Rd                              | County 2019 | School                           | Town of Newton         | No         |
| Newtown Town Hall                             | 6532 Carstens Lake Rd                              | Town        | Administrative Building          | Town of Newton         | No         |
| Water Supply Booster/Pumping Station          | Viebahn St                                         |             | Water Supply                     | Town of Manitowoc      | No         |
| Silver Creek Fire Department - Station 1      | 1822 Silver Creek Rd                               | County      | Fire and Safety                  | Town of Manitowoc      | No         |
| Collector Well C                              | 3983 S 10th St                                     |             | Water Supply                     | City of Manitowoc      | No         |
| Village St Nazianz                            | 608 N 1st Ave                                      | BLRPC       | Wastewater Treatment Facility    | Village of St. Nazianz | No         |
| St Nazianz Fire Station                       | 202 N 4th Ave                                      | Hazus MH    | Fire and Safety                  | Village of St. Nazianz | No         |
| Eaton Town Hall                               | 316 W Main St                                      | Town        | Administrative Building          | Village of St. Nazianz | No         |
| St Nazianz Village Shop                       | 110 Colonial Dr                                    | Village     | Administrative Building          | Village of St. Nazianz | No         |
| Water Utility Well                            | 106 Colonial Dr                                    | Village     | Water Supply                     | Village of St. Nazianz | No         |
| Water Utility Well                            | 600 S 4th Ave                                      | Village     | Water Supply                     | Village of St. Nazianz | No         |
| Power Facility                                | 1618 E STH 310                                     | ATC         | Power Facility/Bulk Fuel Storage | Town of Two Rivers     | No         |
| Sewage Lift Station                           | 44th St                                            | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Two Rivers High                               | 4519 Lincoln Ave                                   | County 2019 | School                           | City of Two Rivers     | No         |
| Aurora Medical Center                         | 5000 Memorial Dr                                   | County 2019 | Licensed Healthcare Facility     | City of Two Rivers     | No         |
| Atrium Post Acute Care of Two Rivers          | 1 Hamilton Dr                                      | County 2019 | Licensed Healthcare Facility     | City of Two Rivers     | No         |
| Two Rivers Police Department                  | 1717 E Park St                                     | Hazus MH    | Fire and Safety                  | City of Two Rivers     | No         |
| Two Rivers Fire Department                    | 2122 Monroe St                                     | Hazus MH    | Fire and Safety                  | City of Two Rivers     | No         |
| Two Rivers Wastewater Treatment               | 1415 Lake St                                       | Hazus MH    | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Koenig Elementary                             | 1114 Lowell St                                     | County 2019 | School                           | City of Two Rivers     | No         |
| Clarke Middle                                 | 4608 Bellevue Pl                                   | County 2019 | School                           | City of Two Rivers     | No         |
| Magee Elementary                              | 3502 Glenwood St                                   | County 2019 | School                           | City of Two Rivers     | No         |
| Sewage Lift Station                           | Lakeview Ave/Jessie St                             | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Sewage Lift Station                           | Gardner St                                         | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Sewage Lift Station                           | Columbus St                                        | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Water Tower                                   | 2612 12th St                                       | City        | Water Supply                     | City of Two Rivers     | No         |
| Building (Switch Station)                     | 4412 Browns Dr (Lakefield Telephone Co. LLC)       | City        | Communication Facility           | City of Two Rivers     | No         |
| Sewage Lift Station                           | Woodland Dr                                        | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Building (Switch Station)                     | 1609 Adams St (GTE Telephone Operations)           | City        | Communication Facility           | City of Two Rivers     | No         |
| Two Rivers Department Public Works            | 1415 Lake Street                                   | City        | Administrative Building          | City of Two Rivers     | No         |
| Two Rivers Utility Shop & Office              | 1415 Lake Street                                   | City        | Administrative Building          | City of Two Rivers     | No         |
| Lakeshore Substation                          | Memorial Dr & 12th St                              | City        | Power Facility/Bulk Fuel Storage | City of Two Rivers     | No         |
| Water Supply Filter Treatment Plant           | Memorial Dr                                        | City        | Water Supply                     | City of Two Rivers     | No         |
| 500 kva Generator                             | Memorial Dr                                        | City        | Power Facility/Bulk Fuel Storage | City of Two Rivers     | No         |
| Two Rivers City Hall                          | 1717 E Park St                                     | City        | Administrative Building          | City of Two Rivers     | No         |
| Sewage Lift Station                           | Pierce St                                          | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Water Tower                                   | 2314 Picnic Hill Ln                                | City        | Water Supply                     | City of Two Rivers     | No         |
| Sewage Lift Station                           | 23rd St/Pine Tree Dr                               | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| US National Guard                             | 2225 Sandy Bay Rd                                  | City        | Military Installation            | City of Two Rivers     | No         |
| Aurora Two Rivers Clinic                      | 2219 Garfield St                                   | County 2019 | Licensed Healthcare Facility     | City of Two Rivers     | No         |
| Tower                                         | 2500 Garfield St                                   | City        | Communication Facility           | City of Two Rivers     | No         |
| Cable TV Control Center                       | 807 34th St (Charter Communications)               | City        | Communication Facility           | City of Two Rivers     | No         |
| Sewage Lift Station                           | Pierce Ct                                          | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Sewage Lift Station                           | Blue Heron Dr                                      | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Sewage Lift Station                           | 31st St                                            | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| West River Substation                         | 27th St & W River St                               | City        | Power Facility/Bulk Fuel Storage | City of Two Rivers     | No         |
| Sewage Lift Station                           | W River St                                         | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Natural Gas Substation                        | 1921 Columbus St                                   | City        | Power Facility/Bulk Fuel Storage | City of Two Rivers     | No         |
| Sub Station                                   | 2929 Hawthorne Ave                                 | City        | Power Facility/Bulk Fuel Storage | City of Two Rivers     | No         |
| Sewage Lift Station                           | Parkway Blvd                                       | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Sewage Lift Station                           | 37th St                                            | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| St. Johns Evangelical Lutheran                | 3607 45th St                                       | County 2019 | School                           | City of Two Rivers     | No         |
| Sewage Lift Station                           | CTH W (45th St)                                    | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Holy Family Memorial Two Rivers Health Center | 3310 45th St                                       | County 2019 | Licensed Healthcare Facility     | City of Two Rivers     | No         |
| Meadow View Assisted Living                   | 4606 Mishicot Rd                                   | County 2019 | Licensed Healthcare Facility     | City of Two Rivers     | No         |
| Sewage Lift Station                           | Forest Hills Dr                                    | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Watersia Haus Assisted Living                 | 2744 45th St                                       | County 2019 | Licensed Healthcare Facility     | City of Two Rivers     | No         |
| Sewage Lift Station                           | Riverhills Rd/Bellevue Pl                          | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Sewage Lift Station                           | 43rd St ?                                          | City        | Wastewater Treatment Facility    | City of Two Rivers     | No         |
| Building (Switch Station)                     | 2722 45th St (Lakefield Telephone Co. LLC)         | City        | Communication Facility           | City of Two Rivers     | No         |
| Schleswig Town Hall                           | 21935 Rockville Rd                                 | Town        | Administrative Building          | Town of Schleswig      | No         |
| Power Facility                                | 705 Washington Ave                                 | ATC         | Power Facility/Bulk Fuel Storage | City of Kiel           | No         |
| Kiel Police Department                        | 619 Paine St                                       | Hazus MH    | Fire and Safety                  | City of Kiel           | No         |
| Divine Savior Catholic School                 | 423 Fremont St                                     | County 2019 | School                           | City of Kiel           | No         |
| Kiel High                                     | 210 Raider Hts                                     | County 2019 | School                           | City of Kiel           | No         |
| Kiel Middle                                   | 502 Paine St                                       | County 2019 | School                           | City of Kiel           | No         |
| Zelanis Elementary                            | 1010 Adams St                                      | County 2019 | School                           | City of Kiel           | No         |
| Well #3, Water Storage Tower                  | 1401 1st St                                        | City        | Water Supply                     | City of Kiel           | No         |
| Wastewater Treatment Facility                 | 100 Rockville Rd                                   | City        | Wastewater Treatment Facility    | City of Kiel           | No         |
| Well #4                                       | 501 CTH XX                                         |             | Water Supply                     | City of Kiel           | No         |
| Well #5                                       | 355 Clay St                                        | City        | Water Supply                     | City of Kiel           | No         |
| Trinity Lutheran School                       | 387 Cemetery Rd                                    | County 2019 | School                           | City of Kiel           | No         |
| Water Storage Tower                           | 198 3rd St                                         |             | Water Supply                     | City of Kiel           | No         |
| Kiel City Hall                                | 621 6th St                                         | County      | Administrative Building          | City of Kiel           | No         |
| Well #1                                       | 705 Washington St                                  |             | Water Supply                     | City of Kiel           | No         |
| Natural Gas Substation                        | Point Creek Rd                                     | Town        | Power Facility/Bulk Fuel Storage | Town of Centerville    | No         |
| Building                                      | 1050 N Linden St                                   |             | Communication Facility           | Village of Cleveland   | No         |
| Cleveland Wastewater Treatment Facility       | 245 Whitetail Ln                                   | BLRPC       | Wastewater Treatment Facility    | Village of Cleveland   | No         |
| Wind Turbine                                  | 1290 North Ave                                     |             | Power Facility/Bulk Fuel Storage | Village of Cleveland   | No         |
| Power Facility                                | W Washington Ave                                   |             | Power Facility/Bulk Fuel Storage | Village of Cleveland   | No         |
| Cleveland Village Hall                        | 1150 W Washington Ave                              | BLRPC       | Administrative Building          | Village of Cleveland   | No         |
| Sewage Lift Station                           | 1151 Lakeshore Dr                                  | Hazus MH    | Wastewater Treatment Facility    | Village of Cleveland   | No         |
| Lakeshore Technical College                   | 1290 North Ave                                     | County 2019 | School                           | Village of Cleveland   | No         |
| Cleveland VA Clinic                           | 1205 North Ave                                     | County 2019 | Licensed Healthcare Facility     | Village of Cleveland   | No         |
| Cleveland Heights Mobile Home Park            | 115 Edgewood St                                    | County 2019 | Manufactured Housing             | Village of Cleveland   | No         |
| Cleveland Fire Department                     | 1274 W Washington Ave                              | Village     | Fire and Safety                  | Village of Cleveland   | No         |

# Critical Facilities

| NAME                                               | ADDRESS                                 | Source      | Type                         | MCD                      | Floodplain |
|----------------------------------------------------|-----------------------------------------|-------------|------------------------------|--------------------------|------------|
| Water Tower                                        | 819 Polk Ln                             | County 2019 | Water Supply                 | Village of Cleveland     | No         |
| Cleveland Police Department                        | 1150 W Washington Ave                   | Village     | Fire and Safety              | Village of Cleveland     | No         |
| Well #1                                            | 1245 Park Ln                            | Village     | Water Supply                 | Village of Cleveland     | No         |
| Well #2                                            | 1299 Franklin Dr                        | Village     | Water Supply                 | Village of Cleveland     | No         |
| Manitowoc City Transit System                      | 915 S 11th St                           | Hazus MH    | Transportation Facility      | City of Two Rivers       | No         |
| US Coast Guard                                     | 13 East St                              | BLRPC       | Military Installation        | City of Two Rivers       | No         |
| Bethany Evangelical Lutheran                       | 3209 Meadow Ln                          | County 2019 | School                       | City of Manitowoc        | No         |
| Tower                                              | 1024 S 9th St                           | BLRPC       | Communication Facility       | City of Manitowoc        | No         |
| McKinley Academy Charter                           | 1010 Huron St                           | County 2019 | School                       | City of Manitowoc        | No         |
| Manitowoc Public School District                   | 2902 Lindbergh Dr                       | County      | Administrative Building      | City of Manitowoc        | No         |
| Mishicot Village Hall                              | 511 E Main St                           | BLRPC       | Administrative Building      | Village of Mishicot      | No         |
| Mishicot Police Department                         | 511 E Main St                           | BLRPC       | Fire and Safety              | Village of Mishicot      | No         |
| Manitowoc Fire Station 3                           | 3820 Dewey St                           | County      | Fire and Safety              | City of Manitowoc        | No         |
| Manitowoc County Highway Shop                      | 3500 STH 310                            | County      | Administrative Building      | Town of Kossuth          | No         |
| St Nazianz Village Hall                            | 228 W Main St                           | County      | Administrative Building      | Village of St. Nazianz   | No         |
| Manitowoc County Highway Shop                      | 318 W Main St                           | County      | Administrative Building      | Village of St. Nazianz   | No         |
| Mishicot Town Hall                                 | 710 N State St                          | BLRPC       | Administrative Building      | Village of Mishicot      | No         |
| Meeme Town Hall                                    | 15318 CTH X                             | BLRPC       | Administrative Building      | Town of Meeme            | No         |
| Manitowoc Town Hall                                | 1822 Silver Creek Rd                    | BLRPC       | Administrative Building      | Town of Manitowoc        | No         |
| Manitowoc Rapids Town Hall                         | 8624 CTH JJ                             | BLRPC       | Administrative Building      | Town of Manitowoc Rapids | No         |
| Two Rivers Town Hall                               | 6525 CTH B                              | BLRPC       | Administrative Building      | Town of Two Rivers       | No         |
| Franklin Town Hall                                 | 7524 CTH J                              | BLRPC       | Administrative Building      | Town of Franklin         | No         |
| K-ville Mobile Home Park                           | 444 Pleasant Ln                         | County 2019 | Manufactured Housing         | Village of Kellnersville | No         |
| Building                                           | 1915 Mirro Dr (Seehafer Broadcasting)   | County 2019 | Communication Facility       | City of Manitowoc        | No         |
| Small Steps Family Child Care                      | 1025 1st St                             | County 2019 | Licensed Childcare Facility  | City of Kiel             | No         |
| Countryside Family Care Center                     | 24322 Manitowoc Rd                      | County 2019 | Licensed Childcare Facility  | Town of Maple Grove      | No         |
| Wee Care - Jod's Day Care                          | 124 Jefferson St                        | County 2019 | Licensed Childcare Facility  | Village of Valders       | No         |
| Forever Friends Family Child Care                  | 824 Randolph St                         | County 2019 | Licensed Childcare Facility  | Village of Mishicot      | No         |
| Kids Crayon Club                                   | 7219 CTH T                              | County 2019 | Licensed Childcare Facility  | Town of Kossuth          | No         |
| Tiny Treasures Christian Child Care                | 1029 33rd St                            | County 2019 | Licensed Childcare Facility  | City of Two Rivers       | No         |
| A Child's Place Day Care                           | 2611 11th St                            | County 2019 | Licensed Childcare Facility  | City of Two Rivers       | No         |
| Lakeshore Child Care Center                        | 3400 Division St                        | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Manitowoc/Two Rivers YMCA Child Development Center | 205 Maritime Dr                         | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Cathy's Day Care Center                            | 1314 Manila St                          | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Jesus' Lambs of Grace                              | 2426 N Rapids Rd                        | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Kinderheit Haus Child Care                         | 948 N 5th St                            | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Rise and Shine Child Care                          | 1335 S 20th St                          | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Sue's Little Angels Day Care                       | 912 N 12th St                           | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Lulu's House Family Child Care                     | 1609 Viebahn St                         | County 2019 | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Tower                                              | 1615 Spring St                          | County      | Communication Facility       | City of Manitowoc        | No         |
| Tower                                              | 1815 Freedom Way                        | County      | Communication Facility       | City of Manitowoc        | No         |
| Tower                                              | 23233 Mueller Rd                        | County      | Communication Facility       | Town of Schleswig        | No         |
| Tower                                              | 4400 Michigan Ave                       | County      | Communication Facility       | City of Manitowoc        | No         |
| Radio Tower                                        | 4009 Viebahn St (Seehafer Broadcasting) | County      | Communication Facility       | City of Manitowoc        | No         |
| Tower                                              | 1015 S Lakeview Dr                      | County      | Communication Facility       | City of Manitowoc        | No         |
| Building                                           | 3730 Mangin St (Seehafer Broadcasting)  | County      | Communication Facility       | City of Manitowoc        | No         |
| Radio Tower                                        | 4009 Viebahn St (Seehafer Broadcasting) | County      | Communication Facility       | City of Manitowoc        | No         |
| Radio Tower                                        | 4009 Viebahn St (Seehafer Broadcasting) | County      | Communication Facility       | City of Manitowoc        | No         |
| Radio Tower                                        | 4009 Viebahn St (Seehafer Broadcasting) | County      | Communication Facility       | City of Manitowoc        | No         |
| The Bay at North Ridge Health and Rehabilitation   | 1445 N 7th St                           | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| River's Bend Health Services                       | 950 S Rapids Rd                         | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Laurel Grove Assisted Living Center                | 1308 S 22nd St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Atrium Senior Living of Two Rivers at Northland    | 2500 Garfield St                        | County 2019 | Licensed Healthcare Facility | City of Two Rivers       | No         |
| Sacred Heart Court                                 | 1903 Division St                        | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| The Artisan Manitowoc                              | 1480 N 7th St                           | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Care Partners Manitowoc                            | 1858 Mirro Dr                           | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Fieldcrest Manor                                   | 1510 S 30th St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Hannah Home I                                      | 4025 Delta St                           | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Hannah Home II                                     | 3407 Wildwood Dr                        | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Harbor View Assisted Living                        | 2115 Cappaert Road                      | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| HLL Lighthouse                                     | 1301 N 24th St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| HLL Whitehall Court                                | 4705 W Whitehall Ct                     | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| HLL Wisconsin Home                                 | 1348 S 39th St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Kindredhearts Manitowoc                            | 5005 Vista Rd                           | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Marco Services Inc                                 | 1114 S 11th St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| TLC Homes Oakwood                                  | 1220 S 8th St                           | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Point Creek Home                                   | 1722 New York Ave                       | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Rainbow House                                      | 3100 Southbrook Ct                      | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Reifs Harmony House II                             | 2303 Marshall Street                    | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Samaritan on 7th                                   | 622 North 7th St                        | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| TLC Homes Fleetwood                                | 4438 Fleetwood Drive                    | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| The Villa                                          | 1600 S 18th St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Whitehall Estates II                               | 910 River Bluff Dr                      | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| St Mary's Home for the Aged                        | 1635 S. 21st St                         | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Field of Dreams                                    | 505 Belitz Dr                           | County 2019 | Licensed Healthcare Facility | City of Kiel             | No         |
| Holy Family Memorial Harbor Town                   | 1650 S 41st St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Holy Family Lakeshore Pediatrics                   | 4303 Michigan Ave                       | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Bellin Health Manitowoc                            | 3415 Custer St                          | County 2019 | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Emergency Siren                                    | CTH Q                                   | County      | Communication Facility       | Town of Gibson           | No         |
| Emergency Siren                                    | E Zander Rd & Stangel Rd                | County      | Communication Facility       | Town of Mishicot         | No         |
| Emergency Siren                                    | STH 42                                  | County      | Communication Facility       | Town of Two Creeks       | No         |
| Emergency Siren                                    | Saxonburg Rd                            | County      | Communication Facility       | Town of Mishicot         | No         |
| Emergency Siren                                    | Nuclear Rd & Twin Elder Rd              | County      | Communication Facility       | Town of Two Creeks       | No         |
| Emergency Siren                                    | Chemy Rd                                | County      | Communication Facility       | Town of Mishicot         | No         |
| Emergency Siren                                    | CTH V                                   | County      | Communication Facility       | Town of Two Rivers       | No         |
| Emergency Siren                                    | Division Dr and Rawley Rd               | County      | Communication Facility       | Town of Mishicot         | No         |
| Emergency Siren                                    | CTH V                                   | County      | Communication Facility       | Town of Two Rivers       | No         |
| Emergency Siren                                    | E Hillcrest Rd                          | County      | Communication Facility       | Town of Two Rivers       | No         |
| Emergency Siren                                    | Crystal Springs Rd                      | County      | Communication Facility       | Town of Two Rivers       | No         |
| Emergency Siren                                    | 3900 block of Bellvue Pl                | County      | Communication Facility       | City of Two Rivers       | No         |
| Emergency Siren                                    | 29th St & Adams St                      | County      | Communication Facility       | City of Two Rivers       | No         |
| Emergency Siren                                    | 2600 Block of 13th St                   | County      | Communication Facility       | City of Two Rivers       | No         |
| Emergency Siren                                    | 1002 E Cedar Ave                        | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | 1605 N 8th St                           | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | 28th St and Hamilton St                 | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | 1115 Washington St                      | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | 708 N Water St                          | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | 4921 Expo Dr                            | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | N Rapids Rd & Menasha Ave               | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | Fleetwood Dr                            | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | 21st St & Viebahn St                    | County      | Communication Facility       | Town of Manitowoc        | No         |
| Emergency Siren                                    | Harvest Cir & Broadway St               | County      | Communication Facility       | City of Manitowoc        | No         |
| Emergency Siren                                    | Dairyland Dr & W Washington Ave         | County      | Communication Facility       | Village of Cleveland     | No         |
| Emergency Siren                                    | 411 E Washington Ave                    | County      | Communication Facility       | Village of Cleveland     | No         |
| Emergency Siren                                    | 207 S Liberty St                        | County      | Communication Facility       | Village of Valders       | No         |
| Emergency Siren                                    | 202 N 4th Ave                           | County      | Communication Facility       | Village of St. Nazianz   | No         |
| Emergency Siren                                    | 212 Church St                           | County      | Communication Facility       | Village of St. Nazianz   | No         |

| NAME                                                                     | ADDRESS                                       | Source      | Type                             | MCD                           | Floodplain |
|--------------------------------------------------------------------------|-----------------------------------------------|-------------|----------------------------------|-------------------------------|------------|
| Emergency Siren                                                          | 1214 Main St                                  | County      | Communication Facility           | Village of Kellnersville      | No         |
| Emergency Siren                                                          | 520 Manitowoc St                              | County      | Communication Facility           | Village of Reedsville         | No         |
| Emergency Siren                                                          | 417 Paine St                                  | County      | Communication Facility           | City of Kiel                  | No         |
| Emergency Siren                                                          | 102 Rockville Rd                              | County      | Communication Facility           | City of Kiel                  | No         |
| Communication Tower for Utility & Public Works Building (Switch Station) | 1415 Lake Street                              | City        | Communication Facility           | City of Two Rivers            | No         |
| Shady Oaks Mobile Home Park LLC                                          | 2205 Forest Ave (Lakefield Telephone Co. LLC) | County      | Communication Facility           | City of Two Rivers            | No         |
| Affinity Medical                                                         | 13835 Cedar Lake Rd                           | County 2019 | Manufactured Housing             | City of Kiel - Calumet County | No         |
| Aurora Kiel Clinic                                                       | 632 Fremont St                                | County 2019 | Licensed Healthcare Facility     | City of Kiel                  | No         |
| Aurora Manitowoc Clinic                                                  | 1001 Service Rd                               | County 2019 | Licensed Healthcare Facility     | City of Kiel                  | No         |
| Manitowoc County Highway Shop                                            | 601 Reed Ave                                  | County 2019 | Licensed Healthcare Facility     | City of Manitowoc             | No         |
| Manitowoc County Highway Shop                                            | 10510 I-43                                    | TAC         | Administrative Building          | Town of Centerville           | No         |
| Manitowoc County Highway Shop                                            | 710 N State St                                | TAC         | Administrative Building          | Village of Mishicot           | No         |
| Menchaivre Fire Department                                               | 15331 County Rd K                             | TAC         | Fire and Safety                  | Town of Franklin              | No         |
| Water Reservoir                                                          | 3900 Bellevue Pl                              | TAC         | Water Supply                     | City of Two Rivers            | No         |
| Silver Lake College                                                      | 2406 S Alverno Rd                             | County 2019 | School                           | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 301 River Ter                                 | City        | Wastewater Treatment Facility    | City of Kiel                  | No         |
| Sewage Lift Station                                                      | access from Rockville Rd                      | City        | Wastewater Treatment Facility    | City of Kiel                  | No         |
| Sewage Lift Station                                                      | Rockville Rd                                  | City        | Wastewater Treatment Facility    | City of Kiel                  | No         |
| Sewage Lift Station                                                      | 402 8th St                                    | City        | Wastewater Treatment Facility    | City of Kiel                  | No         |
| Sewage Lift Station                                                      | 1055 STH 57                                   | City        | Wastewater Treatment Facility    | City of Kiel - Calumet County | No         |
| Co HWY Dept Gravel Pit                                                   | S 15th St                                     | County      | Post-Disaster Recovery Site      | Town of Manitowoc             | No         |
| Gravel Pit (Biese)                                                       | Glen Flora Rd                                 | County      | Post-Disaster Recovery Site      | Town of Eaton                 | No         |
| Gravel Pit (Brocker)                                                     | STH 67                                        | County      | Post-Disaster Recovery Site      | Town of Eaton                 | No         |
| Co HWY Dept Gravel Pit                                                   | 7416 CTH J                                    | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | 16833 Christel Rd                             | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Gravel Pit (Cherney Construction)                                        | 15201 CTH NN                                  | County      | Post-Disaster Recovery Site      | Town of Cooperstown           | No         |
| Co HWY Dept Gravel Pit                                                   | 12415 CTH Q                                   | County      | Post-Disaster Recovery Site      | Town of Gibson                | No         |
| Co HWY Dept Gravel Pit                                                   | 15233 CTH X                                   | County      | Post-Disaster Recovery Site      | Town of Meeme                 | No         |
| Gravel Pit (JPC Investments)                                             | 14511 CTH Z                                   | County      | Post-Disaster Recovery Site      | Town of Cooperstown           | No         |
| Co HWY Dept Gravel Pit                                                   | Schaefel Rd                                   | County      | Post-Disaster Recovery Site      | Town of Maple Grove           | No         |
| Co HWY Dept Gravel Pit                                                   | 16800 Little Elkhart Lake Rd                  | County      | Post-Disaster Recovery Site      | Town of Schleswig             | No         |
| Co HWY Dept Gravel Pit                                                   | Robley Rd                                     | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | 3107 Fricke Dr                                | County      | Post-Disaster Recovery Site      | Town of Newton                | No         |
| Co HWY Dept Gravel Pit                                                   | 14601 Lux Chapel Rd                           | County      | Post-Disaster Recovery Site      | Town of Schleswig             | No         |
| Co HWY Dept Gravel Pit                                                   | Tamarack Rd                                   | County      | Post-Disaster Recovery Site      | Town of Maple Grove           | No         |
| Co HWY Dept Gravel Pit                                                   | 3198 STH 147 W                                | County      | Post-Disaster Recovery Site      | Town of Gibson                | No         |
| Co HWY Dept Gravel Pit                                                   | CTH Q                                         | County      | Post-Disaster Recovery Site      | Town of Kossuth               | No         |
| Co HWY Dept Gravel Pit                                                   | 3304 STH 310                                  | County      | Post-Disaster Recovery Site      | Town of Kossuth               | No         |
| Co HWY Dept Gravel Pit                                                   | 16318 Little Elkhart Lake Rd                  | County      | Post-Disaster Recovery Site      | Town of Schleswig             | No         |
| Gravel Pit (Triple P)                                                    | CTH NN                                        | County      | Post-Disaster Recovery Site      | Town of Cooperstown           | No         |
| Only Hwy Dept Gravel Pit                                                 | CTH F                                         | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | CTH Q                                         | County      | Post-Disaster Recovery Site      | Town of Kossuth               | No         |
| Co HWY Dept Gravel Pit                                                   | E Tapawingo Rd                                | County      | Post-Disaster Recovery Site      | Town of Mishicot              | No         |
| Co HWY Dept Gravel Pit                                                   | English Lake Rd                               | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | Lax Chapel Rd                                 | County      | Post-Disaster Recovery Site      | Town of Schleswig             | No         |
| Gravel Pit (Litz)                                                        | Glen Flora Rd                                 | County      | Post-Disaster Recovery Site      | Town of Eaton                 | No         |
| Co HWY Dept Gravel Pit                                                   | 9803 Long Lake Rd                             | County      | Post-Disaster Recovery Site      | Town of Maple Grove           | No         |
| Co HWY Dept Gravel Pit                                                   | 15322 CTH C                                   | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | 3500 STH 310                                  | County      | Post-Disaster Recovery Site      | Town of Kossuth               | No         |
| Co HWY Dept Gravel Pit                                                   | CTH VV                                        | County      | Post-Disaster Recovery Site      | Town of Two Rivers            | No         |
| Gravel Pit (Sauer)                                                       | 1534 Highway H Rd                             | County      | Post-Disaster Recovery Site      | Town of Cato                  | No         |
| Co HWY Dept Gravel Pit                                                   | Mineral Springs Rd                            | County      | Post-Disaster Recovery Site      | Town of Meeme                 | No         |
| Co HWY Dept Gravel Pit (Olm)                                             | Hickory Hills Rd                              | County      | Post-Disaster Recovery Site      | Town of Eaton                 | No         |
| Co HWY Dept Gravel Pit                                                   | 13701 English Lake Rd                         | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | Parkway Rd                                    | County      | Post-Disaster Recovery Site      | Town of Kossuth               | No         |
| Co HWY Dept Gravel Pit                                                   | Refs Mills Rd                                 | County      | Post-Disaster Recovery Site      | Town of Kossuth               | No         |
| Co HWY Dept Gravel Pit                                                   | 5202 Silver Creek Rd                          | County      | Post-Disaster Recovery Site      | Town of Newton                | No         |
| Co HWY Dept Gravel Pit                                                   | 4005 Rockwood Rd                              | County      | Post-Disaster Recovery Site      | Town of Kossuth               | No         |
| Gravel Pit (MCC)                                                         | 12599 Hidden Valley Rd                        | County      | Post-Disaster Recovery Site      | Town of Cooperstown           | No         |
| Co HWY Dept Gravel Pit                                                   | English Lake Rd                               | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | 2941 STH 147 W                                | County      | Post-Disaster Recovery Site      | Town of Gibson                | No         |
| Co HWY Dept Gravel Pit                                                   | 6800 Manitou Dr                               | County      | Post-Disaster Recovery Site      | Town of Two Rivers            | No         |
| Co HWY Dept Gravel Pit (Sukowaty)                                        | USH 151                                       | County      | Post-Disaster Recovery Site      | Town of Eaton                 | No         |
| Co HWY Dept Gravel Pit                                                   | Quarry Rd                                     | County      | Post-Disaster Recovery Site      | Town of Rockland              | No         |
| Co HWY Dept Gravel Pit                                                   | Quarry Ln                                     | County      | Post-Disaster Recovery Site      | Village of Valders            | No         |
| Co HWY Dept Gravel Pit                                                   | CTH C                                         | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Co HWY Dept Gravel Pit                                                   | CTH C                                         | County      | Post-Disaster Recovery Site      | Town of Liberty               | No         |
| Gravel Pit (Graymont Western Lime)                                       | 16377 Lime Kiln Rd                            | County      | Post-Disaster Recovery Site      | Town of Cato                  | No         |
| Co HWY Dept Gravel Pit                                                   | CTH Q                                         | County      | Post-Disaster Recovery Site      | Town of Gibson                | No         |
| Manitowoc County Office Complex                                          | 4319 Expo Dr                                  | County      | Administrative Building          | City of Manitowoc             | No         |
| Gravel Pit (Kolarik)                                                     | Cooperstown Rd                                | County      | Post-Disaster Recovery Site      | Town of Cooperstown           | No         |
| Kellnersville Fire Department and First Responders                       | 807 Main St                                   | Village     | Fire and Safety                  | Village of Kellnersville      | No         |
| Sewage Lift Station                                                      | Zeman Rd                                      | Village     | Wastewater Treatment Facility    | Village of Kellnersville      | No         |
| Waste Storage                                                            | E Tapawingo Rd                                | Town        | Power Facility/Bulk Fuel Storage | Town of Two Creeks            | No         |
| Wotachek Pond                                                            | 18804 STH 42                                  | Town        | Fire and Safety                  | Town of Two Creeks            | No         |
| Sprang Pond                                                              | 16704 Lakeshore Dr                            | Town        | Fire and Safety                  | Town of Two Creeks            | No         |
| Harpt Lake Boat Landing (dry hydrant)                                    | 6001 North Lake Rd                            | Town        | Fire and Safety                  | Town of Gibson                | No         |
| Cenex                                                                    | Avery Rd                                      | Town        | Power Facility/Bulk Fuel Storage | Town of Gibson                | No         |
| Schaus (LP tank fill station)                                            | 3200 STH 147 W                                | Town        | Power Facility/Bulk Fuel Storage | Town of Gibson                | No         |
| Utility Support Building                                                 | 1418 S Main St                                | Village     | Administrative Building          | Village of Mishicot           | No         |
| Sewage Lift Station 2                                                    | 676 E Church St                               | Village     | Wastewater Treatment Facility    | Village of Mishicot           | No         |
| Sewage Lift Station 3                                                    | 400 Washington St                             | Village     | Wastewater Treatment Facility    | Village of Mishicot           | No         |
| Sewage Lift Station 4                                                    | E Samz Rd/S State St                          | Village     | Wastewater Treatment Facility    | Village of Mishicot           | No         |
| Sewage Lift Station 5                                                    | 139 W Church St                               | Village     | Wastewater Treatment Facility    | Village of Mishicot           | No         |
| Sewage Lift Station 6                                                    | Riverwood Dr/Riverwood Ct                     | Village     | Wastewater Treatment Facility    | Village of Mishicot           | No         |
| Sewage Lift Station 1                                                    | Laduron Dr                                    | Village     | Wastewater Treatment Facility    | Village of Mishicot           | No         |
| Fox Hills Pond (dry hydrant)                                             | 898 W Samz Rd                                 | Village     | Fire and Safety                  | Village of Mishicot           | No         |
| Water Tower                                                              | 3145 Basswood Rd                              | City        | Water Supply                     | Town of Manitowoc Rapids      | No         |
| Public Utilities                                                         | 15201540 Dewey St                             | City        | Administrative Building          | City of Manitowoc             | No         |
| Manitowoc Two Rivers YMCA - Orion                                        | 2210 Woodland Dr                              | County 2019 | Licensed Childcare Facility      | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 2511 Lakeside Blvd                            | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 3201 S 10th St                                | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 1396 Irving Cr                                | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 1800 E Horseshoe Dr                           | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 2329 Silveredge Dr                            | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 500 S 16th St                                 | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 2319 S 14th St                                | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 5023 River Heights Dr                         | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 2300 Paul Rd                                  | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 911 Lawton Ter                                | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Sewage Lift Station                                                      | 820 Marlime Dr                                | City        | Wastewater Treatment Facility    | City of Manitowoc             | No         |
| Lakeshore Tech College Child Care                                        | 1290 North Avenue                             | County 2019 | Licensed Childcare Facility      | Village of Cleveland          | No         |
| Precious Memories Daycare LLC                                            | 132 W Menasha Avenue                          | County 2019 | Licensed Childcare Facility      | Village of Whislaw            | No         |
| Chatterbox Child Learning Center                                         | 65 Riverview Road                             | County 2019 | Licensed Childcare Facility      | City of Kiel                  | No         |
| Chatterbox Kids Campus                                                   | 510 Woodlawn Dr                               | County 2019 | Licensed Childcare Facility      | Village of Mishicot           | No         |
| Chatterbox Kids Campus - Valders                                         | 331 Wilson Street                             | County 2019 | Licensed Childcare Facility      | Village of Valders            | No         |
| Falling Star Child Care LLC                                              | 1501 N Rapids Road                            | County 2019 | Licensed Childcare Facility      | City of Manitowoc             | No         |

# Critical Facilities

| NAME                                             | ADDRESS                                          | Source          | Type                         | MCD                      | Floodplain |
|--------------------------------------------------|--------------------------------------------------|-----------------|------------------------------|--------------------------|------------|
| Kiel Cooperative Preschool                       | 621 6th Street                                   | County 2019     | Licensed Childcare Facility  | City of Kiel             | No         |
| Good Shepherd Lutheran Preschool 4k              | 3234 Micholc Road                                | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| The Peanut Gallery CC and Learning Center        | 2411 Wolmer Street                               | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Manitowoc Two Rivers YMCA SACC - Franklin        | 805 S 35th Street                                | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Man-Tr YMCA - Madison                            | 701 N 4th Street                                 | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Manitowoc Two Rivers YMCA - Riverview            | 4400 Michigan Avenue                             | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| St Peter's Lutheran Tiny Treasures Preschool     | 325 Randolph St                                  | County 2019     | Licensed Childcare Facility  | Village of Mishicot      | No         |
| Redeemer Lutheran Christian Preschool            | 1712 Menasha Ave                                 | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Follow Your Heart Learning Center LLC            | 2132 32nd Street                                 | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| Happy Hearts Childcare                           | 440 Elizabeth Street                             | County 2019     | Licensed Childcare Facility  | Village of Mishicot      | No         |
| Creative Learning Child Enrichment Center        | 4404 Bellevue Pl                                 | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| Creative Kids Club                               | 3502 Glenwood Street                             | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| CESA 7 Head Start - Manitowoc                    | 4400 Michigan Avenue                             | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| CESA 7 Head Start - Two Rivers                   | 3234 Mishicot Road                               | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| CESA 7 Head Start                                | 1130 S 9th Street                                | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Building Blocks Day Care Center and Preschool    | 315 S Adams Street                               | County 2019     | Licensed Childcare Facility  | Village of Valders       | No         |
| Children's House Montessori of Manitowoc         | 4020 Memorial Drive                              | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| Cooperative Nursery Center Preschool             | 501 8th Street                                   | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Learning Center                                  | 1630 28th Street                                 | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| Magic Ladder Nursery School                      | 255 Roosevelt Street                             | County 2019     | Licensed Childcare Facility  | Village of Valders       | No         |
| St Gregory Preschool and Daycare                 | 212 Church Street                                | County 2019     | Licensed Childcare Facility  | Village of St. Nazanz    | No         |
| St Peter the Fisherman Preschool                 | 2203 12th Street                                 | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| Trinity Christian School 4-year-old Kindergarten | 2201 S 42nd St                                   | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Two Rivers Nursery School                        | 1218 Madison Street                              | County 2019     | Licensed Childcare Facility  | City of Two Rivers       | No         |
| Ashling Montessori School                        | 2005 Johnson Dr                                  | County 2019     | Licensed Childcare Facility  | City of Manitowoc        | No         |
| Ascension Medical Group Kiel                     | 1160 Servic Rd, Kiel                             | County 2019     | Licensed Healthcare Facility | City of Kiel             | No         |
| Pathways to a Better Life 2 LLC                  | 13127 Lax Chapel Rd, Kiel                        | County 2019     | Licensed Healthcare Facility | Town of Schleswig        | No         |
| Pathways to a Better Life 1 LLC                  | 13111 Lax Chapel Rd, Kiel                        | County 2019     | Licensed Healthcare Facility | Town of Schleswig        | No         |
| Aurora Valders Clinic                            | 106 Wilson St, Valders                           | County 2019     | Licensed Healthcare Facility | Village of Valders       | No         |
| The Willows                                      | 611 Washington St, Mishicot                      | County 2019     | Licensed Healthcare Facility | Village of Mishicot      | No         |
| Holy Family Lakefront Campus                     | 800 Lakefront Way, Two Rivers                    | County 2019     | Licensed Healthcare Facility | City of Two Rivers       | No         |
| TLC Homes East Cedar                             | 705 E Cedar Ave                                  | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Vista Care North 21st Street AFH                 | 2127 Menasha Ave, Manitowoc                      | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| TLC Homes Cappaert Road                          | 2233 Cappaert Rd, Manitowoc                      | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Hi The Winds                                     | 2408 Knuehl St, Manitowoc                        | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Vista Care Kimberly Circle AFH                   | 3302 Kimberly Circle, Manitowoc                  | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| TLC Homes Paul Road                              | 2213 Paul Rd, Manitowoc                          | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Vista Care Rock Street AFH                       | 4020 Rock St, Manitowoc                          | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Orthopedic Associates                            | 501 N. 10th St, Manitowoc                        | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Lakeshore Community Health Care                  | 2719 Calumet Ave                                 | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Hi Wisconsin Home                                | 1350 S 39th St                                   | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Prevea Manitowoc Health Center                   | 4810 Expo Dr                                     | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Vista Care Expo Drive AFH                        | 5053 Expo Dr, Manitowoc                          | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Tender Reflections of Manitowoc                  | 2210 Dufek Dr                                    | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Aurora Manitowoc Clinic                          | 4100 Dewey Ave                                   | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Aurora Manitowoc Clinic                          | 3509 Dewey Ave                                   | County 2019     | Licensed Healthcare Facility | City of Manitowoc        | No         |
| Hi Newport Home                                  | 3609 Hecker Rd                                   | County 2019     | Licensed Healthcare Facility | Town of Newton           | No         |
| Kiel Elementary                                  | 416 Paine St                                     | County 2019     | School                       | City of Kiel             | No         |
| Saint Francis of Assisi Elementary               | 223 Manitowoc St                                 | County 2019     | School                       | Village of Reedsville    | No         |
| Lakeside Mennonite School                        | 722 Hillview Road                                | County 2019     | School                       | Town of Gibson           | No         |
| Lighthouse Learning Acad                         | 4521 Lincoln Ave                                 | County 2019     | School                       | City of Two Rivers       | No         |
| Life Academy                                     | 2810 Wolmer St                                   | County 2019     | School                       | City of Manitowoc        | No         |
| Saint Francis of Assisi Middle                   | 2109 Marshall St                                 | County 2019     | School                       | City of Manitowoc        | No         |
| Saint Mary/Saint Michael School                  | 19 S CTH J                                       | County 2019     | School                       | Town of Cato             | No         |
| St. John's Lutheran School                       | 14323 S Maribel Rd                               | County 2019     | School                       | Village of Maribel       | No         |
| UW Green Bay - Manitowoc Campus                  | 705 Viebahn St                                   | County 2019     | School                       | City of Manitowoc        | No         |
| Cleveland Elementary School                      | 411 E Washington Ave                             | County 2019     | School                       | Village of Cleveland     | No         |
| Northeast Wisconsin Montessori School            | 411 E Washington Ave                             | County 2019     | School                       | Village of Cleveland     | No         |
| Meeme Leads Charter School                       | 12121 XX                                         | County 2019     | School                       | Town of Meeme            | No         |
| Collins Marsh Sub-impound                        | Trib. of Mud Creek                               | DNR 2019        | Dam                          | Town of Rockland         | No         |
| B360013                                          | DAIRYLAND DR / FISCHER CREEK                     | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360016                                          | DAIRYLAND DR / SOUTH BRANCH OF CENTERVILLE CREEK | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360029                                          | USH 10-STH 42 WALDO BLVD / WISCONSIN CENTRAL RR  | County/HSI 2019 | Bridge                       | City of Manitowoc        | No         |
| B360030                                          | CTH R / DEVILS RIVER STATE TRAIL                 | County/HSI 2019 | Bridge                       | Town of Gibson           | No         |
| B360034                                          | N CTH J / BRANCH OF BRANCH RIVER                 | County/HSI 2019 | Bridge                       | Town of Cato             | No         |
| B360037                                          | CLEVELAND RD / I-43                              | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360039                                          | CTH XX / I-43                                    | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360040                                          | I-43 SB / CTH F                                  | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360041                                          | I-43 NB / NEWTON RD                              | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360042                                          | I-43 SB / WESTVIEW RD                            | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360043                                          | FISCHER CREEK RD / I-43                          | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360045                                          | CTH X / I-43                                     | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360046                                          | POINT CREEK RD / I-43                            | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360048                                          | I-43 NB / CTH F                                  | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360052                                          | I-43 SB / CARSTENS LAKE RD                       | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360053                                          | I-43 NB / CARSTENS LAKE RD                       | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360056                                          | I-43 SB / CLOVER RD                              | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360057                                          | I-43 NB / CLOVER RD                              | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360058                                          | I-43 / PINE CREEK                                | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360059                                          | SILVER CREEK RD / I-43                           | County/HSI 2019 | Bridge                       | Town of Newton           | No         |
| B360061                                          | I-43 NB / WESTVIEW RD                            | County/HSI 2019 | Bridge                       | Town of Centerville      | No         |
| B360062                                          | CTH CL-VIEBAHN ST / I-43                         | County/HSI 2019 | Bridge                       | City of Manitowoc        | No         |
| B360063                                          | USH 151-STH 42 NB / I-43                         | County/HSI 2019 | Bridge                       | City of Manitowoc        | No         |
| B360065                                          | I-43 SB-STH 42 SB / CTH CS-W CUSTER ST           | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360066                                          | I-43 NB-STH 42 NB / CTH CS-W CUSTER ST           | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360067                                          | I-43 SB-STH 42 SB / Wisconsin Central RR         | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360068                                          | I-43 NB-STH 42 NB / Wisconsin Central RR         | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360069                                          | MIDDLE RD / I-43-STH 42                          | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360070                                          | I-43 SB / USH 10 EB-STH 42 SB                    | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360071                                          | I-43 NB / USH 10 EB-STH 42 SB                    | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360077                                          | I-43 SB / USH 10 WB-STH 310                      | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360078                                          | I-43 NB / USH 10 WB-STH 310                      | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360079                                          | ROCKWOOD RD / I-43                               | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360080                                          | REIFS MILL RD / I-43                             | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360081                                          | CTH V-HILLCREST RD / I-43                        | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360083                                          | HIDDEN VALLEY RD / I-43                          | County/HSI 2019 | Bridge                       | Town of Cooperstown      | No         |
| B360084                                          | POLIFKA RD / I-43                                | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360085                                          | CTH P-HOMESTEAD RD / I-43-USH 10                 | County/HSI 2019 | Bridge                       | Town of Manitowoc Rapids | No         |
| B360086                                          | I-43 SB / CTH K                                  | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360087                                          | I-43 NB / CTH K                                  | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360088                                          | FISCHERVILLE RD / I-43                           | County/HSI 2019 | Bridge                       | Town of Kossuth          | No         |
| B360089                                          | ZANDER RD / I-43                                 | County/HSI 2019 | Bridge                       | Town of Cooperstown      | No         |
| B360090                                          | GREENSTREET RD / I-43                            | County/HSI 2019 | Bridge                       | Town of Cooperstown      | No         |
| B360091                                          | I-43 SB / DEVILS RIVER STATE TRAIL               | County/HSI 2019 | Bridge                       | Town of Cooperstown      | No         |
| B360092                                          | I-43 NB / DEVILS RIVER STATE TRAIL               | County/HSI 2019 | Bridge                       | Town of Cooperstown      | No         |
| B360093                                          | I-43 SB / STH 147                                | County/HSI 2019 | Bridge                       | Town of Cooperstown      | No         |
| B360094                                          | I-43 NB / STH 147                                | County/HSI 2019 | Bridge                       | Town of Cooperstown      | No         |



| NAME        | ADDRESS                                        | Source          | Type                   | MCD                      | Floodplain |
|-------------|------------------------------------------------|-----------------|------------------------|--------------------------|------------|
| B360095     | I-43 SB / SCHLEY RD                            | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360096     | I-43 NB / SCHLEY RD                            | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360099     | I-43 NB / CTH T                                | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360100     | I-43 SB / CTH T                                | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360101     | I-43 SB / DEVILS RIVER STATE TRAIL             | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360102     | I-43 NB / DEVILS RIVER STATE TRAIL             | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360103     | I-43 SB / ROSECRANS RD                         | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360104     | I-43 NB / ROSECRANS RD                         | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360106     | 18TH ST / SPRING ST CONNECTOR                  | County/HSI 2019 | Bridge                 | City of Manitowoc        | No         |
| B360114     | USH 10 WB-STH 42 SB-WALDO BLVD / WHITEWATER DR | County/HSI 2019 | Bridge                 | Town of Manitowoc Rapids | No         |
| B360115     | USH 10 EB-STH 42 NB-WALDO BLVD / WHITEWATER DR | County/HSI 2019 | Bridge                 | Town of Manitowoc Rapids | No         |
| B360116     | WISCONSIN CENTRAL RR / DEWEY ST                | County/HSI 2019 | Bridge                 | City of Manitowoc        | No         |
| B360122     | REVERE DR SB / MANITOWOC RIVER                 | County/HSI 2019 | Bridge                 | City of Manitowoc        | No         |
| B3601280003 | USH 10 EB-10TH ST / MANITOWOC RIVER            | County/HSI 2019 | Bridge                 | City of Manitowoc        | No         |
| B360130     | ZANDER RD / DEVILS RIVER STATE TRAIL           | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360138     | CTH W / BRANCH OF MUD CREEK                    | County/HSI 2019 | Bridge                 | Town of Rockland         | No         |
| B360143     | CTH B / WEST TWIN RIVER                        | County/HSI 2019 | Bridge                 | Town of Two Rivers       | No         |
| B360148     | COOPERSTOWN RD / TRIBUTARY OF THE DEVILS RIVER | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| B360158     | BOXWOOD RD / BRANCH OF MUD CREEK               | County/HSI 2019 | Bridge                 | Town of Rockland         | No         |
| B360159     | CTH BB / BLACK CREEK                           | County/HSI 2019 | Bridge                 | Town of Gibson           | No         |
| B360170     | PINE RIVER RD / POINT CREEK                    | County/HSI 2019 | Bridge                 | Town of Liberty          | No         |
| B360178     | STH 42 / S TWO CREEKS                          | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| B360179     | NEWTON RD / POINT CREEK                        | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| B360180     | STH 42 / TRIB. TO MEEME CR                     | County/HSI 2019 | Bridge                 | Town of Meeme            | No         |
| B360181     | STH 42 / TRIB. TO POINT CREEK                  | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| B360224     | CTH X / TRIB. TO SHEBOGAN RIVER                | County/HSI 2019 | Bridge                 | Town of Schleswig        | No         |
| B360227     | STH 42 / UNNAMED TRIB. TO LAKE MICHIGAN        | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| B360229     | S UNION RD / POINT CREEK                       | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| B360231     | I-43 SB / NEWTON RD                            | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| B360317     | SHOTO RD / BRANCH OF WEST TWIN RIVER           | County/HSI 2019 | Bridge                 | Town of Kossuth          | No         |
| B360461     | STH 42 / SILVER CREEK                          | County/HSI 2019 | Bridge                 | Town of Manitowoc        | No         |
| C360002     | I-43 / TRIB. TO FISCHER CREEK                  | County/HSI 2019 | Bridge                 | Town of Centerville      | No         |
| C360005     | STH 42 / MOLASH CREEK                          | County/HSI 2019 | Bridge                 | Town of Two Rivers       | No         |
| C360006     | STH 42 / Unnamed Creek                         | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| C360007     | STH 42 / Unnamed Creek                         | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| C360008     | STH 42 / Unnamed Creek                         | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| C360010     | STH 42 / Drainage Way                          | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| C360011     | STH 42 / Drainage Way                          | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| C360013     | STH 42 / Drainage Way                          | County/HSI 2019 | Bridge                 | City of Two Rivers       | No         |
| C360014     | STH 147-S MAIN ST / TRIB. TO EAST TWIN RIVER   | County/HSI 2019 | Bridge                 | Town of Mishicot         | No         |
| C360015     | STH 147 / Unnamed Creek                        | County/HSI 2019 | Bridge                 | Town of Mishicot         | No         |
| C360019     | I-43 / Unnamed Creek                           | County/HSI 2019 | Bridge                 | Town of Centerville      | No         |
| C360020     | I-43 / PINE CREEK                              | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| C360021     | I-43 / SOUTH BRANCH OF CENTERVILLE CREEK       | County/HSI 2019 | Bridge                 | Town of Centerville      | No         |
| C360025     | I-43 / Unnamed Creek                           | County/HSI 2019 | Bridge                 | Town of Kossuth          | No         |
| C360026     | STH 147-S MAIN ST / JOHNSON CREEK              | County/HSI 2019 | Bridge                 | Village of Mishicot      | No         |
| C360028     | I-43 / KRIWANEK CREEK                          | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| C360034     | CTH W / NORTH BRANCH OF MUD CREEK              | County/HSI 2019 | Bridge                 | Town of Rockland         | No         |
| C360035     | STH 42 / POINT CREEK                           | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| C360037     | USH 10 / TRIB. OF BRANCH RIVER                 | County/HSI 2019 | Bridge                 | Town of Cato             | No         |
| C360039     | GRMMS RD / TRIB. TO BRANCH RIVER               | County/HSI 2019 | Bridge                 | Town of Cato             | No         |
| C360046     | STH 32 / MILLHOME CREEK                        | County/HSI 2019 | Bridge                 | Town of Schleswig        | No         |
| C360058     | USH 10 / Unnamed Creek                         | County/HSI 2019 | Bridge                 | Town of Maple Grove      | No         |
| C360090     | I-43 / Unnamed Creek                           | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| C360784     | USH 151 / UNNAMED CREEK                        | County/HSI 2019 | Bridge                 | Town of Eaton            | No         |
| C360785     | USH 151 / TRIB. TO MANITOWOC RIVER             | County/HSI 2019 | Bridge                 | Town of Eaton            | No         |
| C361016     | STH 42 / Drainage way                          | County/HSI 2019 | Bridge                 | City of Two Rivers       | No         |
| C361024     | STH 42 / DRAINAGE WAY                          | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| P360068     | OLD Q RD / TRIB. TO WEST TWIN RIVER            | County/HSI 2019 | Bridge                 | Town of Kossuth          | No         |
| P360094     | COOPERSTOWN RD / TRIBUTARY OF THE DEVILS RIVER | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| P360105     | KVITEK RD / DEVILS RIVER                       | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| P360127     | FRANCIS CREEK RD / TRIB. TO FRANCIS CREEK      | County/HSI 2019 | Bridge                 | Town of Kossuth          | No         |
| P360130     | CHURCH ST / TRIB. TO EAST TWIN RIVER           | County/HSI 2019 | Bridge                 | Town of Mishicot         | No         |
| P360154     | OLD WOODEN BRIDGE RD / SOO LINE                | County/HSI 2019 | Bridge                 | Town of Cato             | No         |
| P360156     | MANITOWOC RD / TRIB. OF MUD CREEK              | County/HSI 2019 | Bridge                 | Town of Rockland         | No         |
| P360160     | HILLTOP RD / MUD CREEK                         | County/HSI 2019 | Bridge                 | Town of Rockland         | No         |
| P360171     | CTH U / PINE CREEK                             | County/HSI 2019 | Bridge                 | Town of Newton           | No         |
| P360191     | WILLMAS RD / MEEME RIVER                       | County/HSI 2019 | Bridge                 | Town of Meeme            | No         |
| P360199     | POINT CREEK RD / TRIB TO SHEBOGAN RIVER        | County/HSI 2019 | Bridge                 | Town of Schleswig        | No         |
| P360903     | DEVILS RIVER STATE TRAIL / HOSTAK RD           | County/HSI 2019 | Bridge                 | Town of Cooperstown      | No         |
| P360911     | LAKE SHORE RD / RABE FOREST CREEK              | County/HSI 2019 | Bridge                 | Town of Two Rivers       | No         |
| P360920     | CTH Q / TRIB. OF WEST TWIN RIVER               | County/HSI 2019 | Bridge                 | Town of Kossuth          | No         |
| P360924     | E CTH V / TRIB. OF EAST TWIN RIVER             | County/HSI 2019 | Bridge                 | Town of Mishicot         | No         |
| P360927     | BOOT LAKE RD / LONG LAKE TRIB                  | County/HSI 2019 | Bridge                 | Town of Rockland         | No         |
| P360935     | CTH X / FISCHER CREEK                          | County/HSI 2019 | Bridge                 | Town of Centerville      | No         |
| P360942     | LAKE SHORE RD / TRIB. TO LAKE MICHIGAN         | County/HSI 2019 | Bridge                 | Town of Two Creeks       | No         |
| Cell Tower  | 4004 N CTH J                                   | County 2019     | Communication Facility | Town of Cato             | No         |
| Cell Tower  | 13615 McGuire Rd                               | County 2019     | Communication Facility | Town of Cato             | No         |
| Cell Tower  | 15709 Limestone Rd                             | County 2019     | Communication Facility | Town of Cato             | No         |
| Cell Tower  | 13003 USH 151                                  | County 2019     | Communication Facility | Town of Cato             | No         |
| Cell Tower  | 16317 Dairyland Dr                             | County 2019     | Communication Facility | Town of Centerville      | No         |
| Cell Tower  | West View Rd                                   | County 2019     | Communication Facility | Town of Centerville      | No         |
| Cell Tower  | 10167 Schley Rd                                | County 2019     | Communication Facility | Town of Cooperstown      | No         |
| Cell Tower  | 8304 Paulz Rd                                  | County 2019     | Communication Facility | Town of Cooperstown      | No         |
| Cell Tower  | 22520 Croh Rd                                  | County 2019     | Communication Facility | Town of Eaton            | No         |
| Cell Tower  | 9388 Menchalville Rd                           | County 2019     | Communication Facility | Town of Franklin         | No         |
| Cell Tower  | 16818 Long Rd                                  | County 2019     | Communication Facility | Town of Franklin         | No         |
| Cell Tower  | 7318 Old Y Rd                                  | County 2019     | Communication Facility | Town of Gibson           | No         |
| Cell Tower  | 11000 Thunder Rd                               | County 2019     | Communication Facility | Town of Kossuth          | No         |
| Cell Tower  | 11315 CTH T                                    | County 2019     | Communication Facility | Town of Kossuth          | No         |
| Cell Tower  | 9635 Hillside Ln                               | County 2019     | Communication Facility | Town of Kossuth          | No         |
| Cell Tower  | 7500 Village Dr                                | County 2019     | Communication Facility | Town of Kossuth          | No         |
| Cell Tower  | 7500 Village Dr                                | County 2019     | Communication Facility | Town of Kossuth          | No         |
| Cell Tower  | 5102 Marken Rd                                 | County 2019     | Communication Facility | Town of Liberty          | No         |
| Cell Tower  | 15562 CTH C                                    | County 2019     | Communication Facility | Town of Liberty          | No         |
| Cell Tower  | 9526 Hilltop Rd                                | County 2019     | Communication Facility | Town of Manitowoc Rapids | No         |
| Cell Tower  | 6492 Homestead Rd                              | County 2019     | Communication Facility | Town of Manitowoc Rapids | No         |
| Cell Tower  | 5712 CTH JJ                                    | County 2019     | Communication Facility | Town of Manitowoc Rapids | No         |
| Cell Tower  | 2033 Highway H RD                              | County 2019     | Communication Facility | Town of Manitowoc Rapids | No         |
| Cell Tower  | 9630 Old 151 Rd                                | County 2019     | Communication Facility | Town of Manitowoc Rapids | No         |
| Cell Tower  | Oakwood Rd / USH 10                            | County 2019     | Communication Facility | Town of Maple Grove      | No         |
| Cell Tower  | 20400 Manitowoc Rd                             | County 2019     | Communication Facility | Town of Maple Grove      | No         |
| Cell Tower  | 15318 CTH X                                    | County 2019     | Communication Facility | Town of Meeme            | No         |
| Cell Tower  | 11932 CTH X                                    | County 2019     | Communication Facility | Town of Meeme            | No         |
| Cell Tower  | 13103 Moraine Rd                               | County 2019     | Communication Facility | Town of Meeme            | No         |
| Cell Tower  | 15007 CTH XX                                   | County 2019     | Communication Facility | Town of Meeme            | No         |
| Cell Tower  | 9940 STH 147                                   | County 2019     | Communication Facility | Town of Mishicot         | No         |

# Critical Facilities

| NAME                                               | ADDRESS                                      | Source                       | Type                    | MCD                      | Floodplain |
|----------------------------------------------------|----------------------------------------------|------------------------------|-------------------------|--------------------------|------------|
| Cell Tower                                         | 2786 Sturm Rd                                | County 2019                  | Communication Facility  | Town of Mishicot         | No         |
| Cell Tower                                         | 5405 CTH CR                                  | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Cell Tower                                         | 4014 Carstens Lake Rd                        | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Cell Tower                                         | 9542 CTH C                                   | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Cell Tower                                         | 9407 Newton Rd                               | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Radio Tower                                        | 7914 CTH F (Seehafer Broadcasting)           | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Cell Tower                                         | 9431 Center Rd                               | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Cell Tower                                         | 5622 CTH F                                   | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Cell Tower                                         | 13426 Meggers Rd                             | County 2019                  | Communication Facility  | Town of Schleswig        | No         |
| Cell Tower                                         | 14000 Louis Corners Rd                       | County 2019                  | Communication Facility  | Town of Schleswig        | No         |
| Cell Tower                                         | 23233 MUELLER RD                             | County 2019                  | Communication Facility  | Town of Schleswig        | No         |
| Cell Tower                                         | 6010 Nuclear Rd                              | County 2019                  | Communication Facility  | Town of Two Creeks       | No         |
| Cell Tower                                         | 5036 Lehmann Rd                              | County 2019                  | Communication Facility  | Town of Two Creeks       | No         |
| Cell Tower                                         | 4802 CTH V                                   | County 2019                  | Communication Facility  | Town of Two Creeks       | No         |
| Cell Tower                                         | 6220 STH 42                                  | County 2019                  | Communication Facility  | Town of Two Rivers       | No         |
| Cell Tower                                         | 6200 STH 42                                  | County 2019                  | Communication Facility  | Town of Two Rivers       | No         |
| Cell Tower                                         | 3607 Maplewood Rd                            | County 2019                  | Communication Facility  | Town of Two Rivers       | No         |
| Cell Tower                                         | 5103 CTH B                                   | County 2019                  | Communication Facility  | Town of Two Rivers       | No         |
| Cell Tower                                         | 6229 Greenfield Ln                           | County 2019                  | Communication Facility  | Town of Two Rivers       | No         |
| Cell Tower                                         | 10416 E Belmar Rd                            | County 2019                  | Communication Facility  | Village of Maribel       | No         |
| Cell Tower                                         | 819 Polk Ln                                  | County 2019                  | Communication Facility  | Village of Cleveland     | No         |
| Cell Tower                                         | 621 6th St                                   | County 2019                  | Communication Facility  | City of Kiel             | No         |
| Cell Tower                                         | 198 3rd St                                   | County 2019                  | Communication Facility  | City of Kiel             | No         |
| Cell Tower                                         | 2701 18th St                                 | County 2019                  | Communication Facility  | City of Two Rivers       | No         |
| Cell Tower                                         | 2318 Picnic Hill Ln                          | County 2019                  | Communication Facility  | City of Two Rivers       | No         |
| Cell Tower                                         | 800 Columbus St                              | County 2019                  | Communication Facility  | City of Two Rivers       | No         |
| Cell Tower                                         | 4410 Custer St                               | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 2515 Viebahn St                              | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 1915 Mirro Dr                                | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 1915 Mirro Dr                                | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 221 S Rockway St                             | County 2019                  | Communication Facility  | Village of Mishicot      | No         |
| Cell Tower                                         | 425 E Samz Rd                                | County 2019                  | Communication Facility  | Village of Mishicot      | No         |
| Cell Tower                                         | 419 Buchanan St                              | County 2019                  | Communication Facility  | Village of Mishicot      | No         |
| Cell Tower                                         | 250 N Calumet Dr                             | County 2019                  | Communication Facility  | Village of Valders       | No         |
| Cell Tower                                         | 111 Industrial Park Dr                       | County 2019                  | Communication Facility  | Village of Reedsville    | No         |
| Cell Tower                                         | 6610 Nuclear Rd                              | County 2019                  | Communication Facility  | Town of Two Creeks       | No         |
| Cell Tower                                         | 16919 USH 10                                 | County 2019                  | Communication Facility  | Town of Cato             | No         |
| Cell Tower                                         | 3636 CTH CR                                  | County 2019                  | Communication Facility  | Town of Newton           | No         |
| Cell Tower                                         | 1290 North Ave                               | County 2019                  | Communication Facility  | Village of Cleveland     | No         |
| Cell Tower                                         | 1400 N 8th St                                | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 736 Revere Dr                                | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 3110 Viebahn St                              | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 2035 S 30th ST                               | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | 204 N 8th St                                 | County 2019                  | Communication Facility  | City of Manitowoc        | No         |
| Cell Tower                                         | Hempton Lake Rd                              | County 2019                  | Communication Facility  | Town of Franklin         | No         |
| West Shore Retreat                                 | 3301 Long Lake Rd                            | County 2019                  | Manufactured Housing    | Town of Rockland         | No         |
| Voigt's Maple Terrace Mobile Home Court            | 400 E Main St                                | County 2019                  | Manufactured Housing    | Village of St. Nazianz   | No         |
| Al Miller's Mobile Home Park                       | 23604 Sunny Slope Rd                         | County 2019                  | Manufactured Housing    | Town of Maple Grove      | No         |
| Manitowoc County Administration Office Building    | 1110 S 9th St                                | County                       | Administrative Building | City of Manitowoc        | No         |
| Manitowoc County Airport                           | 1815 Freedom Way                             | County                       | Administrative Building | City of Manitowoc        | No         |
| Manitowoc County Communications & Technology Bldg. | 1024 S 9th St                                | County                       | Administrative Building | City of Manitowoc        | No         |
| Manitowoc County Exps                              | 4921 Expo Dr                                 | County                       | Administrative Building | City of Manitowoc        | No         |
| Manitowoc County Heritage Center                   | 1701 Michigan Ave                            | County                       | Administrative Building | City of Manitowoc        | No         |
| Manitowoc County Human Services Department         | 926 S 8th St                                 | County                       | Administrative Building | City of Manitowoc        | No         |
| Manitowoc County Material Recycling Facility       | 3000 Basswood Rd                             | County                       | Administrative Building | Town of Manitowoc Rapids | No         |
| Manitowoc County Public Health Department          | 1028 S 9th St                                | County                       | Administrative Building | City of Manitowoc        | No         |
| Manitowoc County Sheriff's Office                  | 1025 S 9th St                                | County                       | Administrative Building | City of Manitowoc        | No         |
| Tower                                              | 3730 Mangin St                               | County                       | Communication Facility  | City of Manitowoc        | No         |
| Branch Fire Dept                                   | 8124 Village Dr                              | County                       | Fire and Safety         | Town of Manitowoc Rapids | No         |
| Town of Two Rivers Fire Department                 | 6525 CTH B                                   | County                       | Fire and Safety         | Town of Two Rivers       | No         |
| Town of Two Rivers Fire Dept (equip. storage)      | 7915 STH 42                                  | County                       | Fire and Safety         | Town of Two Rivers       | No         |
| Bullhead Lake Public Access (dry hydrant)          | 507 Bullhead Lake Ln                         | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Rockland         | No         |
| Cedar Lake Boat Landing (lake access; draft)       | 18584 Split Rail Ln                          | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Schleswig        | No         |
| Clarks Mills (dry hydrant; Manitowoc River access) | 13845 Old Mill Ln                            | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Cato             | No         |
| Eggers Industries Pond (dry hydrant)               | 1 Eggers Dr                                  | Manitowoc County Fire Assoc. | Fire and Safety         | City of Two Rivers       | No         |
| Grotelug Pond (pond on farm)                       | 7407 Newton Rd                               | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Newton           | No         |
| Horseshoe Lake Boat Landing (dry hydrant)          | 13716 Northwood Ct                           | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Meeme            | No         |
| Kalies Pond Dry Hydrant                            | 7206 E Taus Rd                               | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Franklin         | No         |
| Long Lake Rd (dry hydrant)                         | pond on W side of rd 1600' N of Long Lake Rd | Manitowoc County Fire Assoc. | Fire and Safety         | Calumet County           | No         |
| Man-Cal Rd (dry hydrant)                           | pond on S side of rd 500' W of Long Lake Rd  | Manitowoc County Fire Assoc. | Fire and Safety         | Calumet County           | No         |
| Marquette Pond (dry hydrant)                       | 19420 Marquette Rd                           | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Maple Grove      | No         |
| Matthias Pond                                      | 1540 N Union Rd                              | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Manitowoc Rapids | No         |
| Natural Ovens Tank                                 | 4300 CTH CR                                  | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Newton           | No         |
| Newton Fire Station (50,000 gallon tank)           | 6528 Carstens Lake Rd                        | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Newton           | No         |
| Osman Cistern 2 (underground tank)                 | 11380 Point Creek Rd                         | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Meeme            | No         |
| Osman Cistern 1                                    | 10521 STH 42                                 | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Meeme            | No         |
| Pigeon Lake Public Access (dry hydrant)            | 8964 Pigeon Lake Rd                          | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Liberty          | No         |
| Pt Peach NPP Hydrant (hydrant on north end)        | 6610 Nuclear Rd                              | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Two Creeks       | No         |
| Rokilio Pump (pump on north side of Cedar Lake)    | 14004 Rokilio Rd                             | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Schleswig        | No         |
| Schenian Dry Hydrant (pond)                        | 10455 Menchalville Rd                        | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Franklin         | No         |
| Schenian Dry Hydrant                               | 10455 Menchalville Rd                        | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Franklin         | No         |
| School Hill Cistern (Marken Rd and Lincoln Ave)    | 12228 Marden Rd                              | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Meeme            | No         |
| Seven Lakes (dry hydrant)                          | 3108 N CTH S                                 | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Cato             | No         |
| Stocks Pond                                        | 6007 Gass Lake Rd                            | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Newton           | No         |
| Wilke Lake Boat Landing (draft; lake access)       | 10901 Wilke Lake Rd                          | Manitowoc County Fire Assoc. | Fire and Safety         | Town of Schleswig        | No         |

# APPENDIX D - Public Meeting Notice & Sign-in Sheet

## Bay-Lake Regional Planning Commission Website & Newsletter Posting:


**PUBLIC REVIEW & SURVEYS**

Click on the icons below to participate in public review of documents and provide input via surveys.

**MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE**

Manitowoc County has worked alongside the Bay-Lake Regional Planning Commission to create the updated **Manitowoc County, Wisconsin Hazard Mitigation Plan 2020-2025**.

Please review the draft document online and submit written comments on the proposed updated hazard plan. Feedback can be emailed to [Madison Smith](mailto:Madison.Smith@co.manitowoc.wi.us). A public informational meeting to present the draft plan, maps, and materials will be held **November 11, 2019** from 5:30-6:30PM at the Manitowoc County Emergency Operations Center (EOC) 1024 S 9th Street, Manitowoc, WI 54220.




**Manitowoc County Hazard Mitigation Plan Update**

Manitowoc County and the Bay-Lake Regional Planning Commission have been working together over the past year to create the updated **Manitowoc County, Wisconsin Hazard Mitigation Plan 2020-2025**. Now it's your chance to review the draft document online and submit written comments on the proposed updated hazard plan. Feedback can be emailed to [Madison Smith](mailto:Madison.Smith@co.manitowoc.wi.us). A public informational meeting to present the draft plan, maps, and materials will be held **November 11, 2019**, from 5:30-6:30PM at the Manitowoc County Emergency Operations Center (EOC), 1024 S 9th Street, Manitowoc, WI 54220.



### Public Notices (2) by Manitowoc County Emergency Services:

 **Manitowoc County Emergency Services**  
 1024 South 9th Street - Manitowoc, WI 54220  
 Director **Travis Waack**  
 920-683-4207 - [traviswaack@co.manitowoc.wi.us](mailto:traviswaack@co.manitowoc.wi.us)

For Immediate Release  
 October 11<sup>th</sup>, 2019

**Manitowoc County Undertaking Hazard Mitigation Planning**

MANITOWOC – Manitowoc County Emergency Services, together with response and planning personnel from various entities have been working together as a steering committee to update the County's Hazard Mitigation Plan.

Development of the plan update is being led by the County Emergency Services Department with the Bay-Lake Regional Planning Commission facilitating the process and writing the plan under the direction of the steering committee. The steering committee is made up of personnel from County Departments, including Planning and Zoning and the Health Department, utilities, and various municipalities.


Hazard mitigation planning involves developing a set of actions designed to reduce or eliminate long-term risk to people and property from hazards and their effects. The rising costs associated with hazard recovery activities have led a much greater emphasis being placed on dealing with hazards before they occur through hazard mitigation planning. Hazard mitigation planning is the only phase of emergency management planning specifically dedicated to breaking the cycle of damage, reconstruction, and repeated damage.

With this plan, the County is able to identify the actions steps it needs to take in order to minimize risk and damage to people and property from natural hazards. Additionally, the County maintains its qualification to apply for FEMA funding to undertake identified projects that will minimize future risks.

A public informational meeting to present the draft plan will be held on November 11<sup>th</sup>, 2019, from 5:30 p.m. – 6:30 p.m. at the Manitowoc County Emergency Operations Center (EOC), 1024 S 9th Street, Manitowoc, WI 54220.

The draft plan can be downloaded from the Bay-Lake RPC website at <https://baylakerpc.org/about/surveys>.

If you have any questions, please contact Travis Waack with Manitowoc County Emergency Services at 920-683-4207 or Madison Smith with the Bay-Lake Regional Planning Commission at 920-448-2820, Ext. 106.

 **Manitowoc County Emergency Services**  
 1024 South 9th Street - Manitowoc, WI 54220  
 Director **Travis Waack**  
 920-683-4207 - [traviswaack@co.manitowoc.wi.us](mailto:traviswaack@co.manitowoc.wi.us)

For Immediate Release  
 October 24<sup>th</sup>, 2019

**Public Meeting Reminder for the Manitowoc County Hazard Mitigation Plan**

MANITOWOC – As a reminder, the public is invited to view the draft Manitowoc County Hazard Mitigation Plan and ask questions at a public meeting scheduled on **November 11<sup>th</sup>, 2019**, from 5:30 p.m. – 6:30 p.m. at the Manitowoc County Emergency Operations Center (EOC), 1024 S 9th Street, Manitowoc, WI 54220.

The draft plan can also be downloaded from the Bay-Lake RPC website at <https://baylakerpc.org/about/surveys>.

Manitowoc County Emergency Services, together with response and planning personnel from various entities have been working together as a steering committee to update the County's Hazard Mitigation Plan.

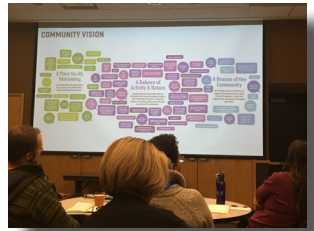
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With this plan, the County is able to identify the actions steps it needs to take in order to minimize risk and damage to people and property from natural hazards. Additionally, the County maintains its qualification to apply for FEMA funding to undertake identified projects that will minimize future risks.

If you have any questions, please contact Travis Waack with Manitowoc County Emergency Services at 920-683-4207 or Madison Smith with the Bay-Lake Regional Planning Commission at 920-448-2820, Ext. 106.

**Sign-In Sheet: Hazard Mitigation Plan Public Meeting  
 November 11<sup>th</sup>, 2019**

| Name                 | Organization               |
|----------------------|----------------------------|
| <i>Travis Waack</i>  | <i>Manitowoc County EM</i> |
| <i>Madison Smith</i> | <i>Bay-Lake RPC</i>        |
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# MANITOWOC COUNTY, WISCONSIN

## *Hazard Mitigation Plan 2020 - 2025*

