

DRAFT
FOR REVIEW ONLY
October 2024



Manitowoc County
Hazard Mitigation Plan
2025-2030

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Hazard Mitigation Plan

2025-2030



Adopted **MONTH YEAR**

Prepared by:

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County Resolution of Adoption

RESERVED

City and Village Resolutions of Adoption

RESERVED

WEM Approval Letter

RESERVED

FEMA Approval Letter

RESERVED

Table of Contents

Executive Summary	12
I. Introduction	14
II. Community Profile	22
III. Risk Assessment	30
Tornado and Strong Wind	38
Hail	42
Winter Storm	44
Flooding	46
Extreme Cold	54
Extreme Heat	56
Lightning	58
Drought	60
Dense Fog	62
Wildland Fires	64
Coastal Hazards	66
Land Subsidence	68
IV. Mitigation Strategy	70
Introduction	70
Mitigation Goals	70
Mitigation Action Plan	70
Policies, Programs, and Resources for Mitigation	83
Potential Funding Sources for Mitigation Activities	84
V. Plan Adoption and Maintenance	88
Plan Adoption Process	88
Plan Maintenance	88
Plan Incorporation	89
Plan Coordination	90
Appendix A	92
Steering Committee Sign-In Sheets	92
Appendix B	94
Steering Committee Agendas	94
Multi-Jurisdictional Cooperation Exercise	95
Appendix C	96
Critical Facilities by Municipality	96
Appendix D	107
Public Meeting Notice and Sign-In Sheets	107
Appendix E	109
Underserved/Vulnerable Populations	109

Maps

Map 2.1: Location Map	23
Map 2.2: Existing Land Use	25
Map 3.1: Critical Facilities	33
Map 3.2: Critical Utilities	34
Map 3.3: Tornado Vulnerability	41
Map 3.4: Large Dams and 100-Year Floodplain	50
Map 3.5: Improved Properties within the 100-Year Floodplain	51
Map 3.6: Transportation	52
Map 3.7: Wetlands and Watersheds	53
Map E.1: Populations of Persons Over Age 65 by MCD	110
Map E.2: Populations of Persons with a Disability by MCD	111
Map E.3: Populations of Persons of Minority Status by MCD	112
Map E.4: Populations of Persons Living Below Poverty Level by MCD	113

Figures

Figure 2.1: Manitowoc County Land Use, 2019	24
Figure 2.2: Manitowoc County Population Trends 2000-2020	26
Figure 2.3: Manitowoc County Population Projections 2020-2040	26
Figure 2.4: Manitowoc County Population Pyramid 2020	26
Figure 2.5: Manitowoc County Housing Units, 2000-2020	27
Figure 2.6: Manitowoc County Housing Tenure, 2021	27
Figure 2.7: Manitowoc County Housing Unit Age, 2020	27
Figure 2.8: Manitowoc County Housing Occupancy, 2020	27
Figure 2.9: Manitowoc County Housing Vacancy, 2020	27
Figure 2.10: Unemployment Rate, 2021	28
Figure 2.11: Median Household Income Inflation Adjusted, 2021	28
Figure 2.12: Manitowoc County Poverty Rate, 2021	28
Figure 2.13: Employment by Occupation	29
Figure 3.1: Enhanced Fujita Scale (EF Scale)	38
Figure 3.2: Critical Facilities/Utilities within the Floodplain	49

Tables

Table ES.1: Plan Update Summary	10
Table ES.2: Mitigation Strategy Updates	11-13
Table 1.1: Jurisdictional Participation	18
Table 2.1: Manitowoc County Planning Area	24
Table 3.1: Manitowoc County Hazard Events (2000-2023)	31
Table 3.2: Number of Critical Facilities and Utilities by Type	35
Table 3.3: Number of Critical Facilities and Utilities by Municipality	35
Table 3.4: Manitowoc County/Communities Participating in National Flood Insurance Program	48
Table 3.5: Critical Facilities/Utilities within the Floodplain by Type	49
Table 3.6: Critical Facilities/Utilities within the Floodplain by Municipality	49
Table 4.1: Manitowoc County Hazard Mitigation Action Plan 2025-2030	72-78
Table 4.2: Mitigation Strategies for Communities in Manitowoc County 2025-2030	80-81
Table 4.3: Manitowoc Public Utilities Mitigation Recommendations and Strategy	82

Executive Summary

Plan Update Summary

To aid in the identification of changes made to the Manitowoc County Hazard Mitigation Plan in this update, Table ES.1: Plan Update Summary below lists plan changes. Table ES.2: Mitigation Strategy Updates identifies updates made to the previously identified mitigation strategies.

Table ES.1: Plan Update Summary

Plan Chapter	Overview of Plan Update
Chapter 1: Introduction	Updated plan update funding and resilience overview and impact on the plan. Updated steering committee information to reflect current membership and public involvement to describe outreach and input methods. The steering committee updated the prioritized order of the hazards to be addressed.
Chapter 2: Planning Area	Updated demographic, housing, and economic profile information using 2020 Decennial Census and 2021 American Community Survey 5-Year Estimates. Updated land use information.
Chapter 3: Risk Assessment	Disaster declaration history was updated with DR disaster declarations. Future changing conditions impacts were updated using 2021 WICCI data. Updated all elements of each hazard profile to reflect updated storm data (frequency, probability, impacts, etc.). Updated critical facilities inventory.
Chapter 4: Mitigation Strategy	Updated mitigation action plan to account for completed projects, changing priorities, timetables, costs, responsibilities, and additional projects. Added potential funding source with estimated costs.
Chapter 5: Plan Adoption and Maintenance	Updated plan maintenance process and plan update schedule.

Table ES.2: Mitigation Strategy Updates

Project	Changes
All Hazards	
Update air photos and LIDAR data	Changed Project Timetable from "2023" to "Ongoing"
Outage management systems to help triage outage repairs	Changed "software" to "systems" in Project and changed Project Timetable from "2020-2025" to "2024-2026"
Maintain RAVE (i.e. Reverse 911) capability	Completed
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	Added "Giving away inventory as prizes at community events and promoting use of smartphone apps" to Notes.
Develop a central data collection process to report hazard incidences and resulting deaths, injuries, and property or crop damages	Completed. Calls are logged on record in CAD system and reported to WEM via WebEOC.
Develop/maintain comprehensive safety plan for all municipal-owned buildings	Changed "Develop" to "Develop/maintain" in Project and changed Project Timetable from "2020-2025" to "Ongoing"
Collect remaining building footprints for all structures in the villages and cities to allow for analysis of where facilities/structures are located <i>AND</i> Collect building height data for all structures in the County	Combined "building footprint" and "building height data projects," changed Priority from "Low" to "High," Project Timetable from "2020-2025" to "TBD," and Estimated Cost from "Costs to be determined" to "County Budget."
Use of early warning system through pagers and NOAA weather radios	Completed. No longer have a pager system. Added previous pagers to RAVE early warning.
Research, develop, and assess inter-operability plans	Added.
Animal protection	Added "animal shelters and human society" to Responsible Party, added "County has a pet trailer" to Notes, and Project moved to All Hazards from Hail
Continue to provide safety information to the public during periods of extreme temperature	Removed from both Extreme Cold and Extreme Heat and moved to All Hazards. Changed "extreme temperature" to "inclement weather" and added "Social media is used for outreach in all inclement weather."
Continue to distribute awareness/educational materials to inform public of safety procedures to follow in a lightning storm	Project moved to All Hazards from Lightning
Provide information about protecting structures from lightning through use of fire resistant materials	Project moved to All Hazards from Lightning
Provide information to residents on land subsidence as needed	Project moved to All Hazards from Land Subsidence

Executive Summary

Table ES.2: Mitigation Strategy Updates (Continued)

Project	Changes
Tornado and Strong Wind	
Continued investment and use of early warning system through pagers, NOAA weather radios, sirens, social media, and Code Red	Removed. This is covered by projects in the "All Hazards" category.
Assist personnel in schools and businesses, public facility managers, mobile/manufactured home park managers, and citizens in determining "best available" tornado safety areas or need to construct safe rooms	Changed Project Timetable from "As needed" to "Ongoing" and removed note about 2011 fairgrounds plan.
Review and update Comprehensive Safety Plan for all county-owned buildings	Changed Responsible Party from "County Emergency Services" to "County Departments."
Consider adoption of ordinances requiring construction of safe shelters for mobile/manufactured home parks, fairgrounds, or other vulnerable public places	Changed Project Timetable from "2020-2025" to "2025-2030." Removed "County Planning and Park Commission" from Responsible Party. Added "County emergency management support" to Notes.
Winter Storm	
	No changes
Hail	
Animal protection	Project moved from Hail to All Hazards "Animal shelters and human society" added to Responsible Party, "County has a pet trailer" added to Notes.
Flooding	
Land use planning	Changed Project Timetable from "2018-2020" to "Ongoing."
Continue to issue early warnings through flood advisory bulletins	Added "NOAA" to Responsible Party.
Dissemination of instructions to the public through the media	Removed "Joint Dispatch Center" from Responsible Party and added "County Emergency Services."
Handle the evacuation of people and property in the case of a severe flood event	Changed estimated cost from "Covered by existing budgets" to "Dependent on budgets available."
Review and update floodplain zoning ordinances as necessary	Changed "Updated in 2010" to "Updated in 2023" in Notes.
Sand-bagging when necessary	County Emergency Services provides empty bags for a small cost; City of Two Rivers provides empty bags for free
Extreme Cold	
Continue to provide safety information to the public during periods of extreme temperature	Removed from both Extreme Cold and Extreme Heat and moved to All Hazards. Changed "extreme temperature" to "inclement weather" and added "Social media is used for outreach in all inclement weather."
Organize outreach to vulnerable populations during periods of extreme temperature provide information about places to go during extreme cold	Removed "including the establishment and promotion of accessible heating or cooling centers in the community" and added "provide information about places to go during extreme cold."

Table ES.2: Mitigation Strategy Updates (Continued)

Project	Changes
Extreme Heat	
Continue to provide safety information to the public during periods of extreme temperature	Removed from both Extreme Cold and Extreme Heat and moved to All Hazards. Changed “extreme temperature” to “inclement weather” and added “Social media is used for outreach in all inclement weather.”
Organize outreach to vulnerable populations during periods of extreme temperature and provide information about places to go during extreme heat	Removed “including the establishment and promotion of accessible heating or cooling centers in the community” and added “provide information about places to go during extreme heat.”
Lightning	
Continue to distribute awareness/ educational materials to inform public of safety procedures to follow in a lightning storm	Project moved from Lightning to All Hazards
Provide information about protecting structures from lightning through use of fire resistant materials	Project moved from Lightning to All Hazards
Drought	
Identification of areas with potential ground water level problems and inspection of shallow wells in those areas for adequate depth and construction	Changed Project Timetable from “2020-2025” to “2025-2030.”
Dense Fog	
	No changes
Wildland Fires	
Develop local ordinances to require burn permits and restriction of campfires and outdoor burning	Changed Project Timetable from “2020-2025” to “2025-2030.”
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	Removed “non-combustible roof covering, fire safe construction” from project
Coastal Hazards	
	No changes
Land Subsidence	
Provide information to residents on land subsidence as needed	Project moved from Land Subsidence to All Hazards.

I. Introduction

Purpose of the Plan

The Manitowoc County Hazard Mitigation Plan is developed 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 from hazards. 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 deems Manitowoc County an eligible applicant 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 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 was designed to reduce losses from disasters, lessen 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 May 2023, Manitowoc County received a planning grant to develop an update to their hazard mitigation plan in the amount of \$27,300 from Section 404-Hazard Mitigation Grant Program (HMGP) under Presidential Disaster Declaration FEMA-4520-DR-WI that was declared on April 4, 2020. Through the grant (Agreement #: 4520.29-P), FEMA provided 75 percent of the funds (\$20,475) and WEM provided a 12.5% state share (\$3,413), while the remaining 25 percent (\$3,413) was required by Manitowoc County to meet the local match. In addition to the project funds, FEMA provided an additional 5% of the total project costs (\$1,138) as management costs for activities associated with managing the grant.

Manitowoc County entered into a contract (#23017-05) with the Bay-Lake Regional Planning Commission to prepare the update to the hazard mitigation plan. Development of the plan began in August 2023.

Resilience

Human activities have major impacts on both local environments and major global systems. Since the industrial revolution, humans have drastically increased the level of greenhouse gases emitted into Earth's atmosphere. Greenhouse gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases which, when trapped in the atmosphere, create a "blanket" effect and cause the planet to warm. While there have been natural fluctuations of these gases in Earth's atmosphere over long historical cycles, their levels have seen dramatic increases due to diverse human activities, including burning fossil fuels for transportation and energy, an increasingly industrialized food system and the associated land use change, and operation and maintenance of buildings.

These changing conditions have significant negative impacts on the human population and ecosystems. Over the past several decades, there have been changes to temperature and precipitation patterns, as well as frequently unpredictable extreme weather events that affect people all over the state, country, and world. These changes are important to incorporate into hazard mitigation planning as they are increasingly affecting hazard frequency and severity.

In order to address the negative impacts of changes in greenhouse gas concentrations in the atmosphere due to human activities, humans can undertake a combination of two approaches: mitigation and adaptation.

Mitigation

Mitigation involves reducing greenhouse gas emissions. This can include reducing or eliminating polluting practices or industries, or changing practices to reduce pollution in a certain industry. The Clean Water Act began regulating pollutant discharge into water and has led to restoration and recovery of healthy and safe waters.

Mitigation of greenhouse gases can occur at all levels of government, industry, and society. Governments and industry have the greatest potential to make changes that have rapid and widespread effects, but individuals and communities can reduce emissions in small ways through decreasing energy use, changing diets and reducing food waste, and utilizing active transportation.

Adaptation

Adaptation addresses changing conditions by identifying and preparing for the impacts of those changes. Impacts include increased flooding, heat waves, lengthened growing seasons, warmer winters, and more extreme weather events. These put human populations and ecosystems at risk, but in this plan and through other approaches, Manitowoc County can identify and implement initiatives that reduce vulnerability to these changes.

Adaptation measures communities can implement include updating stormwater infrastructure to handle bigger floods, including incorporating nature based solutions; reassessing floodplain zoning to avoid property damage; and identifying vulnerable populations and developing emergency action plans in the event of extreme heat events. Adaptation can simultaneously benefit human communities and their local environment.

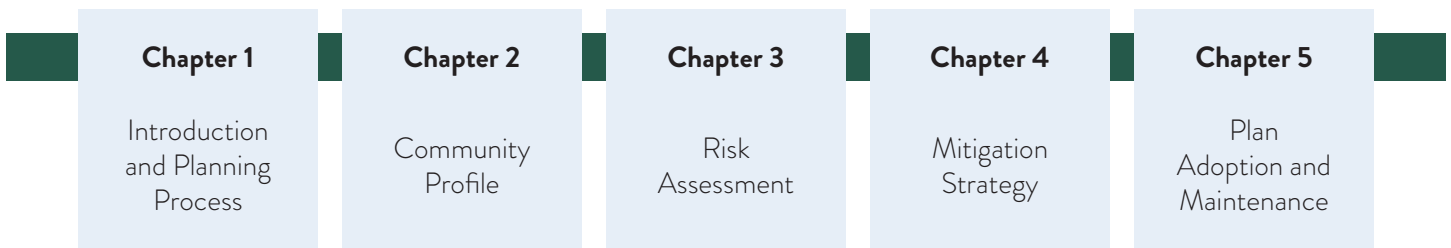
Future Changes and Resilience

Even with aggressive mitigation efforts, the climate will continue to change over the next 50 to 100 years because of the concentration and longevity of greenhouse gases already in the atmosphere. It is important to pursue both mitigation and adaptation measures in order to remain resilient and reduce hazard risk in the face of changing conditions.

I. Introduction

Plan Elements

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 follow:



Planning Process

The Manitowoc County 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. The WEM guidance for hazard mitigation plans recommends that planning areas “be consistent with a community’s comprehensive planning boundary,” so 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 12-month time-frame beginning in August 2023. 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 in 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 to review previous steering committee appointments and representation, invitations to new and returning committee members, reconvening the committee, and outlining the planning process and division of responsibilities.

Phase 2 included meetings with the steering committee to reassess identified critical facilities, natural hazards, and associated potential risks to the county.

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











Phase 4 involved reviewing the policies that affect plan implementation and the procedures to implement the plan.

Phase 5 involved documenting the planning process, developing a complete plan draft, plan review, and final 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). 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. The steering committee was responsible for providing input, helping to guide the planning process, and reviewing draft chapters of the plan.

-  **Rhonda Green**, Director, Manitowoc County Emergency Services
-  **Brenden Riley**, Deputy Director, Manitowoc County Emergency Services
-  **Andrea Raymakers**, Senior Planner, Manitowoc County Planning & Zoning
-  **Melissa Konop**, Manager, Manitowoc County Aging and Disability Resource Center
-  **Gerry Neuser**, Director, Manitowoc County Public Works
-  **Lexi Otis**, Health Educator, Manitowoc County Public Health
-  **Korina Aghmar**, Health Officer, Manitowoc County Public Health
-  **Todd Blaser**, Chief, City of Manitowoc Fire & Rescue
-  **Dan Koski**, Director, City of Manitowoc Public Works
-  **Casey Witterholt**, City Administrator, City of Kiel
-  **Josh Stradal**, Board Chair, Town of Manitowoc Rapids
-  **Steve Bacalzo**, Manager, Manitowoc Public Utilities
-  **Denny Smith**, EP Manager, Point Beach Nuclear - NextEra Energy
-  **Brian Nack**, Chief Deputy, Manitowoc County Sheriff’s Office
-  **Jason Orth**, Major, Manitowoc County Sheriff’s Office
-  **Dave Murack**, Chief, Two Rivers Fire Department
-  **Melissa Weisner**, Assistant Chief, Two Rivers Police Department
-  **Paul Granger**, Chief, Mishicot Police Department
-  **Izzy Fuller**, Environmental Planner, Bay-Lake Regional Planning Commission
-  **Brandon Robinson**, Executive Director, Bay-Lake Regional Planning Commission

Jurisdiction Involvement

All local government jurisdictions within the county were requested to participate in this hazard mitigation plan update process. In September 2023, the steering committee and the Bay-Lake Regional Planning Commission engaged the local communities in a multi-jurisdictional cooperation exercise to review and provide input on plan materials. Cities and villages were provided a listing of their critical facilities, goals identified in the current 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. A letter that was sent to the cities and villages in Manitowoc County is found in Appendix B of this document. All towns received a similar letter that asked only for updates to their existing critical facility list. Responses were received from all three cities, all nine villages, and six of the county’s 18 towns (Mishicot, Maple Grove, Kossuth, Two Rivers, Rockland, and Cato). A list of those local jurisdiction representatives requested to participate during this planning process is found on the following table (Table 1.1).

I. Introduction

Table 1.1: Jurisdictional Participation

Jurisdiction	Representatives	Position/Title
City of Kiel*	Joseph Jeanty	Chief of Police/Emergency Government Director
	Casey Witterholt	City Administrator
City of Manitowoc*	Mackenzie Reed	City Clerk
	Todd Blaser	Fire & Rescue Chief
	Dan Koski	Director Public Works
	Steve Bacalzo	Public Utilities Manager
City of Two Rivers*	Dave Murack	Fire Department Chief
	Melissa Weisner	Police Department Assistant Chief
Village of Cleveland	Stacy Grunwald	Director of Public Works
Village of Francis Creek	Margaret Peroutka	Village Clerk/Treasurer
Village of Kellnersville	Heather Dachelet	Village Clerk
Village of Maribel	Dale Bomski	Village Clerk/Treasurer
Village of Mishicot*	Kathy Reissmann	Village Clerk/Treasurer
	Paul Granger	Village Police Chief
Village of Reedsville	Allen Schreiber	Village President
Village of St. Nazianz	Dan Gintner	Lead, Village Safety Committee
Village of Valders	Christopher Dallas	Village Fire Chief
Village of Whitelaw	Wendy Stoeckler	Village Clerk/Treasurer
Town of Cato	Mary Muench	Town Clerk
Town of Centerville	Paulette Vogt	Town Clerk
Town of Cooperstown	Susan Kornely	Town Clerk
Town of Eaton	Paulette Vogt	Town Clerk
Town of Franklin	Cary Nate	Town Clerk
Town of Gibson	Linda Herman	Town Clerk
Town of Kossuth	Dana Tesarik	Town Clerk
Town of Liberty	Pam Petersen	Town Clerk
Town of Manitowoc	Geraldine Gilbert	Town Clerk
Town of Manitowoc Rapids*	Jessica Backus	Town Clerk
	Josh Stradal	Town Board Chair
Town of Maple Grove	Tiffany Walt	Town Clerk
Town of Meeme	Valerie Spindler	Town Clerk
Town of Mishicot	Sarah Kowalski	Town Clerk
Town of Newton	Alyssa Grotegut	Town Clerk
Town of Rockland	Linda Gilbertson	Town Clerk
Town of Schleswig	Beth Pieper	Town Clerk
Town of Two Rivers	Bonnie Timm	Town Clerk

* Steering Committee Representation

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. Lightning and Thunderstorms (including hail storms)
4. Extreme Cold
5. Flooding
6. Drought
7. Excessive Heat
8. Dense Fog
9. Wildland Fires
10. Dam Failure

The steering committee reviewed and analyzed each section of the plan, and subsequently Table ES.1 was developed to document the sections of the plan that were revised as part of the update process. The steering committee held ----- meetings to update the plan:

- October 2, 2023
- November 30, 2023
- February 26, 2024
- April 9, 2024

Copies of the sign-in sheets are included in [Appendix A](#).

Public Involvement

Steering Committee Meetings

All steering committee meetings were open to the public. All meetings provided opportunities for public comment during the drafting of the plan.

Project Webpage

The Bay-Lake RPC hosted a project webpage on their website throughout the planning process. This page included an overview and timeline of the plan update process, the list of steering committee members, contact information for the planning team, and a feedback form. This feedback form provided an opportunity for anonymous comments on the plan, and the form was available in both English and Spanish.

Public Informational Meetings

Several informational meetings were held for the public including on May 29, 2024 at the Kiel Community Center; June 12, 2024 at the Mishicot Village Hall; and June 20, 2024 at the Manitowoc County Emergency Operations Center (EOC) at 1024 S 9th Street in the City of Manitowoc. These meetings were 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 these meetings. Both the steering committee meetings and the public informational meetings were open to the public and notices were posted by the county.

County Board Meeting

On _____, 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 _____.

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.

Local and Regional Agency Involvement

The plan update process also involved gathering input from local and regional agencies that have a role in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests. The following entities participated as Hazard Mitigation Plan Steering Committee members and attended the majority of the meetings throughout the planning process to provide feedback and insight into hazard mitigation goals and strategies for Manitowoc County.

- Melissa Konop, Manager, Manitowoc County Aging and Disability Resource Center
- Lexi Otis, Health Educator, Manitowoc County Public Health
- Korina Aghmar, Health Officer, Manitowoc County Public Health
- Denny Smith, EP Manager, Point Beach Nuclear - NextEra Energy
- Audrey Erdmann, Disaster Program Manager, Red Cross-Northeast WI Chapter
- Izzy Fuller, Environmental Planner, Bay-Lake Regional Planning Commission
- Brandon Robinson, Executive Director, Bay-Lake Regional Planning Commission

Underserved Communities and Vulnerable Populations

During this plan update process, an emphasis was placed on underserved communities and socially vulnerable populations. These concepts present an opportunity to expand local hazard mitigation plans to help increase the community benefits of hazard mitigation

The term “underserved communities” refers to populations sharing a particular characteristic or geography that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life. “Social vulnerability” is the potential for loss within an individual or social group, recognizing that some characteristics influence an individual’s or group’s ability to prepare for, respond to, cope with, or recover from an event.

Within Manitowoc County and its communities, a number of general population groups that are often identified as underserved or vulnerable were identified. These include school aged children, disabled persons, the elderly, minorities, persons who speak with limited English proficiency, and low income individuals or families. Geographic analysis of several of these populations was conducted (Appendix E) to assist with the analysis and discussion of the underserved and/or socially vulnerable populations within Manitowoc County.

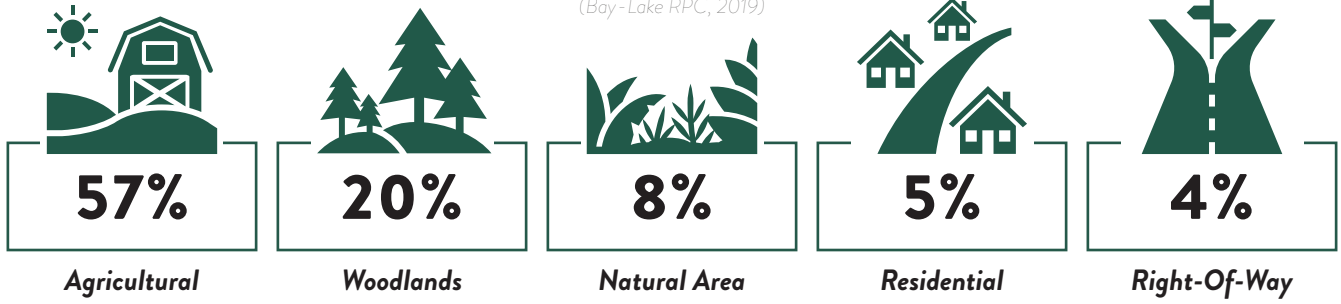
Outreach and involvement to address underserved or vulnerable populations included identifying and contacting agencies and organizations that advocate or serve those individuals including the Manitowoc Aging and Disability Resource Center and Manitowoc County Public Health Department.

II. Community Profile

Land Use

Top 5 Land Uses

(Bay-Lake RPC, 2019)



Demographics and Housing



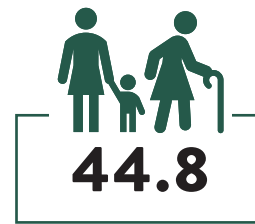
Total Population

(Decennial Census, 2020)



Total Housing Units

(Decennial Census, 2020)



Median Age

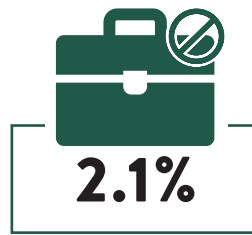
(ACS 5-Year Estimate, 2021)

Economic Characteristics



Median Household Income

(ACS 5-Year Estimate, 2021)



Unemployment Rate

(ACS 5-Year Estimate, 2021)

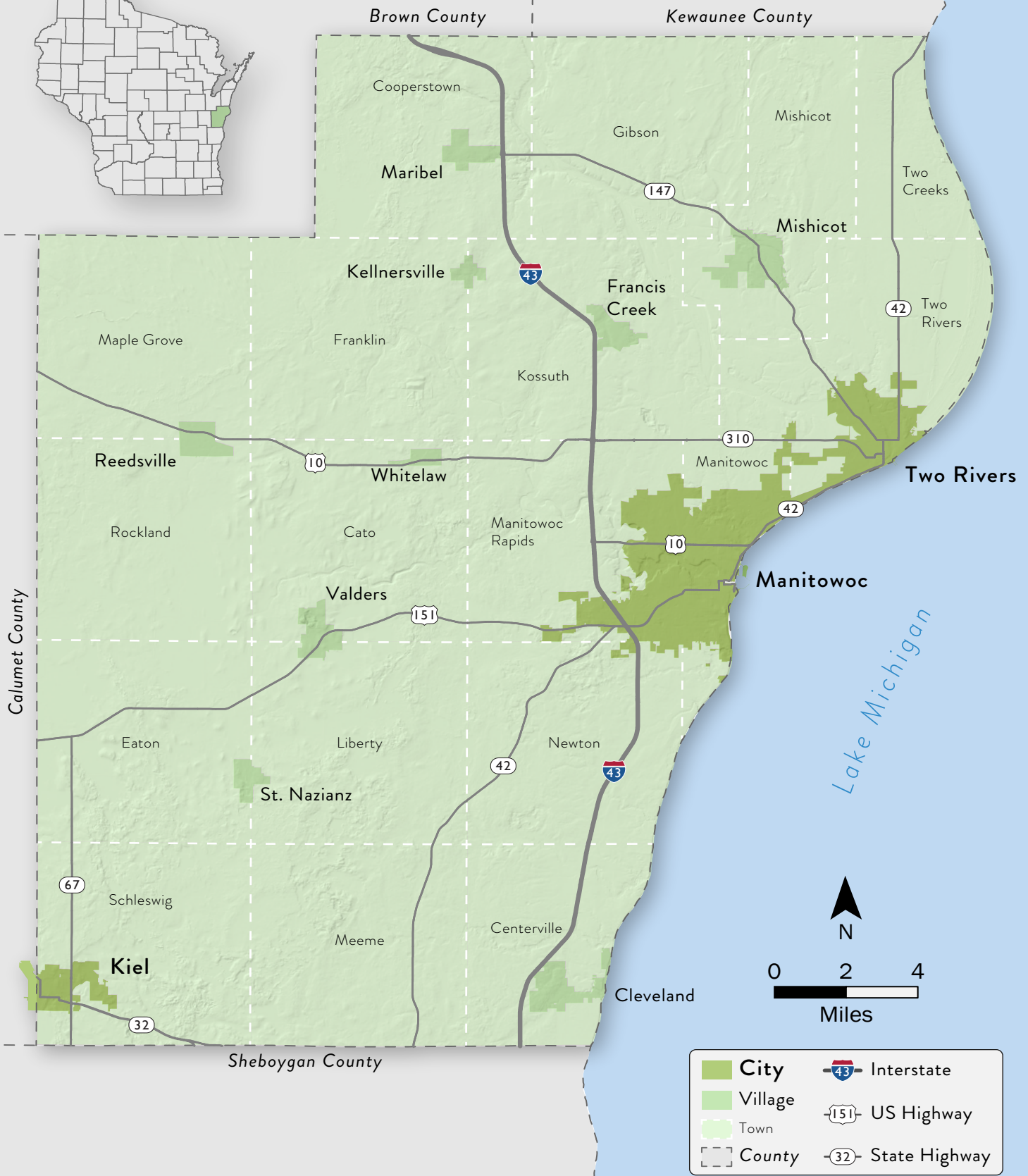


Poverty Rate

(ACS 5-Year Estimate, 2021)

Manitowoc County, Wisconsin

Map 2.1: Location Map



II. Community Profile

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 12 incorporated communities (three cities and nine villages).

Map 2.1: Location Map 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 (Miles ²)
City of Kiel	2.65
City of Manitowoc	18.16
City of Two Rivers	6.53
Village of Cleveland	1.99
Village of Francis Creek	1.14
Village of Kellnersville	0.54
Village of Maribel	1.15
Village of Mishicot	2.60
Village of Reedsville	1.22
Village of St. Nazianz	0.81
Village of Valders	1.43
Village of Whitelaw	0.53
Town of Cato	34.89
Town of Centerville	23.83
Town of Cooperstown	35.13
Town of Eaton	35.48
Town of Franklin	36.16
Town of Gibson	35.32
Town of Kossuth	38.64
Town of Liberty	35.49
Town of Manitowoc	6.11
Town of Manitowoc Rapids	27.31
Town of Maple Grove	35.36
Town of Meeme	36.29
Town of Mishicot	27.53
Town of Newton	34.35
Town of Rockland	35.28
Town of Schleswig	33.72
Town of Two Creeks	14.92
Town of Two Rivers	31.68
Manitowoc County	596.25

Source: Bay-Lake RPC, 2019

Historical County Description

Manitowoc County 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’s western shore in east central Wisconsin. The total land area of the county is 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 details Manitowoc County’s location in Wisconsin.

Development Pattern

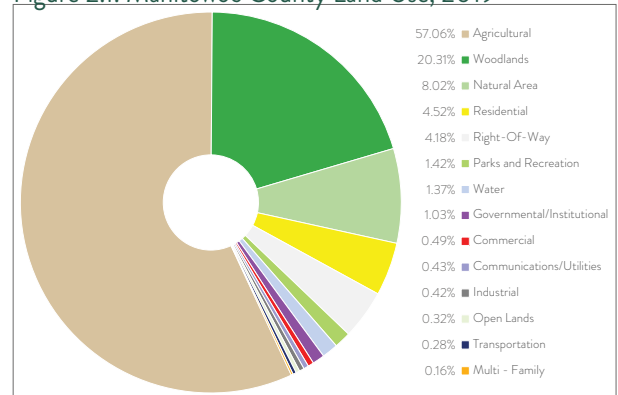
A field inventory of county-wide land use was completed by the Bay-Lake Regional Planning Commission in 2019, which is shown on Map 2.2. Using GIS, land use types were tabulated to calculate the total area of Manitowoc County. (Table 2.1)

Figure 2.1 details that the largest land use category in the county is agricultural land (specifically croplands) with 217,671 acres (57.06 percent) of the land. Woodlands comprise 77,473 acres (20.31 percent) and natural areas cover 30,587 acres (8.02 percent).

The amount of agricultural land being diverted to other uses over a period of time is a good indicator of how much development has occurred. According to the USDA Census of Agriculture, an average of 15.5 acres of agricultural land was sold each year between 2017 and 2022 in Manitowoc County. There was a total of 93 acres sold between 2017-2022. Preservation of farmland remains a primary goal of the county.

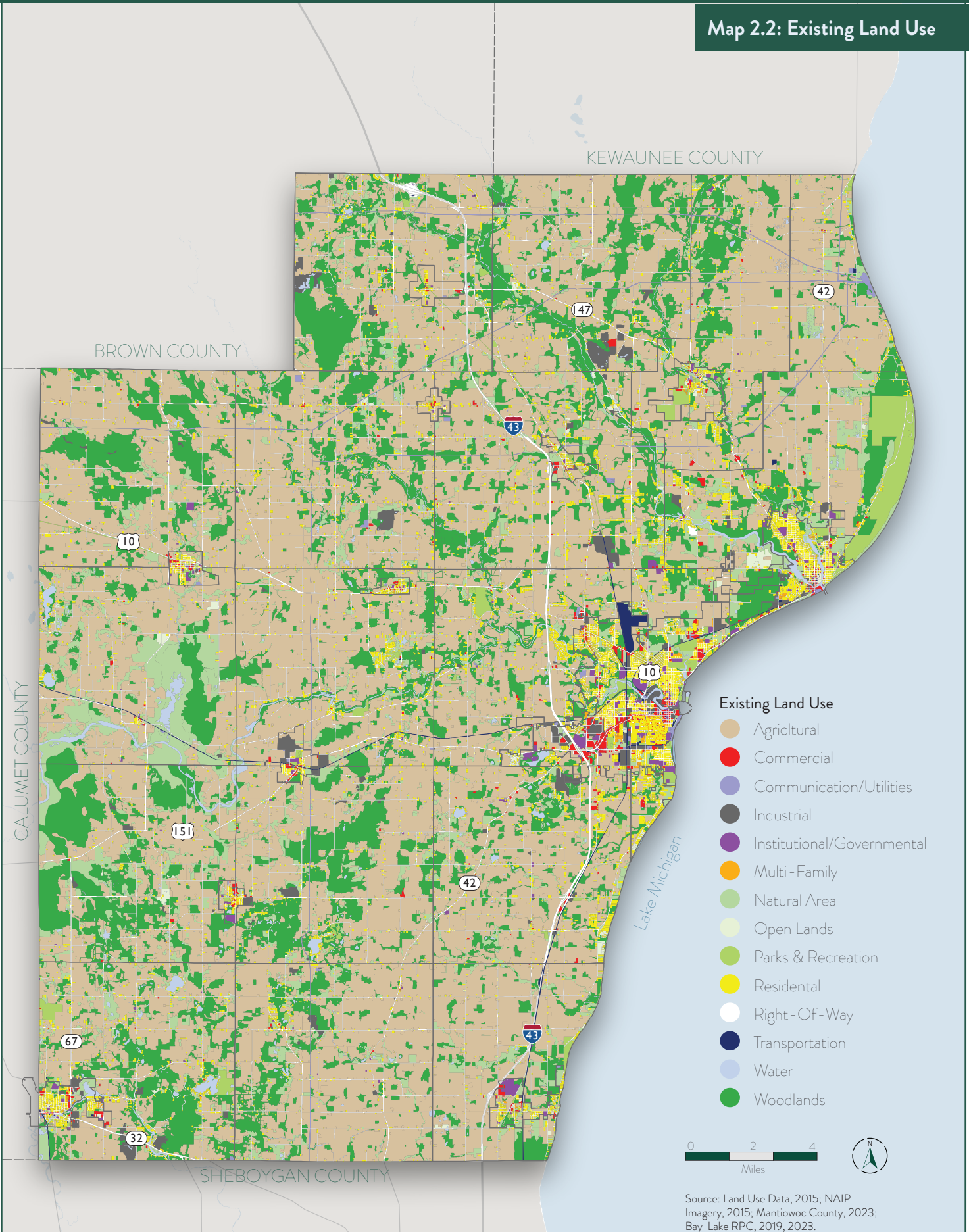
Approximately 49,317 acres or about 13 percent of Manitowoc County is developed. Developed land is comprised of residential, commercial, industrial, transportation, communications/utilities, governmental/institutional, and parks and recreation. According to the US Census, the majority of the housing growth over the last 10 years has occurred in the cities of Manitowoc and Kiel, along with the Village of Cleveland. Development has also occurred in some rural pockets of the county and along the Lake Michigan shoreline since the last hazard plan. However, several coastal developments have been impacted by shoreline/bluff erosion and flooding due to fluctuating lake levels and extreme weather events.

Figure 2.1: Manitowoc County Land Use, 2019



Source: Bay-Lake RPC, 2019

Map 2.2: Existing Land Use



Source: Land Use Data, 2015; NAIP Imagery, 2015; Mantiowoc County, 2023; Bay-Lake RPC, 2019, 2023.

II. Community Profile

Population

As of 2020, the total population in Manitowoc County was 81,358 people. This was a decrease of 83 people from the previous decade. Between 2000 and 2010, the population decreased by a much larger number of people (1,445).

- Between 2010 and 2020, there was a one percent overall population increase in the county’s three cities, no change in the villages, and a one percent decrease in the towns.
- The largest population growth in the county by percentage was the Village of Cleveland with just over a six percent growth, while Kiel experienced a five percent increase. The City of Manitowoc experienced the largest population growth by number of any municipality (890 people).
- 24 of Manitowoc County’s 30 municipalities experienced a loss in population between 2010 and 2020. The City of Two Rivers lost the largest number of people in the county with a decline of 441.

The data above reveals Manitowoc County’s population dip since the last hazard plan. Little-to-no change occurred in the rural areas and most population growth took place in two cities (Kiel and Manitowoc) and a village (Cleveland).

The Wisconsin DOA’s 2013 Population Projections indicate the county’s population is anticipated to vary over the next several decades increasing by as many as 830 additional people from 2020 to 2030 and then experiencing a decline of 3,310 individuals between 2030 and 2040. In addition, average household size is expected to decline from 2.36 in 2010 to 2.18 by 2040.

The WDOA population projections though the year 2050 are expected to be released sometime in 2024. The county should review the new projections for any significant changes that could impact future hazard mitigation planning efforts.

Figure 2.2: Manitowoc County Population Trends 2000-2020



Source: U.S. Decennial Census

Figure 2.3: Manitowoc County Population Projections 2020-2040



Source: WDOA Population Projections, 2013

Figure 2.4: Manitowoc County Population Pyramid 2020

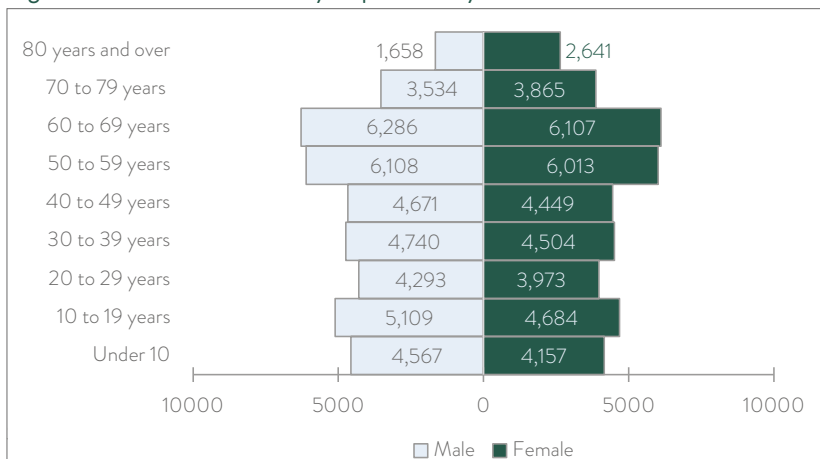


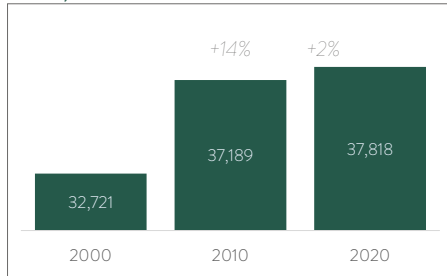
Figure 2.4 shows a breakdown of the Manitowoc County population in 2020 by age and sex. Males make up 50.35 percent of the population (40,966 people) and females make up 49.65 percent (40,393 people). The largest age categories are 60 to 69, followed by 50 to 59 and 10 to 19. The county has significant elderly and youth populations.

The median age in Manitowoc County is 44.8 years (ACS 5-Year Estimates, 2021).

Housing

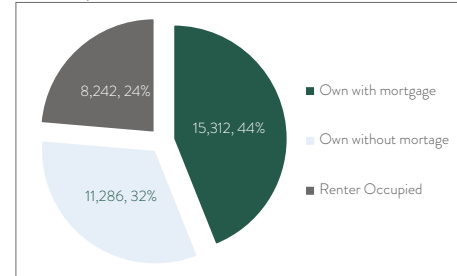
Since 2000, housing units in Manitowoc County have steadily grown. Over the two preceding decades, the county has gained over 5,000 housing units. The rate of growth slowed from 14 percent between 2000 and 2010 to two percent between 2010 and 2020. The largest portion of housing units in Manitowoc County are occupied by owner with a mortgage (44 percent), 32 percent are owned without a mortgage, and the remaining 24 percent are renter occupied.

Figure 2.5: Manitowoc County Housing Units, 2000-2020



Source: U.S. Decennial Census

Figure 2.6: Manitowoc County Housing Tenure, 2021

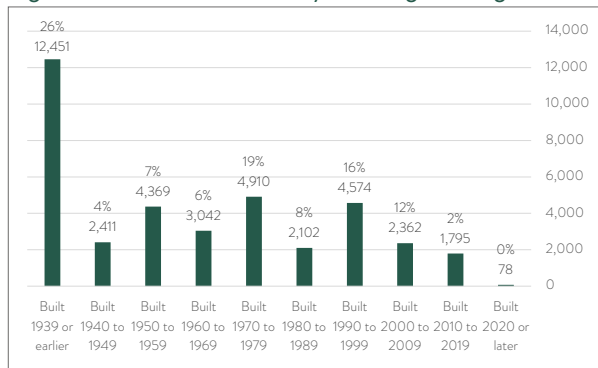


Source: ACS 5-Year Estimates, 2021

In 2020, there were approximately 37,818 housing units in Manitowoc County. Around a quarter of the homes were built in 1939 or earlier. Since the 1980s, the number of new housing units per decade has been declining. Between 1980 and 2009, Manitowoc County averaged slightly over 3,300 new housing units every 10 years.

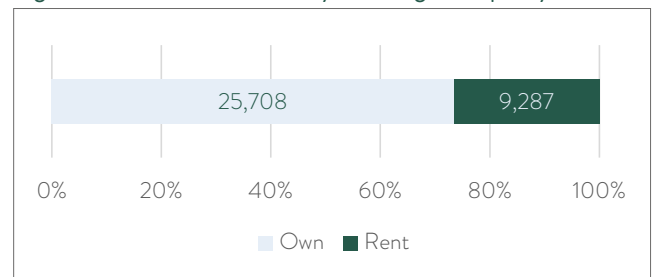
- Between 2010 and 2020 there were 629 new housing units which is significantly lower than the historical trends.
- According to the 2020 Census, over 71 percent of the housing units in the county are located in the cities and villages; this is an increase from 63 percent in 2010. New housing units in the cities of Manitowoc (322) and Kiel (127), and the Village of Cleveland (29) accounted for 76 percent of the new housing in all of Manitowoc County from 2010 to 2020.
- Just under 75 percent of housing units are owner occupied. The total housing unit vacancy rate was 7 percent in 2020.

Figure 2.7: Manitowoc County Housing Unit Age, 2020



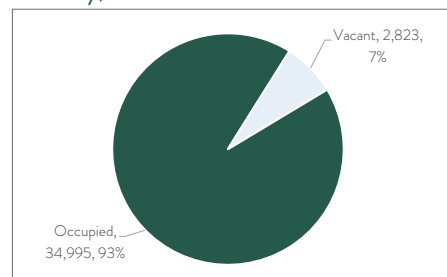
Source: ACS 5-Year Estimates, 2021

Figure 2.8: Manitowoc County Housing Occupancy, 2020



Source: U.S. Decennial Census, 2020

Figure 2.9: Manitowoc County Housing Vacancy, 2020



Source: U.S. Decennial Census, 2020

II. Community Profile

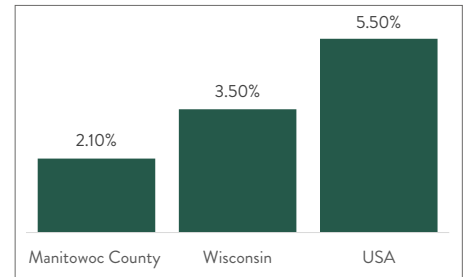
Economy

Labor Force

The civilian labor force is comprised of employed persons and those seeking employment. It excludes persons in the armed forces and those under age 16. Variations in the size of the labor force are the result of many factors, including 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.

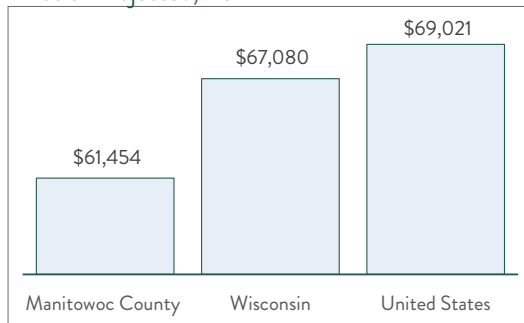
The unemployment rate of the civilian labor force in Manitowoc County is 2.1 percent (Figure 2.10). The unemployment rate in Manitowoc County is lower than both the state (3.5 percent) and the nation (5.5 percent).

Figure 2.10: Unemployment Rate, 2021



Source: ACS 5-Year Estimates, 2021

Figure 2.11: Median Household Income Inflation Adjusted, 2021



Source: ACS 5-Year Estimates, 2021

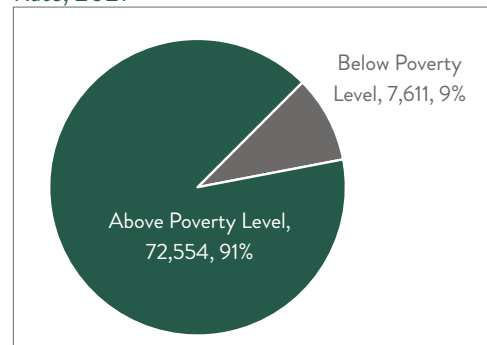
Median Household Income

The median household income in Manitowoc County is \$61,454 per year, which is over \$5,000 less than Wisconsin’s median (\$67,080), and \$8,000 less than the United States (\$69,021). See Figure 2.11

Poverty Rate

Manitowoc County’s poverty level of 9.5 percent is lower than the state and country’s poverty levels (10.7 percent and 12.6 percent, respectively). See Figure 2.12

Figure 2.12: Manitowoc County Poverty Rate, 2021

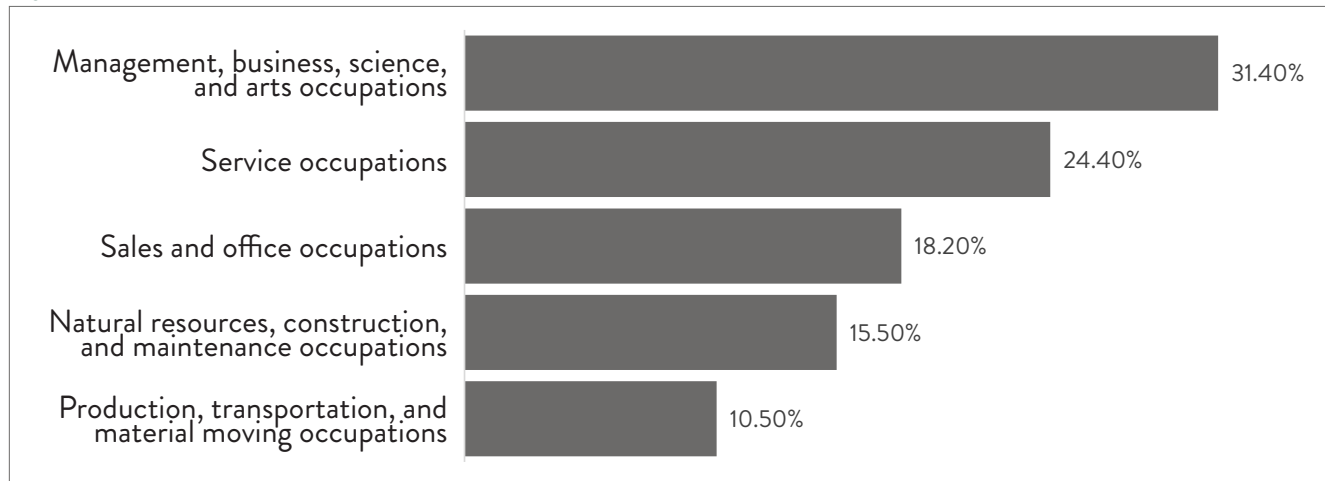


Source: ACS 5-Year Estimates, 2021

Employment

Figure 2.13 represents the breakdown of the civilian employed population age 16 or older. The occupation category with the highest percentage of workers is management, business, science, and arts occupations, with nearly a third of the county's workforce in these occupations (31.4 percent). Service occupations make up approximately a quarter of the civilian workforce (24.4%).

Figure 2.13: Employment by Occupation



Source: ACS 5-Year Estimates, 2021

III. 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:

1. Identifies the natural hazards thought to pose the greatest risk to residents of the county,
2. Profiles the extent and severity of past natural hazard events that have affected the county, and
3. Assesses 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 natural and man-made 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 the existing hazard list, the hazards addressed by NCDC data, and the listing 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 and published in 2003 with funding provided by the State of Wisconsin Department of Military Affairs, Wisconsin Emergency Management, and the Federal Emergency Management Agency).

Natural Hazards Prioritization

The steering committee for this Manitowoc County planning effort identified and ranked notable 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 this plan. Several natural hazards in the prioritized list included a combination of NCDC event types for consistency (i.e., Tornado and Strong Wind: Strong Wind, Tornado, Thunderstorm Wind, High Wind, and Funnel Cloud; Winter Storm: Blizzard, Winter Storm, Heavy Snow, Lake-Effect Snow, and Winter Weather; Flooding: Flood and Flash Flood; Extreme Cold: Cold/Wind Chill and Extreme Cold/Wind Chill). The remaining hazards include just one corresponding NCDC event type category. The adjacent table lists the hazards in order of the steering committee’s prioritized ranking.

1	Tornado/Strong Wind
2	Winter Storm
3	Lightning and Thunderstorms (including hail storms)
4	Extreme Cold
5	Flooding
6	Drought
7	Extreme Heat
8	Dense Fog
9	Wildfires
10	Dam Failure

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. For the purposes of this plan, historical hazard event data was collected from January 1, 2000 through October 10, 2023. The query for the time period resulted in 297 events recorded (Table 3.1).

The data from the NCDC shows that of the 297 events, the natural hazards occurring most frequently in Manitowoc County between January 2000 and October 2023 include: tornado and strong wind, winter storms, hail, and flooding. 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 event categories in terms of property damage since 2000 has been flooding, tornadoes and strong winds, hail, and lightning. The reported costs of crop damage and property damage can be found on Table 3.1.

Table 3.1: Manitowoc County Hazard Events (2000-2023)

Natural Hazard	# of Events ¹	Average #/Year	Risk ²	Deaths	Injuries	Reported Crop Damage	Reported Property Damage ³
Tornadoes and Strong Wind	122	5	High	0	0	\$20,500	\$2,006,000
Winter Storm	79	3	High	0	0	\$0	\$0
Hail	55	2	Moderate	0	30	\$5,190,000	\$53,515,000
Flooding	17	1	Moderate	0	0	\$20,000,000	\$650,000
Extreme Cold ⁴	7	0	Low	0	0	\$0	\$0
Excessive Heat ⁵	4	0	Low	2	0	\$0	\$0
Drought	3	0	Low	0	0	\$0	\$0
Lightning	4	0	Low	0	0	\$0	\$403,100
Coastal Hazards	4	0	Low	0	0	\$0	\$60,000
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	297	--	--	2	30	\$25,210,500	\$56,634,100

ND = No data

1. January 1, 2000 to October 10, 2023 (23.78 years)

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

3. Does not factor in private losses for most occurrences.

4. Temperatures well below zero, or the combination of cold temperatures and high winds (NOAA)

5. A period of high heat and humidity that lasts for at least two to three days, with temperatures above 90°F (NOAA)

Source: NOAA NCDC Storms Database, 2000-2023.

Disaster Declaration History

Between January 2000 and October 2023, 20 federal Major Disaster Declarations (DR) have been issued in Wisconsin. Manitowoc County was included in two 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).
- On January 20, 2020, FEMA issued a nationwide disaster declaration due to the Covid-19 pandemic (DR-4520-WI). The incident period ended on May 11, 2023.

III. Risk Assessment

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

Low magnitude earthquakes do occur occasionally in Wisconsin, however, none have exceeded a magnitude of 3.9. According to the U.S. Geological Survey (USGS), there have been 14 earthquake events felt in Wisconsin since 1900.

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 and are not fully assessed in this plan.

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 the majority of Manitowoc County, with roughly the southern half of the Lake Michigan coast at moderate risk. 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 may be 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 reviews, 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

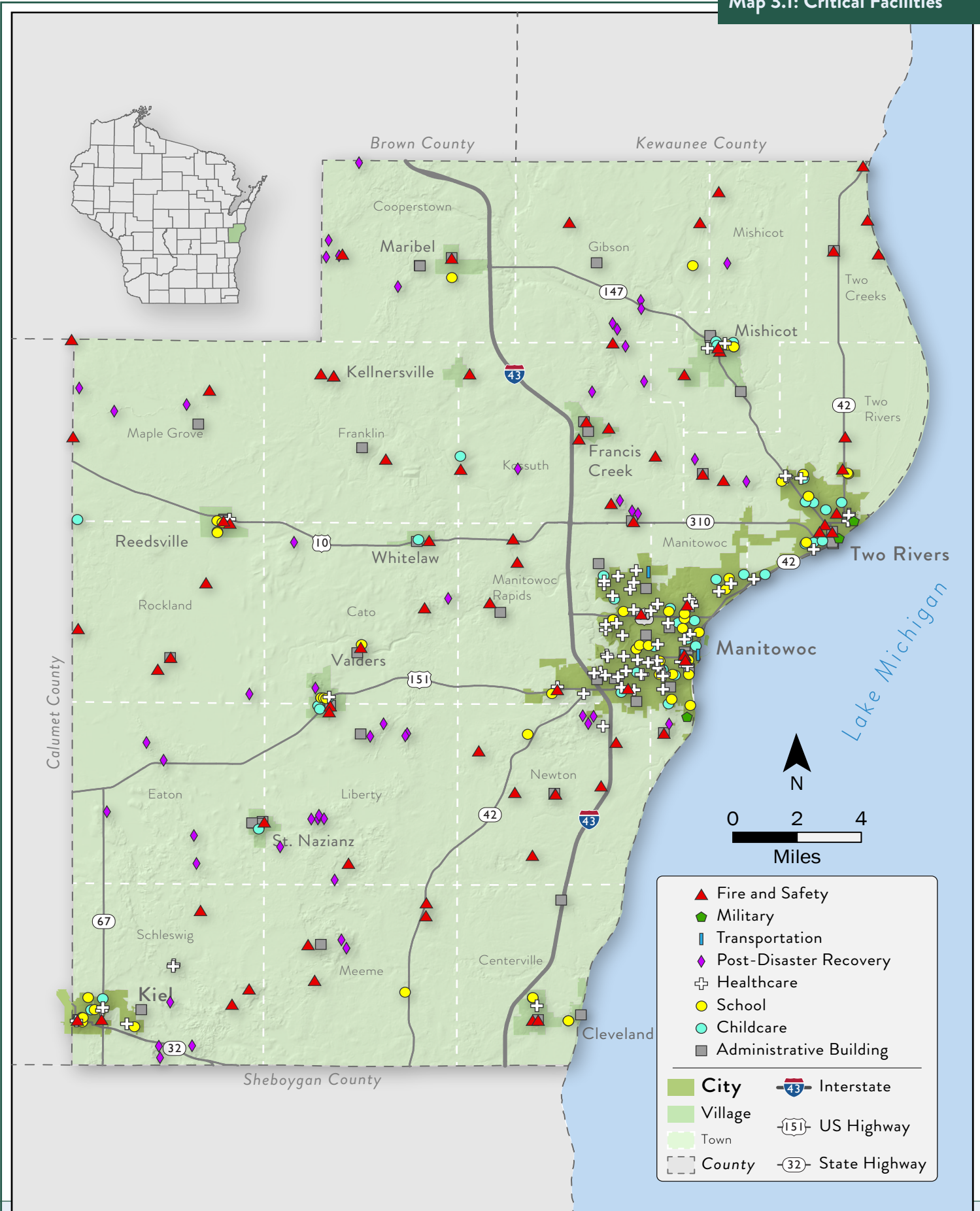
The risk and vulnerability assessment is intended to describe the frequency, severity, and probability of future occurrence of natural hazards that could impact the planning area. The following hazard profiles attempt to historically describe the characteristics of each natural hazard and how they have 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 & Utilities

Although the risk assessment focuses on the risk potential to the overall planning area, critical facilities and utilities are of particular concern. Critical facilities and utilities 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/manufactured home parks).

Critical facilities and utilities in the planning area are identified and illustrated on maps 3.1 and 3.2. Table 3.2 lists the types and number of critical facilities and utilities within the county. Table 3.3 lists the critical facilities and utilities by municipality.

Map 3.1: Critical Facilities



Map 3.2: Critical Utilities

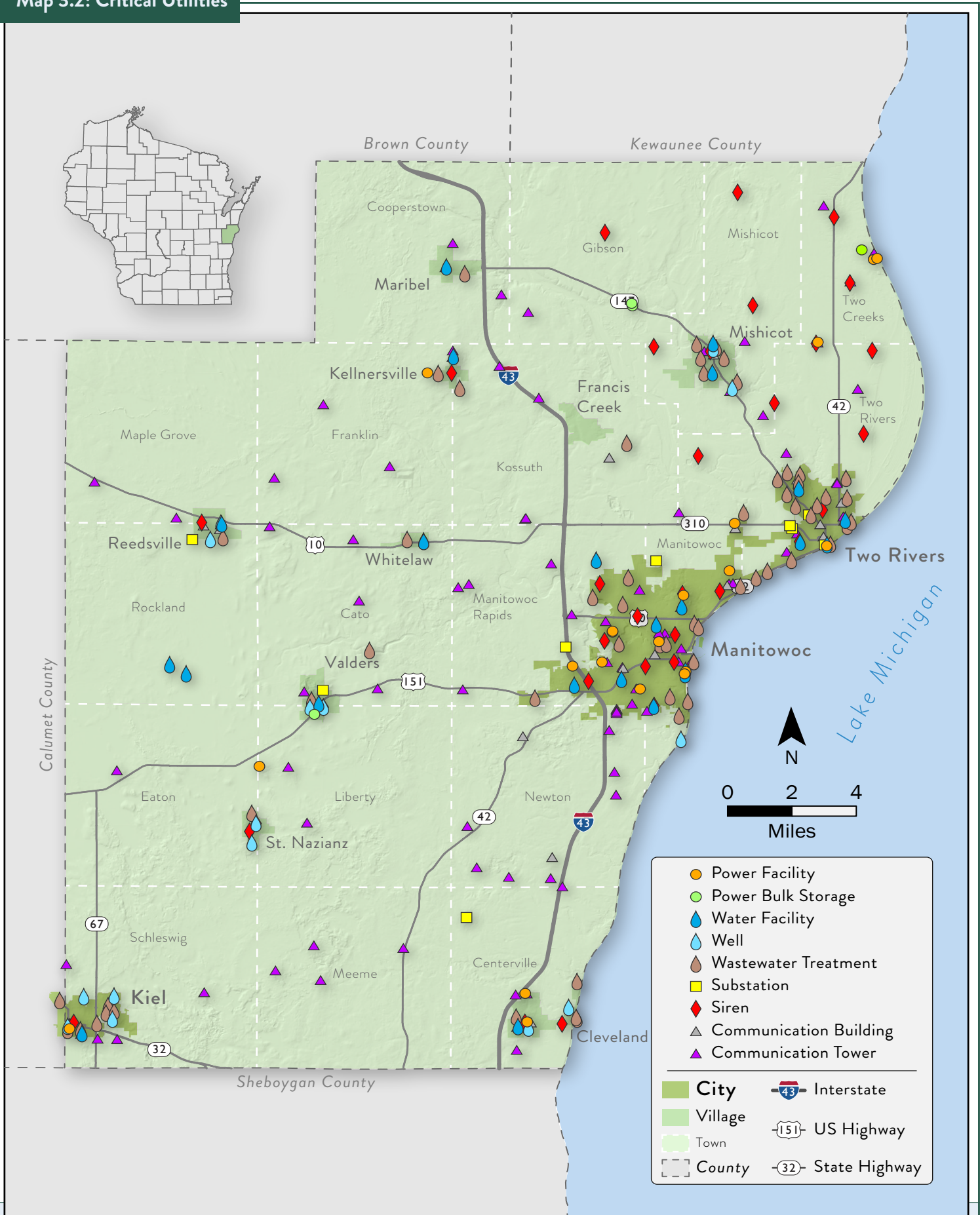


Table 3.2: Number of Critical Facilities and Utilities by Type

Type	Number of Critical Facilities/Utilities
Administrative Building	56
Bridge	291
Communication Facility	134
Dam	10
Fire and Safety	78
Licensed Childcare Facility	45
Licensed Healthcare Facility	67
Mobile/Manufactured Housing	14
Military Installation	3
Post-Disaster Recovery Site	51
Power Facility/Bulk Fuel Storage	34
School	48
Transportation Facility	3
Wastewater Treatment Facility	62
Water Supply	40
Total	936

Source: Bay-Lake Regional Planning Commission, 2024

Table 3.3: Number of Critical Facilities and Utilities by Municipality

Municipality	Number of Critical Facilities/Utilities
City of Kiel	40
City of Manitowoc	203
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	47
Town of Liberty	18
Town of Manitowoc	14
Town of Manitowoc Rapids	38
Town of Maple Grove	13
Town of Meeme	25
Town of Mishicot	14
Town of Newton	50
Town of Rockland	23
Town of Schleswig	24
Town of Two Creeks	23
Town of Two Rivers	21
Village of Cleveland	30
Village of Francis Creek	8
Village of Kellnersville	6
Village of Maribel	6
Village of Mishicot	36
Village of Reedsville	23
Village of St. Nazianz	11
Village of Valders	21
Village of Whitelaw	6
Total	936

Source: Bay-Lake Regional Planning Commission, 2024

III. Risk Assessment

Hazard Profiles

Hazard profiles describe the frequency, severity, and probability of future natural hazards that could have an impact on Manitowoc County. These hazard profiles describe historic causes 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.

Effects of Future Changing Conditions on Natural Hazards

Changing conditions has already begun to impact Wisconsin, the U.S., and the world. These impacts include increases in heat waves, extreme weather events, flooding, droughts, and other climatic events.

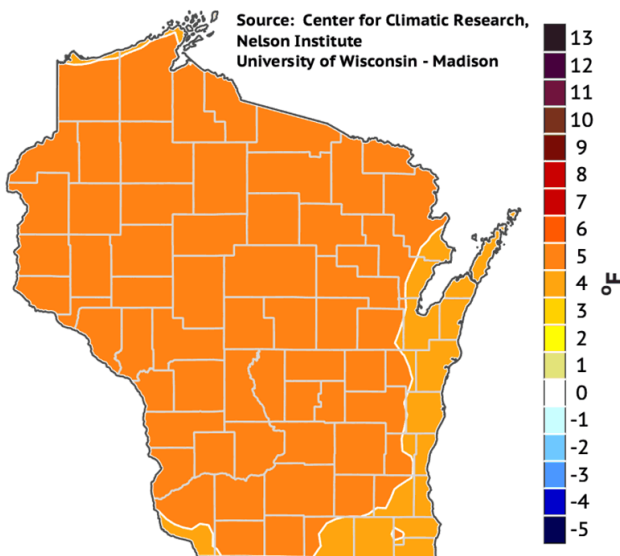
The Wisconsin Initiative on Climate Change Impact's (WICCI) 2021 Assessment Report outlines the changing conditions trends in Wisconsin. Overall, the report outlines Wisconsin's climate as becoming warmer and wetter. Springs and summers are seeing warmer temperatures and an increase in the intensity of rain and storm events, while seeing a decline in the number of precipitation events. Fall and winter are seeing warmer temperatures and an increase in precipitation. The winter months are seeing the largest changes in temperature and precipitation.

Manitowoc County Future Changing Conditions Impacts

Manitowoc County could expect to see an increase in extreme storms, droughts, outbreaks of new pests that can survive in a warmer climate, flooding, heat, and other climatic stressors and events.

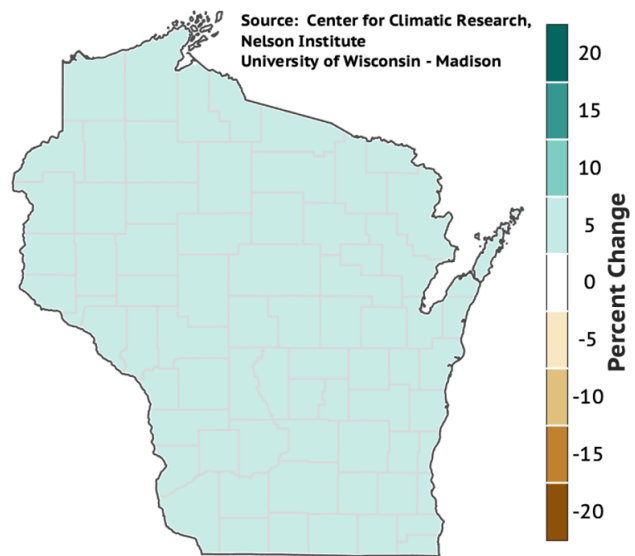
The maps below show projected change in annual average temperatures and precipitation through 2060.

**Change in Annual TMEAN, RCP45:
2041-2060 minus 1981-2010**



Source: Wisconsin Initiative on Climate Change Impacts

**Change in Annual PRCP (%), RCP45:
2041-2060 minus 1981-2010**



Source: Wisconsin Initiative on Climate Change Impacts

III. Risk Assessment

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.

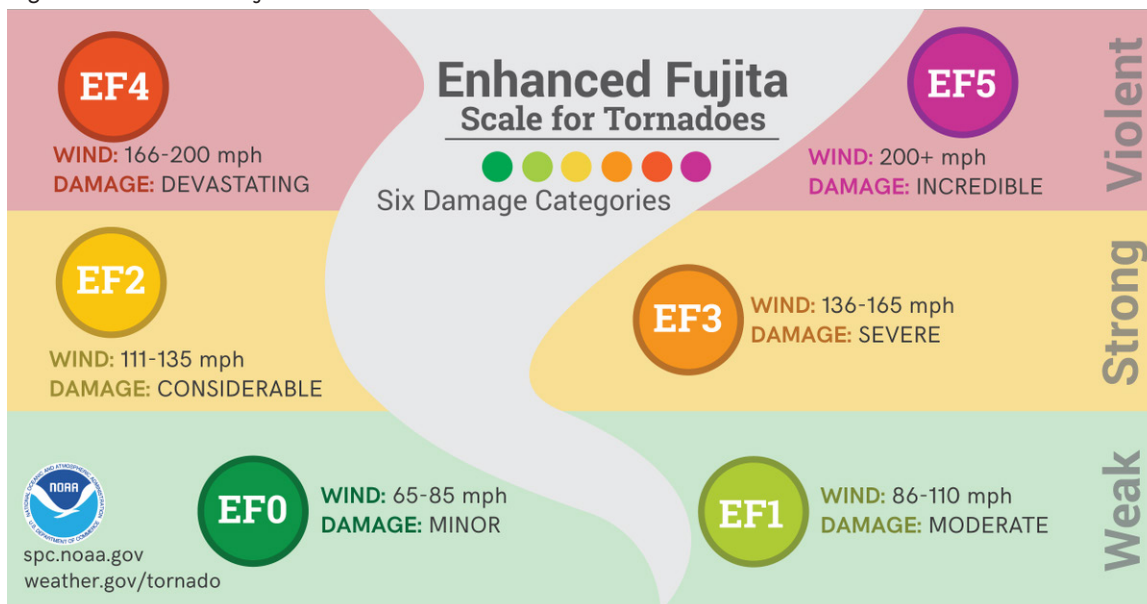
The destructive power of the tornado results primarily from strong wind velocities and sudden changes in pressure. Wind and pressure differentials probably account for 90 percent of the damage caused by tornadoes. Since tornadoes are generally associated with severe storm systems, they are usually accompanied 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. According to the National Weather Service, tornadoes have occurred in Wisconsin in every month of the year.

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 Figure 3.1 illustrates the Enhanced Fujita Scale (EF Scale), which is recognized as the tornado magnitude measurement rating.

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.

Figure 3.1: Enhanced Fujita Scale (EF Scale)



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 122 significant tornado and strong wind events (including funnel clouds, strong wind, high wind, and thunderstorm wind) from January 1, 2000 to October 10, 2023.

One significant tornado of note was an EF-1 in the Town of Cato that occurred on July 13, 2004 and caused \$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 and strong wind events have no defined hazard area within the county. Past events have been relatively uniform across the planning area making the events a countywide concern. However, mobile/manufactured home residents are often most vulnerable to death, injury, and property damage from tornadoes and strong winds due to the high concentration of individual homes that are more apt to be damaged than standard site-built homes. Therefore, mobile/manufactured home parks in the planning area are the areas of greatest risk from this hazard. Besides mobile/manufactured homes, campground patrons are vulnerable to tornadoes because there usually is little shelter provided. The following is a list of things that may be affected by a tornado in Manitowoc County.

- Community facilities – hospitals, schools, jails
- Public Service – police and fire departments
- Utilities – power lines, telephone lines, radio communication
- Transportation – debris clean-up, sign damage
- Residential – nursing homes, mobile/manufactured homes/parks, garages, trees and limbs,

Facilities considered most vulnerable to tornadoes are identified on Map 3.3.

III. Risk Assessment

Impacts from Hazard

Death and Injury

No deaths or injuries have been reported from tornado/strong wind events for Manitowoc County from January 1, 2000 to October 10, 2023, 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/manufactured homes, homes on crawlspaces, and buildings with vast spans.

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

Critical Facilities

All critical facilities in Manitowoc County are vulnerable to tornadoes and strong winds. 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. Power lines and communication towers are at risk of being blown down. 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.

Tornado safe rooms and shelters should be constructed using FEMA regulations and guidelines.

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 the 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 \$2 million in public property and crop damages from January 1, 2000 to October 10, 2023 according to NCDC data.

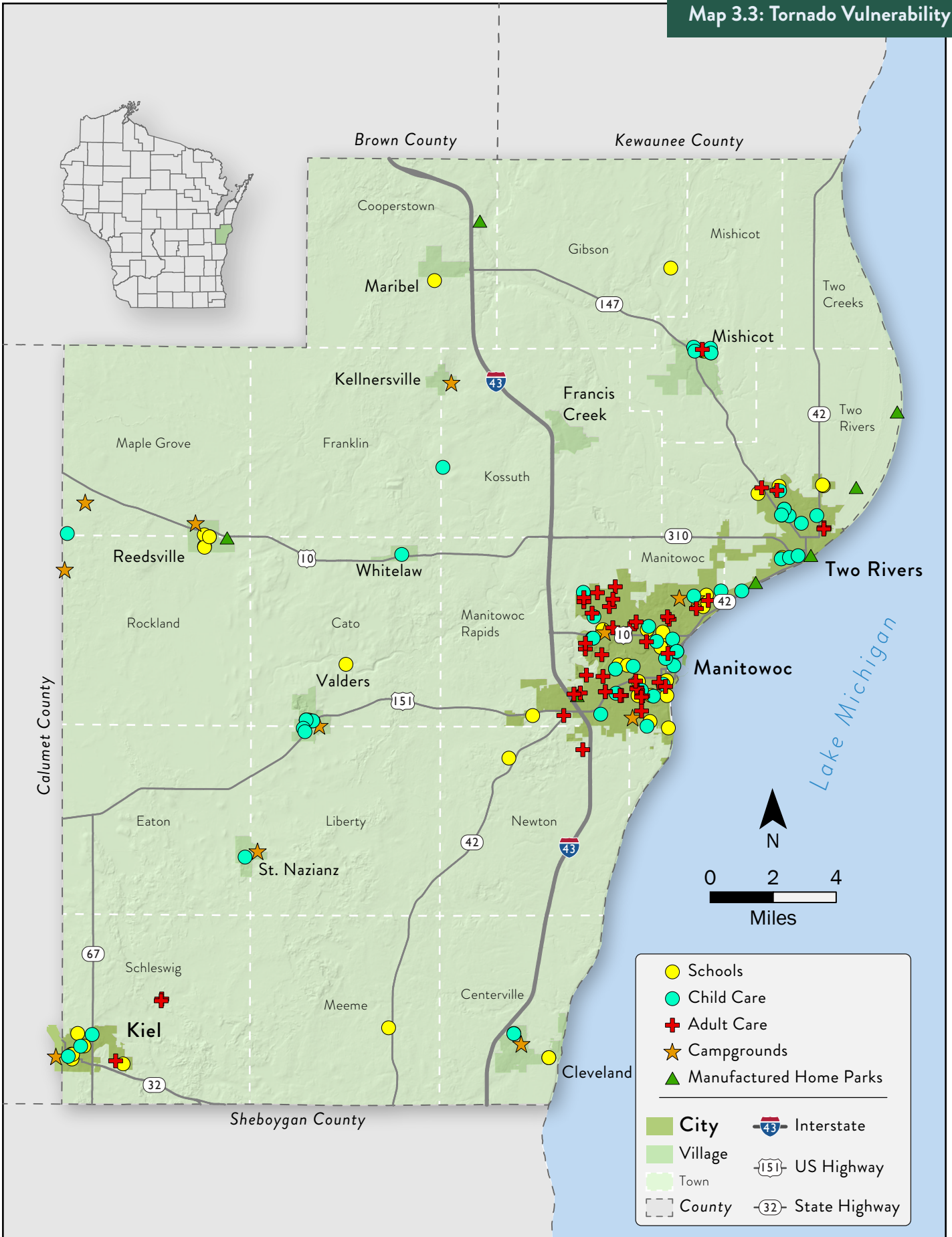
Estimate of Potential Dollar Losses

Historic data is used to estimate potential future dollar losses due to tornado/strong wind events. Estimated damages resulting from various tornadoes in Manitowoc County range from \$2.0 million up to \$10 million depending on the number of events in a given year.

Impacts of Future Changing Conditions

Future changing conditions may include an increase in the frequency of extreme weather events, including higher intensity thunderstorms and the risk of resultant strong winds and tornadoes. Because of the anticipated increase in frequency of thunderstorm events with possible strong winds and tornadoes, future impacts of tornado hazards can be expected to be higher than historic risk, and resulting damages will be higher.

Map 3.3: Tornado Vulnerability



III. Risk Assessment

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 55 significant hail storm events from January 1, 2000 to October 10, 2023. 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 moderate 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 deaths and 30 injuries have been reported from hail events in Manitowoc County from January 1, 2000 to October 10, 2023, 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 from January 1, 2000 to October 10, 2023 according to NCDC data.

\$46 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.

Impacts of Future Changing Conditions

Future changing conditions may lead to more frequent, extreme weather events, particularly higher intensity thunderstorms and accompanying hail. Because of the anticipated increase in frequency of thunderstorms with resultant hail, future impacts of hail hazards can be expected to be higher than historic risk, and resulting damages will be higher.

III. Risk Assessment

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) descriptions of winter storm elements:

- *Heavy snowfall:* Snowfall accumulating to four inches or more in depth in 12 hours or snowfall accumulating to six inches or more in depth in 24 hours or less.
- *Snow squall:* An intense, but limited duration, period of moderate to heavy snowfall, accompanied by strong, gusty surface winds and possibly lightning. Accumulation may be significant.
- *Lake effect storms:* Snow showers that are created when cold, dry air passes over a large warmer lake, such as one of the Great Lakes (i.e., Lake Michigan), and picks up moisture and heat. This air, now full of water, dumps the water as snow
- *Blizzard:* Blowing and/or falling snow with winds of at least 35 mph, reducing visibilities to 1/4 mile or less for at least three hours. Winds lofting the current snow pack and reducing visibilities without any falling snow is called a ground blizzard
- *Ice storm:* A freezing rain storm which results in the accumulation of at least .25" of ice on exposed surfaces.
- *Freezing drizzle/freezing rain:* A drizzle that falls as a liquid but freezes into glaze or rime upon contact with the cold ground or surface structures.
- *Sleet:* Caused when snowflakes only partially melt when they fall through a shallow layer of warm air. These slushy drops refreeze as they next fall through a deep layer of freezing air above the surface, and eventually reach the ground as frozen rain drops that bounce on impact.
- *Wind chill:* The apparent temperature the body feels when wind is factored into the equation. No specific rules exist for determining when wind chill becomes dangerous. As a general rule, the threshold for potentially dangerous wind chill conditions is about -20°F

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.

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Manitowoc County has experienced 79 significant winter storm events from January 1, 2000 to October 10, 2023 (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 three 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 moderate 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. However, given Manitowoc County's geographic location adjacent to Lake Michigan, winter storm events such as Lake Effect Storms and Snow Squalls have a higher probability of occurring in Manitowoc County than those areas not located adjacent to Lake Michigan.

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.

Impacts of Hazard

Death and Injury

No deaths or injuries have been reported from significant winter storm events for Manitowoc County from January 1, 2000 to October 10, 2023 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 operations 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, road closures that cause lost retail trade, wages, and tax revenue, flight delays, damage to utilities, and flooding from snowmelt.

Estimate of Potential Dollar Losses

An estimate of potential dollar losses is difficult for winter storm events as damages and losses are typically widespread. Winter storms do have the potential to be extremely destructive, particularly in the case of ice storms. Based on previous damages reported by the NCDC, property damages from winter storms has been minimal over the past 23 years.

Impacts of Future Changing Conditions

Changing conditions may lead to more frequent, more powerful winter storm events. Power outages, structural collapse, and transportation impacts can be expected with the increased frequency of heavier, winter storms.

III. Risk Assessment

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 are of such intensity that the stormwater infrastructure cannot handle all the runoff 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.

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.

According to the WDNR Statewide Dams Database, there are a total of 46 dams in Manitowoc County. Of these, nine are classified as large dams (Map 3.3). 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. 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 17 significant flooding events (including flash floods and dam failure flooding) from January 1, 2000 to October 10, 2023. 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 moderate 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 3.4. Properties that potentially lie within the floodplain and would be affected by the 100-year flood are also illustrated in Map 3.4.

Impacts from Hazard

Death and Injury

No death or injuries from flooding has been reported for Manitowoc County from January 1, 2000 to October 10, 2023, according to NCDC data.

Structures at Risk

Analysis of the data used to produce Map 3.5 indicates that 3,012 structures could potentially be impacted by the base flood in the planning area.

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.

Critical Facilities

Analysis of the GIS data used to produce Map 3.5 indicates that there are 211 critical facilities/utilities located within 100-year floodplains in Manitowoc County. Table 3.5 lists the critical facility/utility types within the 100-year floodplains and Figure 3.2 illustrates the location of critical facilities/utilities within the 100-year floodplains within Manitowoc County. Table 3.6 identifies the number of critical facilities/utilities within the floodplain by municipality.

Economic Impacts

Property Damage

Reported significant public property and crop damage from flooding in Manitowoc County has totaled \$20,650,000 from January 1, 2000 to October 10, 2023 according to NCDC data. Most of the damage cost (\$20.2 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.

Value of Structures at Risk

The value of all at-risk structures is estimated at \$506.7 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.

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.

To estimate potential future dollar losses due to flood, historic data from past flood events for which we have loss figures is used. Manitowoc County can anticipate property and crop losses of approximately \$1,214,705, on average, between the public and private sector for each significant flood occurrence. Over the next ten-year period, flood losses in Manitowoc County could approach \$12 million.

III. Risk Assessment

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. Based on an analysis of GIS data collected, there are 167 bridges that could potentially be underwater during a base flood. In addition to those bridges that could be impacted by flood waters, there may be a number of additional bridges in areas that are not included in the 100-year flood zones, such as areas located along small tributary streams.

Development in Areas Subject to Flooding

Development in floodplains, watersheds, and wetland areas (Map 3.7) are kept to a minimum through zoning. The Manitowoc County Code Administrator enforces Manitowoc County’s *Chapter 31 Floodplain Zoning* in all unincorporated areas of the county. Eight of the 12 incorporated communities in the county also enforce a floodplain zoning ordinance via their Zoning Administrator, Building Inspector, or Code Enforcement Officer. These ordinances are useful in keeping inappropriate development out of flood hazard zones in the county.

Following a flood event in the unincorporated areas of the county, the Manitowoc County Code Administrator oversees inspections on all damaged floodplain structures that have been impacted to determine if substantial damage has occurred. Following flood events impacting the incorporated communities, inspections of damaged floodplain properties are overseen by their municipal Building Inspectors or Code Enforcement Officers.

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. Table 3.4 details Manitowoc County and its cities and villages that have a completed Flood Insurance Study and a Flood Insurance Rate Map (FIRM).

Table 3.4: Manitowoc County/Communities Participating in National Flood Insurance Program

Jurisdiction	Initial Flood Hazard Boundary Map (FHBM)	Initial FIRM	Current FIRM	Floodplain Ordinance
Manitowoc County	02/07/75	09/15/78	02/23/23	Yes
City of Kiel	02/08/74	01/03/85	08/02/11	Yes
City of Manitowoc	06/07/74	04/15/77	02/23/23	Yes
City of Two Rivers	01/09/74	04/03/78	02/23/23	Yes
Village of Cleveland	06/07/74	05/15/78	02/23/23	Yes
Village of Kellnersville	-	08/02/11	(NSFHA)	Yes
Village of Maribel	-	08/02/11	(NSFHA)	Yes
Village of Mishicot	-	05/13/72	08/02/11	Yes
Village of Reedsville	06/04/76	09/30/88	08/02/11(M)	Yes

NSFHA - No Special Flood Hazard Area - All Zone C

M - No Elevation Determined - All Zone A, C, and X

Source: <https://www.fema.gov/cis/WI.pdf>

Not Participating in NFIP

The villages of Francis Creek, St. Nazianz, Valders, and Whitelaw are not participating in NFIP. Since there are NSFHA’s within their municipal boundaries, these communities were not provided a floodplain map, and have not been asked to participate in the NFIP.

Impacts of Future Changing Conditions

Future changing conditions are expected to lead to more annual precipitation with more frequent and heavier high precipitation events. This will lead to more flooding due to soils not able to absorb rainfall fast enough or being waterlogged. Flood damages will affect more people over a wider area of the county, and resulting damages will be higher.

Table 3.5: Critical Facilities/Utilities within the Floodplain by Type

Type	# of Critical Facilities/Utilities
Administrative Building	2
Bridges	167
Communication Facility	1
Dam	9
Fire and Safety	15
Licensed Childcare Facility	1
Licensed Healthcare Facility	1
Post-Disaster Recovery Site	1
Power Facility/Bulk Fuel Storage	2
Wastewater Treatment	11
Water Supply	1
Total	211

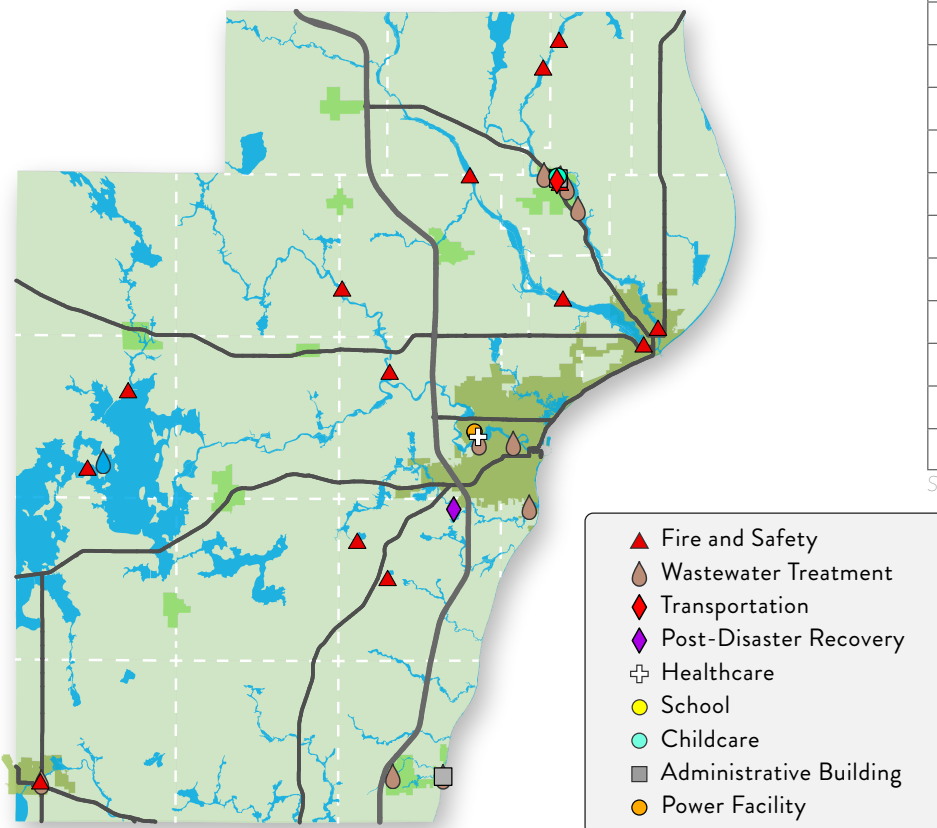
Source: Bay-Lake Regional Planning Commission, 2024

Table 3.6: Critical Facilities/Utilities within the Floodplain by Municipality

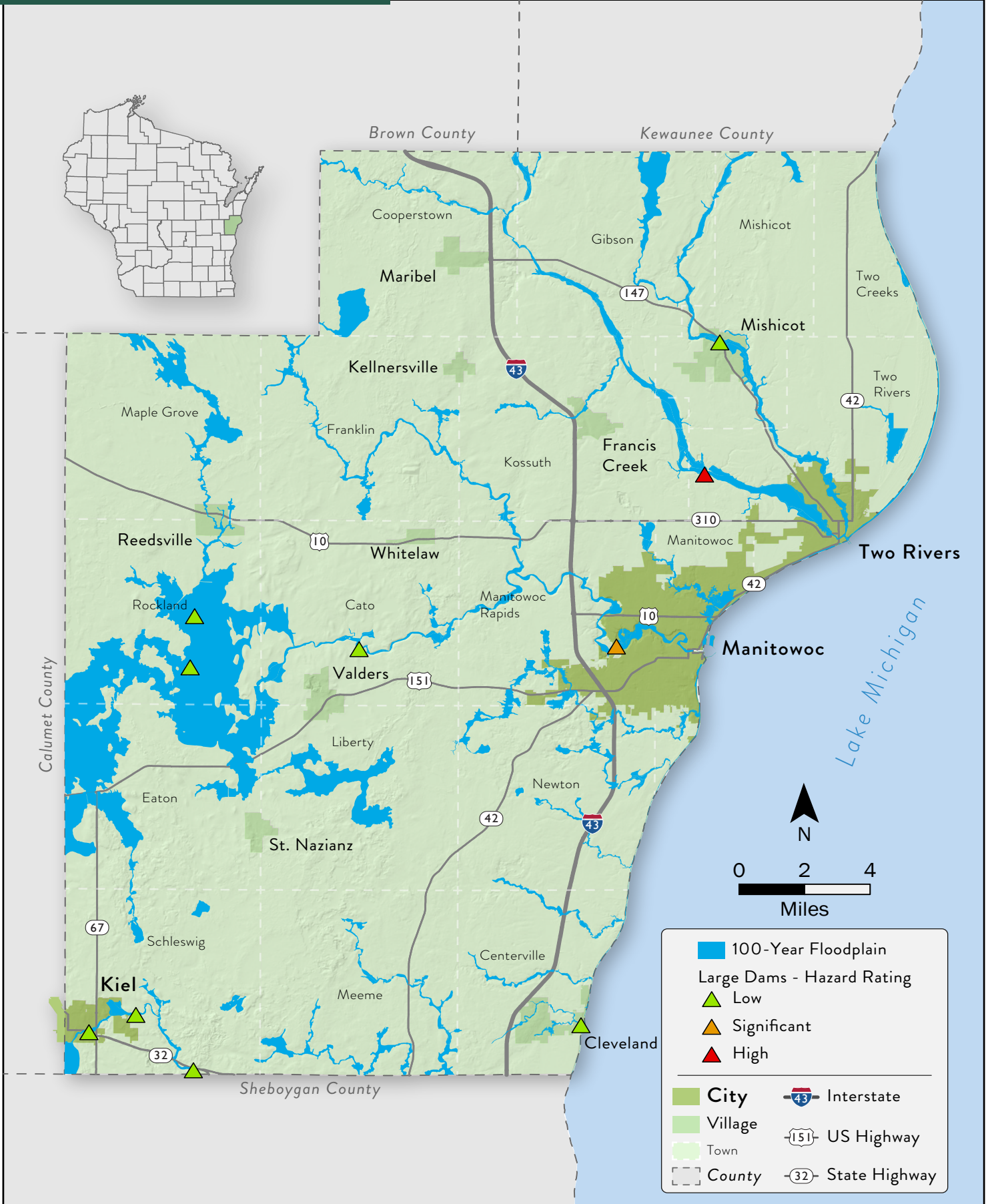
Type	# of Critical Facilities/Utilities
City of Kiel	6
City of Manitowoc	20
City of Two Rivers	7
Village of Francis Creek	2
Village of Mishicot	14
Village of Reedsville	4
Village of Cleveland	7
Town of Cato	4
Town of Centerville	15
Town of Cooperstown	10
Town of Eaton	3
Town of Franklin	11
Town of Gibson	14
Town of Kossuth	9
Town of Liberty	2
Town of Meeme	11
Town of Mishicot	7
Town of Maple Grove	5
Town of Newton	13
Town of Two Rivers	7
Town of Rockland	9
Town of Manitowoc	8
Town of Manitowoc Rapids	16
Town of Schleswig	7
Total	211

Source: Bay-Lake Regional Planning Commission, 2024

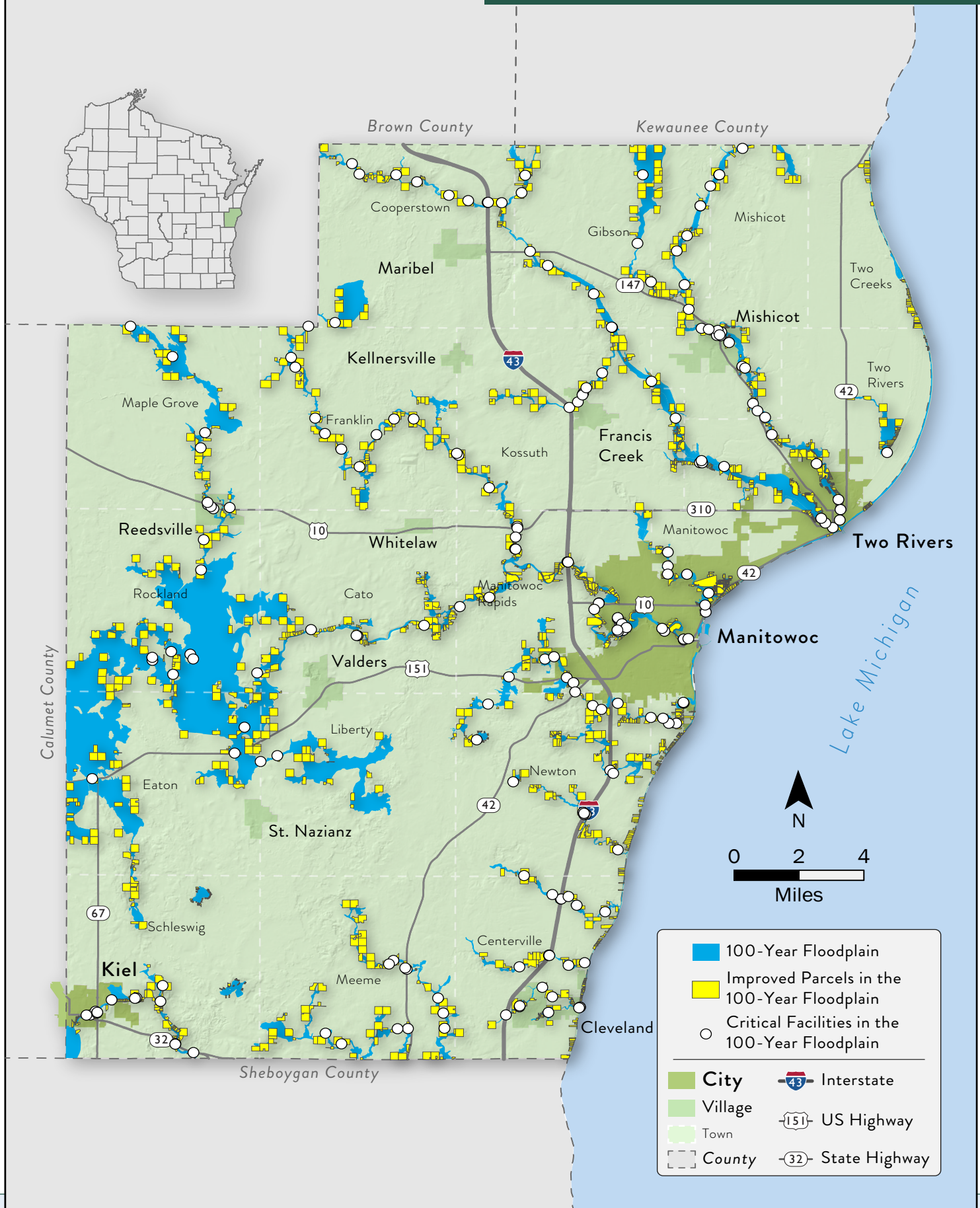
Figure 3.2: Critical Facilities/Utilities within the Floodplain



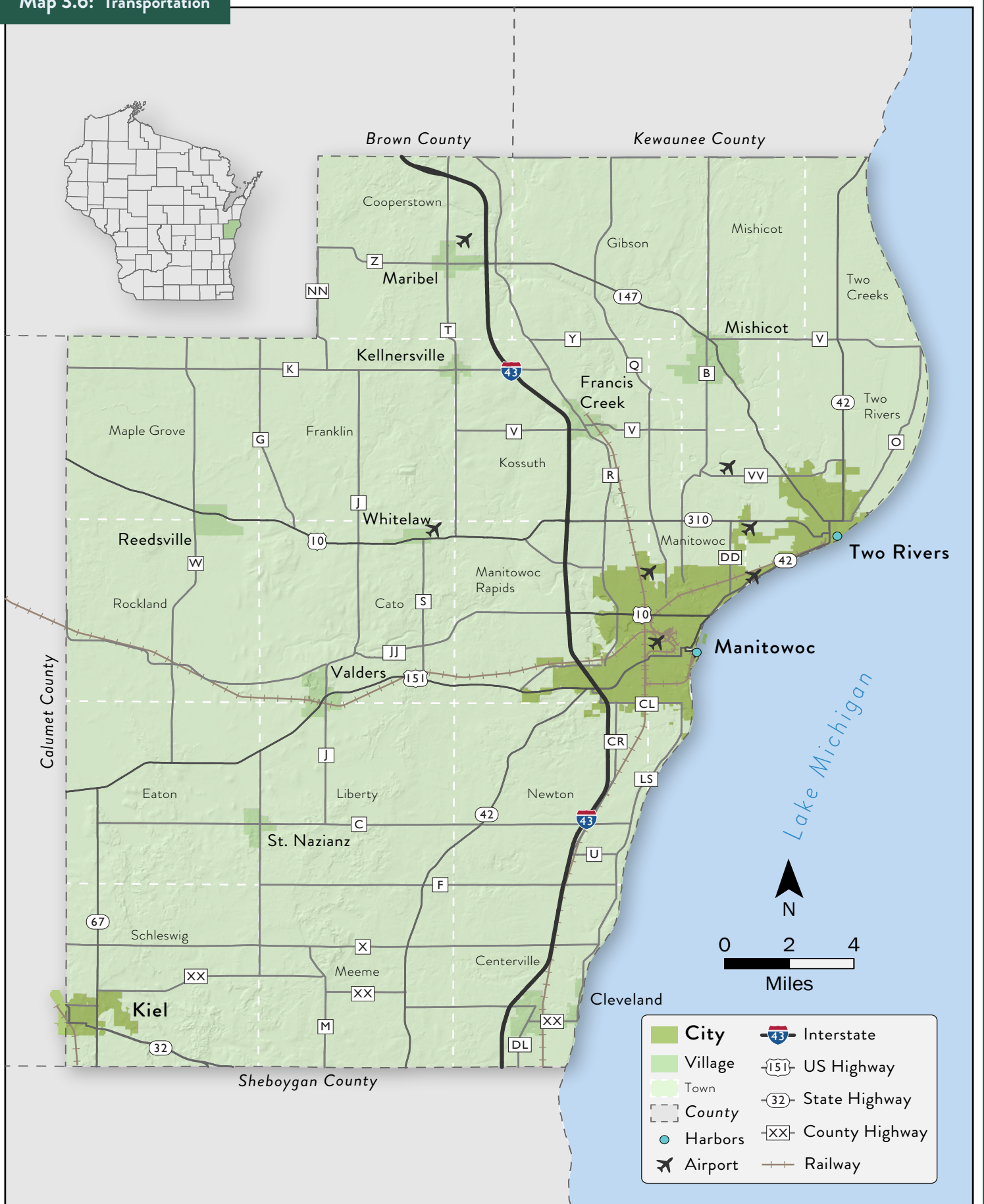
Map 3.4: Large Dams and 100-Year Floodplain



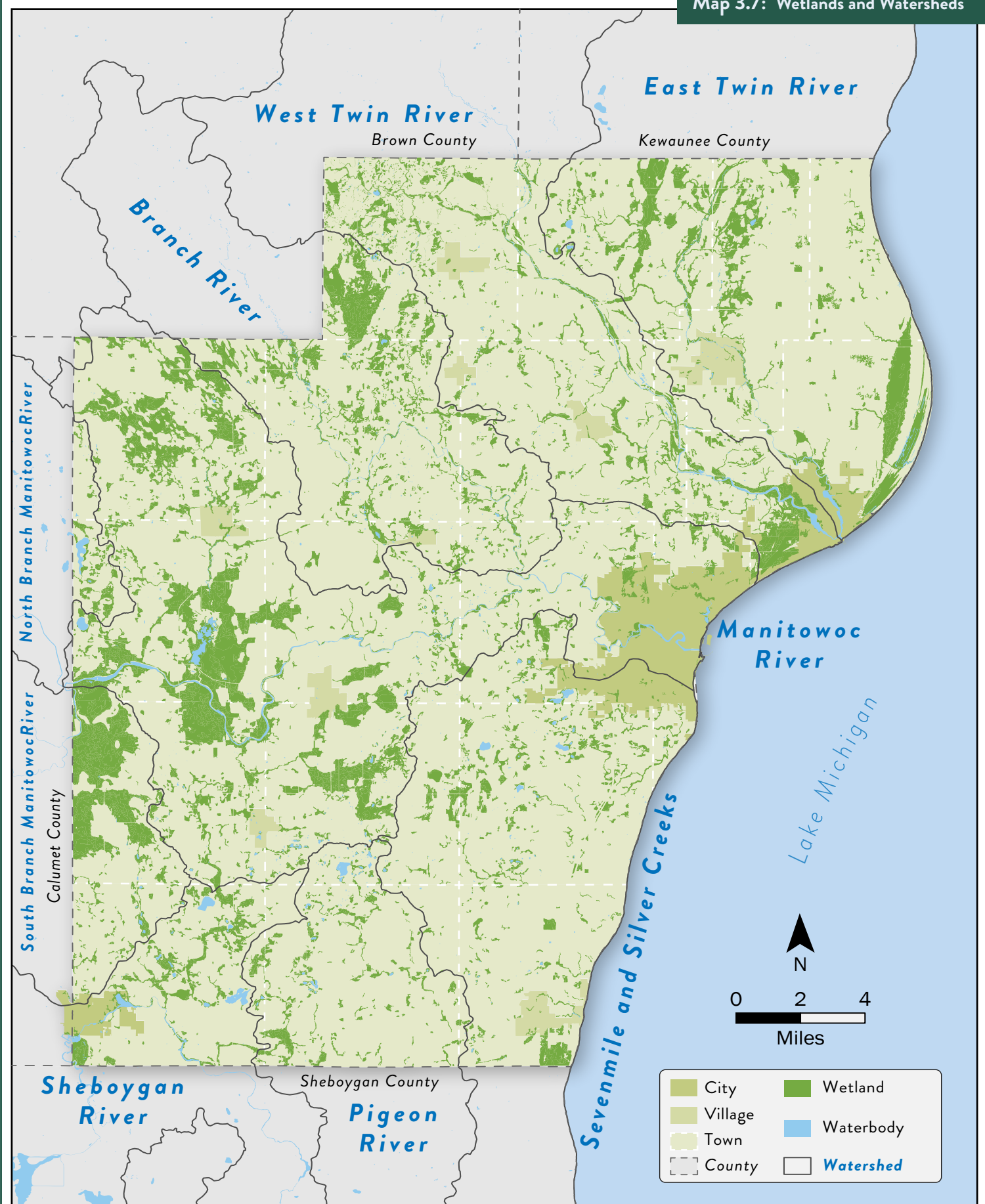
Map 3.5: Improved Properties within the 100-Year Floodplain



Map 3.6: Transportation



Map 3.7: Wetlands and Watersheds



III. Risk Assessment

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 seven significant extreme cold events from January 1, 2000 to October 10, 2023.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant extreme cold event every 3.5 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 from January 1, 2000 to October 10, 2023 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 10, 2023 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 23 years.

Impacts of Future Changing Conditions

Future changing conditions are expected to lead to more frequent, winter storm events, including the occurrences of severe cold.

III. Risk Assessment

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 10, 2023.

Hazard Frequency

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

Two deaths and no injuries, has been reported from significant extreme heat events for Manitowoc County from January 1, 2000 to October 10, 2023 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.

Property Damage

No significant public property damages have been reported from extreme heat events for Manitowoc County from January 1, 2000 to October 10, 2023 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 since 2000.

Impacts of Future Changing Conditions

According to research conducted by the *Wisconsin Initiative on Climate Change Impacts*, extreme heat events are projected to become more frequent, longer lasting, and geographically widespread. Future changing conditions are expected to lead to an increase in wildfire occurrences and the conditions for any given fire to get out of control. Rising average annual temperatures will exacerbate drought conditions contributing to wildfire risk.

III. Risk Assessment

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 four significant lightning events from January 1, 2000 to October 10, 2023.

Hazard Frequency

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

Impacts from Hazard

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 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 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

There was insufficient data to calculate average lightning damages.

Property Damage

Reported property damage from significant lightning for Manitowoc County has totaled approximately \$403,100 from January 1, 2000 to October 10, 2023 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 lightning has been minimal since 2000.

Impacts of Future Changing Conditions

Future changing conditions are expected to lead to more frequent, higher intensity severe thunderstorms and resultant lightning. This will affect more people over a wider area of the County.

III. Risk Assessment

Drought

Description of Hazard

A drought is an extended period of unusually dry weather, which may be accompanied by extreme heat. The U.S. Drought Monitor depicts the location and intensity of drought across the country. The drought monitor uses five classifications:

- D0 (Abnormally Dry): Areas that may be going into or are coming out of drought.
- D1 (Moderate Drought): Some damage to crops and pastures, low water levels in streams, reservoirs, and wells, and a high risk of fire.
- D2 (Severe Drought): Likely crop or pasture loss, high risk of fire, and common water shortages.
- D3 (Extreme Drought): Major crop or pasture loss, extreme fire danger, and widespread water shortages or restrictions.
- D4 (Exceptional Drought): Widespread crop and pasture loss, exceptional fire risk, and water shortages in reservoirs, streams, and wells that create water emergencies.

There are several types of drought in Wisconsin: agricultural drought, hydrologic drought, and meteorological 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 depth of the groundwater table. Meteorological drought occurs when dry weather patterns dominate an area. These 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 from January 1, 2000 to October 10, 2023.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Manitowoc County experiences approximately one significant drought event every eight 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. According to the USDA, National Agricultural Statistics Service 2022 Census of Agriculture, Manitowoc County contains over 193,600 acres of croplands.

Impacts from Hazard

Death and Injury

No deaths or injuries have been reported from significant drought events for Manitowoc County from January 1, 2000 to October 10, 2023, 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 and pose serious challenges for providing feed for livestock, resulting in total losses.

During severe drought periods farmers are often forced to seek financial assistance from the government to supplement lost income.

Property Damage

No significant public property damages have been reported from drought events for Manitowoc County from January 1, 2000 to October 10, 2023 according to NCDC data.

Estimate of Potential Dollar Losses

Drought is another hazard lacking good loss figures at the county level. However, a look at aggregate data from previous major droughts for which figures are available can give some indication of potential impact. Those droughts resulted in losses of \$9.6 million (1976-77) to \$18 million (1987-88) per affected county in Wisconsin on average.

Impacts of Future Changing Conditions

Future changing conditions are expected to lead to rising average annual temperatures. The increased heat will fuel more extreme weather of all types, including excessive heat and possible resultant drought conditions that may become more frequent and persistent.

Snow droughts may become more frequent with future changing conditions which would reduce both summer and winter water availability, as many streams, rivers, and reservoirs depend on snow melt to replenish or maintain their water levels. Snow droughts reduce the amount of soil moisture that is necessary for proper seed germination come springtime planting of crops, significantly impacting farm incomes.

Increased drought events would have significant adverse effects on Wisconsin's tourism industry throughout the year.

III. Risk Assessment

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. Ice fog, or freezing fog, presents additional challenges as this is a fog in which the droplets of moisture freeze instantly upon contact with exposed objects and form a coating of rime and/or glaze. Not only does ice fog reduce visibility, but it creates icy conditions on roadways for vehicles and can make flying very dangerous if the aircraft is not treated or does not contain effective de-icing equipment.

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Manitowoc County has experienced two significant dense fog events from January 1, 2000 to October 10, 2023.

Hazard Frequency

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

Impacts from Hazard

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 from January 1, 2000 to October 10, 2023 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 23 years.

Impacts of Future Changing Conditions

As warm moist air becomes more common in the winter months as a result of changing conditions, it may increase the frequency of fog events with the nearby cooler bodies of water (Lake Michigan).

III. Risk Assessment

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 2000.

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. .

Areas at Greatest Risk

Manitowoc County contains approximately 77,473 acres of woodlands (20% of the County’s 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.

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.

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 according to NCDC data.

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.

Impacts of Future Changing Conditions

Future changing conditions are expected to lead to an increase in wildfire occurrences and the conditions for any given fire to get out of control. Rising average annual temperatures may worsen drought conditions and contribute to the frequency of the wildfire risk.

III. Risk Assessment

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 and Manitowoc County 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

According to National Climatic Data Center (NCDC), Manitowoc County has experienced four significant coastal hazard events from January 1, 2000 to October 10, 2023.

Hazard Frequency

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

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. Manitowoc County has experienced occurrences of bluff slumping and instability along Lake Michigan. While not always visible, the bluffs are continuously changing due to erosion. Years and even decades can pass without any major loss, and then in one single event a section of bluff-top can start falling into the lake. Living along these bluffs requires an understanding of how erosion works to avoid putting people and buildings in dangerous locations by better determining safe building setbacks.

Impacts from Hazard

Death and Injury

No data on deaths or injuries is available for significant coastal hazard events for Manitowoc County.

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.

Critical Facilities

There are 20 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 also critical facilities that are not dependent on a location with proximity to the lake.

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 as private property and houses.

Property Damage

Reported property damage from coastal hazard events for Manitowoc County has totaled approximately \$60,000 from January 1, 2000 to October 10, 2023 according to NCDC data.

Estimate of Potential Dollar Losses

Based on previous damages reported by the NCDC, property damage from coastal hazards has been infrequent since 2000 and mostly coincides with water level fluctuations. 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 over \$60 million 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.

Impacts of Future Changing Conditions

Future changing conditions are expected to lead to both high and low water level extremes, increased coastal flooding, and reduced bluff slope stability resulting in the likelihood of increased damage to infrastructure and property in Manitowoc County and its coastal communities.

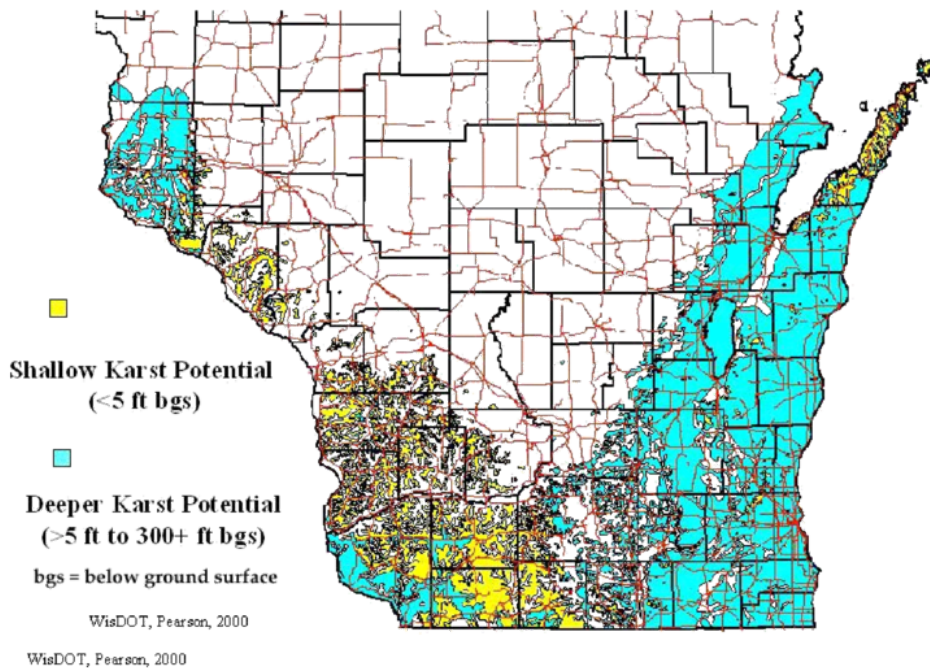
III. Risk Assessment

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 occur 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.



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.

The Manitowoc County Soil & Water Conservation Department administers the Manitowoc County Karst & Bedrock Features Inventory that details sinkholes located throughout the county.

Previous Significant Hazard Occurrences

There is no record of significant subsidence occurrences for Manitowoc County since 2000.

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 land subsidence events for Manitowoc County.

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.

Impacts of Future Changing Conditions

Future changing conditions are expected to lead to more frequent, extreme weather events, including extremes in precipitation (heavy rain versus drought) and fluctuation in groundwater levels, potentially increasing likelihood of sinkholes occurring.

IV. 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 per Steering Committee input. Table 4.2 includes strategies to mitigate hazards at the local level as identified by the county’s local municipalities, while Table 4.3 details strategies and recommendations based on input from Manitowoc Public Utilities. 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 action plan, 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 action plan, 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
- Transitioned from Code Red to the RAVE Emergency Alert System
- 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
- Developed a central data collection process to report hazard incidences and impacts.

IV. Mitigation Strategy

Table 4.1: Manitowoc County Hazard Mitigation Action Plan 2025-2030

All Hazards					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	Notes
Update air photos and LIDAR data	High	Ongoing	Covered by existing budgets	Land Information Officer	Change Acquire to update. Cost covered by existing budgets.
Outage management systems to help triage outage repairs	High	2025-2030	Costs to be determined	Manitowoc, Two Rivers, and Kiel public utilities	
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. Giving away inventory as prizes at community events and promoting use of smartphone apps.
Develop/maintain comprehensive safety plan for all municipal-owned buildings	Medium	Ongoing	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	

Table 4.1 (cont.): Manitowoc County Hazard Mitigation Action Plan 2025-2030

All Hazards					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	Notes
Collect remaining building footprints for all structures in the villages and cities to allow for analysis of where facilities/ structures are located	High	2025-2030	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	High	2025-2030	Costs to be determined	County Planning and Park Commission	
Research, develop, and assess inter-operability plans	High	2025-2030	Costs TBD	County EMS, local law/fire/public works	
Animal protection	High	Ongoing	Costs to be determined	County UW-Extension, Farm Service Agency, animal shelters, and humane society	County has a pet trailer
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	Social media is used for outreach in all inclement weather.
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 from lightning through use of fire resistant materials	Low	Ongoing	Costs to be determined based on project and jurisdiction	Local Building and Fire Inspectors	
Provide information to residents on land subsidence as needed	Low	Ongoing	Covered by existing budgets	Dependent on assistance needed	

IV. Mitigation Strategy

Table 4.1 (cont.): Manitowoc County Hazard Mitigation Action Plan 2025-2030

Tornado and Strong Wind					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	Notes
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	Ongoing	Covered by existing budgets	County Emergency Services and American Red Cross	
Review and update Comprehensive Safety Plan for all county-owned buildings	Medium	Annually	Covered by existing budgets	County Departments	
Consider adoption of ordinances requiring construction of safe shelters for mobile home parks, fairgrounds, or other vulnerable public places	Low	2025-2030	Covered by existing budgets	Local zoning officials	County emergency management support

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., local news, social media new blasts, 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 (readywisconsin.wi.gov)	

Table 4.1 (cont.): Manitowoc County Hazard Mitigation Action Plan 2025-2030

Hail					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	Notes
Provide information about hail crop insurance	Medium	Ongoing	Covered by existing budgets	County UW-Extension and Farm Service Agency	

Flooding					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	Notes
Land use planning	Low	Ongoing	Covered by existing budgets	All participating jurisdictions with assistance (when feasible) from County Planning and Resources Department	Will update with Comprehensive Plan
Monitor the 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, public works/ engineering, and NOAA	
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	

IV. Mitigation Strategy

Table 4.1 (cont.): Manitowoc County Hazard Mitigation Action Plan 2025-2030

Handle the evacuation of people and property in the case of a severe flood event	High	As needed	Dependent on budgets available	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, and cities and villages	County updated in February 2023; 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 departments	County Emergency Services provides empty bags for a small cost; City of Two Rivers provides empty bags for free
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
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

Table 4.1 (cont.): Manitowoc County Hazard Mitigation Action Plan 2025-2030

Extreme Cold					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	Notes
Organize outreach to vulnerable populations during periods of extreme temperature and provide information about places to go during extreme cold	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
Organize outreach to vulnerable populations during periods of extreme temperature and provide information about places to go during extreme heat	Medium	As needed	Covered by existing budgets	County Health Dept, American Red Cross, and local jurisdictions	

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	2025-2030	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	

IV. Mitigation Strategy

Table 4.1 (cont.): Manitowoc County Hazard Mitigation Action Plan 2025-2030

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	2025-2030	Costs to be determined based on needs of jurisdiction	All participating jurisdictions and WDNR	
Coordinate public outreach efforts to promote such things as 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	

IV. Mitigation Strategy

Table 4.2: Mitigation Strategies for Communities in Manitowoc County 2025-2030

Project	Priority	Project Timetable	Estimated Cost/Funding Source	Responsible Party
City of Kiel				
Repair catwalk, increase the dam spillway, and repair concrete pylons	Medium	2024 Completion	Covered by existing budgets/ FEMA BRIC, DNR MFC, EDA	Wisconsin DNR and City of Kiel
City of Manitowoc				
Interoperable radio frequency with all disciplines (police/fire/DPW/MPU) to communicate in a man-made or natural disaster	High	As funding is available	Refer to Joint Dispatch Center/ FEMA BRIC, FEMA HMGP, EDA	Emergency communications, law enforcement, local fire, public works, public utilities
City of Two Rivers				
Conduct yearly needs assessments regarding expected hazards (community), identify rescue/mitigation capabilities. Address disparities.	High	Jan-24	Minimum personnel cost. Grant/public safety budget \$3,000-\$4,000. Addressing disparities: \$ unknown/ FEMA BRIC, FEMA HMGP, DNR MFC, EDA	Two Rivers Public Safety Administration
Village of Cleveland				
Install motion sensors at wells No. 1 and 2 and the water tower	Medium	2025	Costs to be determined/ FEMA BRIC, FEMA HMGP, DNR MFC, EDA	Village of Cleveland Public Works
Village of Francis Creek				
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	Costs to be determined/ FEMA BRIC, FEMA HMGP, EDA	Village of Francis Creek
Village of Kellnersville				
Develop comprehensive safety plan for wastewater lift station located at 100 Tower Avenue	Medium	2024-2026	To be determined/ FEMA BRIC, FEMA HMGP, EDA, CDBG	Kellnersville Water and Sewer Utility
Village of Maribel				
Promote NOAA weather radios; encourage residents to stock up on necessary items and encourage citizens to maintain smoke detectors and fire extinguishers	Low	As money comes in	To be determined; grants/ FEMA BRIC, FEMA HMGP, EDA	Village of Maribel

Table 4.2 (cont.): Mitigation Strategies for Communities in Manitowoc County 2025-2030

Project	Priority	Project Timetable	Estimated Cost and Funding Source	Responsible Party
Village of Mishicot				
Turn the VFW building into a Primary Command Center for disasters; will need to update technology, install Wi-Fi, update furnace to allow for a generator to be installed in the case of a power outage	High	Immediately	To be determined; FEMA BRIC, FEMA HMGP, DNR MFC, EDA,	Village of Mishicot Police Department
Village of Reedsville				
Dissemination of instructions to the public through the media	High	As needed	Covered by existing budgets	Jurisdictions: local law enforcement, fire departments, county emergency services, county highway department, county aging, and county health department
Ensure that plow and sanding equipment is operational and available	High	Ongoing	Covered by existing budgets	County highway department and local public works department
Village of St. Nazianz				
Encourage citizens to take water-saving measures during periods of drought where regulations are not in place	Low	Ongoing	\$500	Local jurisdictions
Village of Valders				
Dissemination of instructions to the public through the media	High	As needed	Budget as needed	JDC, Local fire department, Village of Valders
Village of Whitelaw				
Develop a comprehensive safety plan for all municipal-owned buildings	Medium	2023-2028	Covered by existing budget/FEMA BRIC, FEMA HMGP, EDA	Village of Whitelaw
Develop a water usage regulation during periods of drought and encourage residents to take water-saving measures	Low	As needed	Covered by existing budget	Village of Whitelaw
Continued investment and use of early warning system through sirens and to review and update comprehensive safety plan for all municipal owned buildings	Medium	Ongoing	Covered by existing budget/FEMA BRIC, FEMA HMGP, EDA	Local fire department

IV. Mitigation Strategy

Table 4.3: Manitowoc Public Utilities Mitigation Recommendations and Strategy

Action Description	Hazard/Threat	Preliminary Cost	Time Frame	Priority
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	2025-2026	Medium
Purchase and install standby power generation equipment to support Manitowoc drinking water, wastewater, and to start MPU solid fuel generator	All Hazards	\$3,000,000	2024-2026	High
Investigate protection against frazil ice and water intake freezing	Winter Storm & Extreme Cold	\$2,500,000	2027	Medium
Bank stabilization for Collector well station	Coastal Erosion & Bluff Failure	\$250,000	2030	Medium
Safe room (new construction or retrofit) for control room at power plant	All Hazards & Threats	\$300,000+	2026	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
Develop and exercise a business continuity plan for all departments and activities	All Hazards	\$50,000+	2019-2024	High

Policies, Programs, and Resources for Mitigation

Manitowoc County has a number of authorities that enforce polices, 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 Utilities, 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.

IV. Mitigation Strategy

Potential Funding Sources for Mitigation Activities

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

Federal Programs

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 Grant (AFG) is to meet the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical service 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 FEMA administers the grants in cooperation with the U.S. Fire Administration.

FEMA Fire Prevention and Safety Grant

The Fire Prevention and Safety Grants (FP&S) are part of the AFG, and are also under the purview of the National Preparedness Directorate in FEMA. 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 authorized 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, territories, federally recognized tribes and local communities with implementing measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. Eligible activities include: acquisition, relocation, elevation, and floodproofing 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 NFIP.

FEMA Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) provides funds to states, tribes and local communities after a disaster declaration to protect public or private property through various mitigation measures. Hazard mitigation includes long-term efforts to reduce the impact of future events. HMGP recipients have the primary responsibility for prioritizing, selecting, and administering state and local hazard mitigation projects. Although individuals may not apply directly to a state for assistance, local governments may sponsor an application on their behalf. The purpose of the HMGP is to help communities implement hazard mitigation measures following a Presidential Major Disaster Declaration in areas of the state, tribe or territory requested by the Governor or Tribal Executive. The key purpose of this grant program is to enact mitigation measures that reduce the risk of loss of life and property from future disasters.

Building Resilient Infrastructure and Communities (BRIC)

Building Resilient Infrastructure and Communities (BRIC) supports states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC replaces the Pre-Disaster Mitigation program and is a new FEMA pre-disaster hazard mitigation program. Guiding principles of the BRIC program include: supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.

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 (LEAs) to strengthen and improve their emergency response and crisis plans, at the district and school building levels. 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

Wisconsin Department of Natural Resources (WDNR) Surface Water Grant Program

The WDNR Surface Water Grant Program provides cost-sharing grants for surface water protection and restoration. Funding is available for education, ecological assessments, planning, implementation, and aquatic invasive species prevention and control. Counties, municipalities, natural resource agencies, tribal governing bodies, other local units of government, accredited colleges, universities, technical schools, lake districts, and town sanitary districts are automatically eligible to apply for a grant under this program. Qualified lake associations, qualified surface water management organizations, qualified river management organizations, nonprofit conservation organizations, and qualified school districts must apply for eligibility before applying for a surface water grant. Nonprofit organizations will need to reapply as surface water management organizations before receiving a grant. The following are grant subcategories under this program:

- Education and Planning Grants (includes surface water education, surface water planning, and comprehensive planning);
 - Aquatic Invasive Species (AIS) Prevention and Management Grants (includes AIS prevention, clean boats/clean waters, AIS population management, early detection and response, and AIS research and demonstration);
 - Surface Water Restoration and Management Grants (includes healthy lakes and rivers, surface water restoration, management plan implementation, ordinance development, fee simple land easement and acquisition, and wetland restoration incentives); and
 - County and Tribal Government Grants (includes lake monitoring and protection network, and county lake grants).
- This program includes the former WDNR Lake Planning Grant Program and WDNR River Planning Grant Program that appeared in previous hazard mitigation plans.

IV. Mitigation Strategy

WDNR Municipal Flood Control Grant Program

The WDNR Bureau of Community Financial Assistance and Bureau of Watershed Management offer this grant assistance to all cities, villages, towns, tribes, and metropolitan sewerage districts concerned with municipal flood control management throughout the state. Eligible project types (in ranked order) include the following:

- Property acquisition and removal of structures for permanent open space or flood water storage;
- Acquisition of vacant land or flood water flowage easement to facilitate more efficient flood flows to the water body;
- Floodproofing and flood elevation of public and private structures in the 100-year floodplain;
- Flood water control detention ponds;
- Riparian restoration projects on a watercourse; and
- Flood mapping.

The grant period is for two years, with a possible extension of one year with written justification. WDNR reimburses 50 percent of eligible costs under this program.

WDNR Forest Fire Protection Grant Program

Forest fire protection (FFP) grants are available to Wisconsin fire departments and county/area fire associations. Grant funding is intended to expand the use of local fire departments to augment and strengthen the WDNR's overall initial attack fire suppression capabilities on forest fires.

WDNR Lead Service Line Replacement Programs

The WDNR, in collaboration with the Wisconsin Department of Administration and the Wisconsin Public Service Commission, established the Private Lead Service Line (LSL) Replacement Program to assist municipalities in their efforts to replace private LSLs. This is part of the WDNR's Safe Drinking Water Loan Program (SDWLP). Funding for LSL replacements on private property will be awarded as principal forgiveness, which means that no debt is incurred on behalf of the municipality for these funds. The private portion of the service line is defined as the portion between the curb stop and the normal connection point inside the building. The public portion of the service line is eligible for SDWLP funding. This program has gone in and out of existence in recent years, but the Bipartisan Infrastructure Law (BIL) recently gave it new life.

Wisconsin Department of Administration (WDOA) Division of Energy, Housing, and Community Resources - Community Development Block Grant (CDBG) – Emergency Assistance Program (EAP)

The CDBG-EAP is administered by the WDOA's Division of Energy, Housing, and Community Resources (DEHCR) under Title I of the Housing and Community Development Act of 1974, as amended. CDBG-EAP funds are used to assist local units of government in addressing emergency housing, public facility, infrastructure, and business assistance needs that occur as a result of natural or manmade disasters. Such assistance may include, but is not limited to: housing rehabilitation, acquisition/demolition, housing replacement, road repairs, storm water drainage and public facilities. A local unit of government interested in applying for CDBG-EAP funds must submit a notice of intent to apply within 90 days of the disaster event. These funds must be used for the benefit of low-to-moderate income households or persons; income information is collected and reviewed to ensure participant eligibility.

Wisconsin Department of Health Services (WDHS) Public Health Emergency Preparedness Program

The WDHS applies for federal funding each year through the Hospital Preparedness Program – Public Health Emergency Preparedness Cooperative Agreement. The WDHS Health Emergency Preparedness (HEP) Section must submit an application, budget narrative and other documentation each year in order to receive funding for the upcoming fiscal year. Once that documentation has been reviewed and approved, the federal government distributes a Notice of Award that allocates the amount of funding that the state receives for the fiscal year. This funding is typically distributed between two programs: the Public Health Emergency Preparedness Program (PHEP) and the Hospital Preparedness Program (HPP). A certain percentage of PHEP funding goes to local health departments and tribal health centers, with one of these being the Manitowoc County Health Department.

Wisconsin Economic Development Corporation (WEDC) Disaster Recovery Microloan Program

The goal of the WEDC Disaster Recovery Microloan (DRM) program is to provide short-term assistance to businesses affected by disaster events in Wisconsin. Nine regional entities in the state (including the Bay-Lake Regional Planning Commission (RPC) and nearly all RPCs in the state) have been designated by the WEDC “with the capacity to deploy rapid response microloans to businesses affected by disasters, either natural or manmade.” These regional entities contract with the WEDC to distribute and administer DRM funds. Within 30 days following a natural or manmade disaster event (which may or may not include a corresponding state of emergency or disaster declaration), the regional entity can request allocation of funding to make microloans in their region, and the WEDC will expedite review and approval of the request. Eligible activities include: (1) procurement of cleanup and restoration services; (2) operating expenses (such as payroll); (3) rent or mortgage for temporary space; and (4) repair and reconstruction. There are several eligibility criteria, and certain business types are ineligible. Up to \$20,000 in loans are available at an interest rate of 0.0 percent, and the loans should be paid back within 24 months. There are provisions for deferral, collateral and guarantees. Additional information regarding this program can be found at: [https://baylakerpc.org/fundingresources/disaster-recovery-microloan-program\(.\)](https://baylakerpc.org/fundingresources/disaster-recovery-microloan-program(.))

Wisconsin Emergency Management (WEM) Emergency Planning and Community Right-to-Know Act (EPCRA) Grants

WEM offers two grants that have been authorized in the federal EPCRA:

- Planning Grants – WEM will provide grant funds to a county emergency management office for eligible expenses that support their Local Emergency Planning Committee (LEPC) completion of required Plan-of-Work (POW) hazardous materials planning and preparedness activities. Grant awards are formula based and are funded by EPCRA program revenue/fees. The grant is administered in conjunction with the Emergency Management Performance Grant (EMPG).
- Computer and Hazmat Equipment Grants – WEM will provide grant funds to a county emergency management office to support the purchase of eligible computer and hazmat equipment for a county sponsored hazmat team. The maximum total award may be up to \$10,000 annually (subject to approval), and with consideration of a four-year funding cycle. The grant will reimburse 80 percent of eligible expenses, with a 20 percent local match required. Counties without a county sponsored hazmat team are eligible only for the computer portion of the grant. The grant is funded by state general purpose revenue (GPR).

Wisconsin Disaster Fund

The Wisconsin Disaster Fund (WDF) is a state-funded reimbursement program intended to assist counties, city, village, town and tribal units of government recoup costs incurred in responding to and recovering from natural disasters. The state reimburses 70 percent of eligible costs after the local governmental unit submits a complete WDF application. The WDF does not cover individuals, businesses, the agricultural sector, costs associated with snowstorms, damages covered by insurance, nor does it provide funds for mitigation activities. The WDF does reimburse public disaster costs under three categories of work: debris clearance; protective measures; and road and bridge repair.

The WDF is modeled after FEMA’s Public Assistance Program, and is guided by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended.

In order to be eligible for the WDF, the following steps must occur:

- The local unit of government has declared a “State of Emergency,” in accordance with their own policies and procedures.
- The applicant must show that federal disaster assistance is not available.
- Recovery costs meet or exceed the county-wide per capita damage threshold.

V. 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 ___-month time-frame, with professional planning support from the Bay-Lake Regional Planning Commission. A list of Steering Committee members can be found in Section I - Introduction of this document.

WEM and FEMA reviewed a final draft of the county's hazard mitigation plan prior to adoption by the Manitowoc County Board. Comments received from WEM and FEMA were reviewed by the Steering Committee and necessary revisions were made.

Prior to final approval by WEM and FEMA, the plan update must be formally adopted by Manitowoc County and its incorporated areas by resolution. Incorporated communities that do not adopt the plan cannot apply for mitigation grant funds unless they choose to prepare, adopt, and submit their own plan. Adoption of the county's hazard mitigation plan gives the incorporated jurisdiction the ability to enact ordinances, policies, or programs to reduce hazard losses and to implement other mitigation actions.

Adoption of the this hazard mitigation plan update by a local unit of government certifies their participation. **The plan was adopted by resolution by the Manitowoc County Board on _____. Local resolutions of adoption can be found on page _____. Approval letters from WEM and FEMA can be found on page _____.**

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 2025-2030* is an update to the 2020 plan, and will continue to be monitored, evaluated, and updated by the Manitowoc County Emergency Management Director.

Plan monitoring will occur every five years, and will involve convening the Steering Committee to review the identified mitigation strategies and track the progress toward implementation.

Plan evaluation will include an assessment of the effectiveness of the plan at achieving the stated goals by convening the steering committee every five years to review the plan and ensure that all information is still relevant and applicable.

Plan updating will occur every five years, and will 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 plan monitoring, evaluation and updating will be coordinated by the Manitowoc County Emergency Management Director, and will be approved by the County Board. All meetings to monitor, evaluate, and/or update the plan will be subject to the Wisconsin Open Meetings Law, and will be properly noticed to allow for public involvement and comment. All communities in Manitowoc County will be invited to participate in the process.

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 Manitowoc County Emergency Management 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 Incorporation

The mitigation action plan (provided in Section IV) 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. Manitowoc County's current comprehensive plan was completed in August 2020. The 2020 Comprehensive Plan incorporated the January 2020 mitigation plan as outlined below. In addition, the current local comprehensive plans for the cities and villages also incorporated the hazard mitigation plan in a similar fashion as outlined below. Most of the following municipal comprehensive plans incorporated content from the original 2009 hazard mitigation plan, or from the 2014 or 2020 hazard mitigation plan updates based on how recently their comprehensive plan was adopted: villages of Cleveland (2019), Francis Creek (2009), Kellnersville (2009), Maribel (2009), Mishicot (2023), Reedsville (2009), St. Nazianz (2009), and Whitelaw (2009); and the cities of Manitowoc (2019) and Two Rivers (2022). The comprehensive plans for the City of Kiel (2002) and the Village of Valders (2003) are currently out of date and do not include hazard mitigation strategies since they were completed prior to Manitowoc County's original hazard mitigation plan (2009).

The Bay-Lake Regional Planning Commission facilitates the hazard mitigation planning and updates, plus assists with the county and many of the local comprehensive plan updates. Bay-Lake RPC works to integrate both plans as part of its standard planning process.

The following points detail how the hazard mitigation plan is incorporated into each of the elements of the county and local comprehensive plans

- 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/manufactured homes, recommendations concerning building codes, shelter opportunities, and a survey of homeowners that may be interested in a voluntary buyout and relocation program.
- Utilities and Community Facilities Element: Identify critical facilities such as schools, medical, water infrastructure, etc., and make recommendations on how to mitigate specific risks factors.
- Transportation Element: Identify any transportation routes or facilities that are more at risk during flooding or winter storms.
- Agricultural, 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.

Elements of the *Manitowoc County, Wisconsin Hazard Mitigation Plan: 2025 – 2030* were incorporated into other planning mechanisms that the county and its individual jurisdictions maintain including the *2024 Manitowoc County Farmland Preservation Plan*, *2023 Manitowoc County Parks and Open Space Plan*, and other local outdoor recreation plans.

V. Plan Adoption and Maintenance

Plan Coordination

To maximize coordination of the Hazard Mitigation Plan 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.

Several relevant plans, reports, and technical data were referenced and incorporated into the *Manitowoc County, Wisconsin Hazard Mitigation Plan: 2025 – 2030*. The following is a comprehensive list of the data and reports that were used in plan development:

- Population and housing data from the Bureau of the Census (1990, 2000, 2010 and 2020);
- Employment by industry from the Bureau of the Census (2020 American Community Survey (ACS) 5-Year Estimates);
- Median household income and poverty rate (2016 and 2020 ACS 5-Year Estimates);
- Annual unemployment rate (2016 and 2020 Wisconsin Department of Workforce Development Local Area Unemployment Statistics);
- Land use inventory data (2023, Bay-Lake Regional Planning Commission);
- National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information, past natural hazard occurrence data;
- Wisconsin Department of Natural Resources (WDNR) Fire Management Dashboards Wildfire View, and Burning Permit Map;
- Traffic Operations and Safety (TOPS) Laboratory, UW-Madison, WisTransPortal System;
- Federal Emergency Management Agency (FEMA), Federal Disaster Declarations affecting Manitowoc County, Wisconsin, and Wind Zones Map;
- U.S. Geological Survey maps on landslides, land subsidence and earthquakes were used to describe those hazards;
- National Weather Service, various graphics, including: Explanation of Enhanced Fujita Scale; Tornado Tracks in Manitowoc County; Where to go when sheltering from a tornado; Average Annual Snowfall in Wisconsin; Number of Heat Wave Days; and Hailstone Size Chart;
- Wisconsin State Climatology Office, graphics, including: Average Days with Below Zero Lows; and Average Lightning Density;
- Wisconsin Initiative on Climate Change Impacts - Assessment Report (2021) contributed to the climate impacts language;
- National Drought Mitigation Center, Drought Guide Chart;
- Crondall Weather, Lightning Types;
- Internet Crime Complaint Center, Victims (of cybercrime) by Age Group; and Crime Type by Victim Count;
- FEMA, Flood Insurance Studies and Flood Insurance Rate Maps (FIRMs) were used to map floodplain areas;
- Parcel data from Manitowoc County were used to determine impacts of hazards with defined areas;
- Assessed valuation data from Manitowoc County were used to derive estimates of potential dollar losses;
- The *Manitowoc County 20-Year Comprehensive Plan Update* was used to develop the community profile and contributed to the development of the mitigation action plan;
- Risk Assessment Matrix Worksheet adapted from the Resource Guide to All Hazards Mitigation Planning in Wisconsin (AWRPC, 2003);
- Local Hazard Mitigation Plan Review Crosswalk completed for Manitowoc County in January 2020 was used to ensure that recommended revisions were addressed;
- State of Wisconsin Hazard Mitigation Plan (2016) was used to develop hazard descriptions for the risk assessment;

- FEMA Local Mitigation Planning Handbook (2013) was used to ensure that the plan contained all required information; and
- FEMA Mitigation Ideas: A Resource for Reducing 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

October 2, 2023

ATTENDANCE REPORT & EXPENSE CLAIM VOUCHER:

Date: 10/2/2023 Start time: 1:30 pm
 Location: CT 111112 End time: 3:00 pm

Hazard Mitigation Plan Steering Committee

Each person who signs the Attendance Report and Expense Claim Voucher declares and affirms, subject to the penalties of Wis. Stat. § 946.32(1), that he or she believes the information he or she has provided is true and acknowledges that such information is required by the Manitowoc County Clerk to maintain official county records and to process the expense claim voucher.

Employee No.	Name	Signature <small>If present at meeting, sign name. If not present, Chair write EXCUSED or ABSENT.</small>	Round-Trip Miles	- ADMIN USE ONLY - Mileage Paid
	AGHMAR, Korina	EXCUSED		
	BACALZO, Steve	[Signature]		
	BECKERDITE, Kayla	[Signature]		
	BLASER, Todd	[Signature]		
	FULLER, Izzy	[Signature]		
	GRANGER, Paul	[Signature]		
	KONOP, Melissa	[Signature]		
	KOSKI, Dan	[Signature]		
	MURACK, Dave	[Signature]		
	NACK, Brian	[Signature]		
	NEUSER, Gerry	EXCUSED		
	ORTH, Jason	[Signature]		
	OTIS, Lexi	[Signature]		
	RAYMAKERS, Andrea	[Signature]		
	SMITH, Denny	[Signature]		
	STRADAL, Josh	[Signature]		
	WIESNER, Melissa	[Signature]		
	WITTERHOLT, Casey	[Signature]	54	

NOTE: Return this form to the COUNTY CLERK Office within ten days of the meeting.

[Signature]
CHAIRPERSON SIGNATURE

November 30, 2023

ATTENDANCE Report & Expense Claim Voucher:

Date: 11/30/23 Start time: 10:00am
 Location: Room 11/112 End Time: 11:30am

HAZARD MITGATION PLAN STEERING COMMITTEE

Each person who signs the Attendance Report and Expense Claim Voucher declares and affirms, subject to the penalties of Wis. Stat. § 946.32(1), that he or she believes the information he or she has provided is true and acknowledges that such information is required by the Manitowoc County Clerk to maintain official county records and to process the expense claim voucher.

Employee No.	Name	Signature <small>If present at meeting, sign name. If not present, Chair write EXCUSED or ABSENT</small>	Round-Trip Miles	- ADMIN USE ONLY - Mileage Paid
	AGHMAR, Korina	[Signature]		
	BACALZO, Steve	[Signature]		
	BLASER, Todd	[Signature]		
	FULLER, Izzy	[Signature]		
	GRANGER, Paul	[Signature]		
	GREEN, Rhonda	[Signature]		
	KONOP, Melissa	[Signature]		
	KOSKI, Dan	[Signature]		
	MURACK, Dave	[Signature]		
	NACK, Brian	[Signature]		
	NEUSER, Gerry	[Signature]		
	ORTH, Jason	[Signature]		
	OTIS, Lexi	[Signature]		
	RAYMAKERS, Andrea	[Signature]		
	RILEY, Brenden	[Signature]		
	SMITH, Denny	[Signature]		
	STRADAL, Josh	[Signature]		
	WIESNER, Melissa	[Signature]		
	WITTERHOLT, Casey	[Signature]	50	

April 9, 2024

February 26, 2024

ATTENDANCE REPORT & EXPENSE CLAIM VOUCHER:

Date: 02/26/24 Start time: 10:00am
 Location: 604 59th St End time: 11:20am

Hazard Mitigation Plan Steering Committee

Each person who signs the Attendance Report and Expense Claim Voucher declares and affirms, subject to the penalties of Wis. Stat. § 946.32(1), that he or she believes the information he or she has provided is true and acknowledges that such information is required by the Manitowoc County Clerk to maintain official county records and to process the expense claim voucher.

Employee No.	Name	Signature <small>If present at meeting, sign name. If not present, Chair write EXCUSED or ABSENT.</small>	Round-Trip Miles	- ADMIN USE ONLY - Mileage Paid
900378	AGHMAR, Korina	[Signature]		
	BACALZO, Steve	[Signature]		
	BLASER, Todd	[Signature]		
	ROBINSON, Brandon	[Signature]		
	GRANGER, Paul	[Signature]		
900442	GREEN, Rhonda - Chair	[Signature]		
52174	KONOP, Melissa	[Signature]		
	KOSKI, Dan	[Signature]		
	MURACK, Dave	[Signature]		
10142	NACK, Brian	[Signature]		
10966	NEUSER, Gerry	[Signature]		
15473	ORTH, Jason	[Signature]		
56078	OTIS, Lexi	[Signature]		
27405	RAYMAKERS, Andrea	[Signature]		
900434	RILEY, Brenden	[Signature]		
	SMITH, Denny	[Signature]		
	STRADAL, Josh	[Signature]		
	WIESNER, Melissa	[Signature]		
	WITTERHOLT, Casey	[Signature]		
	Wondashi, Kevin	[Signature]		
	[Signature]	[Signature]		

NOTE: Return this form to the COUNTY CLERK Office within ten days of the meeting.

ATTENDANCE REPORT & EXPENSE CLAIM VOUCHER:

Date: 4/9/24 Start time: 1:31
 Location: Room 112 End time: 2:12

Hazard Mitigation Plan Steering Committee

Each person who signs the Attendance Report and Expense Claim Voucher declares and affirms, subject to the penalties of Wis. Stat. § 946.32(1), that he or she believes the information he or she has provided is true and acknowledges that such information is required by the Manitowoc County Clerk to maintain official county records and to process the expense claim voucher.

Employee No.	Name	Signature <small>If present at meeting, sign name. If not present, Chair write EXCUSED or ABSENT.</small>	Round-Trip Miles	- ADMIN USE ONLY - Mileage Paid
900378	AGHMAR, Korina	[Signature]		
	BACALZO, Steve	[Signature]		
	BLASER, Todd	[Signature]		
	ROBINSON, Brandon	[Signature]		
	GRANGER, Paul	[Signature]		
900442	GREEN, Rhonda - Chair	[Signature]		
52174	KONOP, Melissa	[Signature]		
	KOSKI, Dan	[Signature]		
	MURACK, Dave	[Signature]		
10142	NACK, Brian	[Signature]		
10966	NEUSER, Gerry	[Signature]		
15473	ORTH, Jason	[Signature]		
56078	OTIS, Lexi	[Signature]		
27405	RAYMAKERS, Andrea	[Signature]		
900434	RILEY, Brenden	[Signature]		
	SMITH, Denny	[Signature]		
	STRADAL, Josh	[Signature]		
	WIESNER, Melissa	[Signature]		
	WITTERHOLT, Casey	[Signature]	56 (1-4mi)	
	Semo, Lydria	[Signature]		

NOTE: Return this form to the COUNTY CLERK Office within ten days of the meeting.

[Signature]
CHAIRPERSON SIGNATURE

Appendix B

Steering Committee Agendas October 2, 2023



MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE STEERING COMMITTEE

Meeting Notice

DATE: Monday, October 2nd, 2023
TIME: 1:30 p.m.
PLACE: Communications and Technology Building
Room 111/112
1024 South 9th Street
Manitowoc, Wis.

The meeting is open to the public, but portions of the meeting may be closed if this notice indicates that the committee may convene in closed session. The following matters may be considered at the meeting:

1. Call to Order
2. Roll Call/Introductions
3. Public Comment
4. Project Description- Overview of planning process and plan content
5. Review project schedule and expectations of steering committee
6. Review/Update elements from previous plan, including, but not limited to, the following:
 - a. Goals
 - b. Hazard Risks and Ratings
 - c. Critical Facilities Categories
 - d. Mitigation Strategies
7. Discuss next steps
8. Schedule next meeting

Date: September 21, 2023 Prepared by: Izzy Fuller
Bay-Lake Regional Planning Commission

Any person wishing to attend the meeting who requires special accommodation because of a disability should contact the County Clerk's office at 920-683-4003 at least 24 hours before the meeting begins so that appropriate accommodations can be made.

November 30, 2023



MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE STEERING COMMITTEE

Meeting Notice

DATE: Thursday, November 30th, 2023
TIME: 10:00 am
PLACE: Communications and Technology Building
Room 111/112
1024 South 9th Street
Manitowoc, Wis.

The meeting is open to the public, but portions of the meeting may be closed if this notice indicates that the committee may convene in closed session. The following matters may be considered at the meeting:

1. Call to Order
2. Roll Call/Introductions
3. Public Comment
4. Recap of previous meeting
5. Review municipal exercises
6. Hazards overview
7. Review draft chapters
8. Other discussion and next steps
9. Schedule next meeting

Date: November 20th, 2023 Prepared by: Izzy Fuller
Bay-Lake Regional Planning Commission

Project Contacts:
Rhonda Green, Emergency Management; rhondagreen@manitowocountywi.gov; 920-323-4207
Brenden Riley, Emergency Management; brendenriley@manitowocountywi.gov; 920-323-7780
Izzy Fuller, Bay-Lake Regional Planning Commission; ifuller@baylakerpc.org; 920-448-2820, Ext. 106

Any person wishing to attend the meeting who requires special accommodation because of a disability should contact the County Clerk's office at 920-683-4003 at least 24 hours before the meeting begins so that appropriate accommodations can be made.

February 26, 2024



MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE STEERING COMMITTEE

Meeting Notice

DATE: February 26, 2024
TIME: 10:00 AM
PLACE: Communications and Technology Building
Room 111/112
1024 South 9th Street
Manitowoc, Wis.

The meeting is open to the public, but portions of the meeting may be closed if this notice indicates that the committee may convene in closed session. The following matters may be considered at the meeting:

1. Call to Order
2. Roll Call/Introductions
3. Public Comment
4. Recap of previous meeting
5. Review draft chapter 3 (Risk Assessment)
 - a. Critical facilities overview
 - b. Hazards data & risk assessment
 - c. Hazards prioritization exercise
6. Mitigation strategies review
7. Other discussion and next steps
8. Schedule next meeting

Date: February 15, 2024 Prepared by: Brandon Robinson
Bay-Lake Regional Planning Commission

Project Contacts:
Rhonda Green, Emergency Management; rhondagreen@manitowoccountywi.gov; 920-323-4207
Brenden Riley, Emergency Management; brendenriley@manitowoccountywi.gov; 920-323-7780
Brandon Robinson, Bay-Lake Regional Planning Commission; brobinson@baylakerpc.org; 920-448-2820, Ext. 105

Any person wishing to attend the meeting who requires special accommodation because of a disability should contact the County Clerk's office at 920-683-4003 at least 24 hours before the meeting begins so that appropriate accommodations can be made.

April 9, 2024



MANITOWOC COUNTY HAZARD MITIGATION PLAN UPDATE STEERING COMMITTEE

Meeting Notice

DATE: April 9, 2024
TIME: 1:30 PM
PLACE: Communications and Technology Building
Room 111/112
1024 South 9th Street
Manitowoc, Wis.

The meeting is open to the public, but portions of the meeting may be closed if this notice indicates that the committee may convene in closed session. The following matters may be considered at the meeting:

1. Introductions
2. Recap of previous meeting
3. Finish Review Draft Chapter 3 (Risk Assessment)
4. Review Draft Chapters 4 & 5 (Mitigation Strategy and Plan Adoption and Maintenance)
5. Other discussion and next steps
6. Schedule next meeting

Date: April 3, 2024 Prepared by: Brandon Robinson
Bay-Lake Regional Planning Commission

Project Contacts:
Rhonda Green, Emergency Management; rhondagreen@manitowoccountywi.gov; 920-323-4207
Brenden Riley, Emergency Management; brendenriley@manitowoccountywi.gov; 920-323-7780
Brandon Robinson, Bay-Lake Regional Planning Commission; brobinson@baylakerpc.org; 920-448-2820, Ext. 105

Any person wishing to attend the meeting who requires special accommodation because of a disability should contact the County Clerk's office at 920-683-4003 at least 24 hours before the meeting begins so that appropriate accommodations can be made.

Multi-Jurisdictional Cooperation Exercise

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 the Bay-Lake Regional Planning Commission engaged the local communities in a cooperation exercise to review and provide input on plan materials.

Cities and villages 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 cities and villages in Manitowoc County. Towns received a similar letter that only asked for updates to their existing critical facility list.



Manitowoc County Emergency Services

1024 South 9th Street - Manitowoc, WI 54220

Kayla Beckerdite, Director

920-683-4207 – kaylabeckerdite@manitowocountywi.gov

September 13, 2023

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 Manitowoc County and its 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.**

- Ensure that there is an address or lat/long coordinates provided for each critical facility that you add.
- 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 October 6, 2023** to Izzy Fuller at ifuller@baylakerpc.org or 1861 Nimitz Drive, De Pere, WI 54115.

If you have any questions or need any additional information, please contact Izzy by 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,

Kayla Beckerdite
Emergency Services Director

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

Appendix C

Critical Facilities by Municipality

NAME	ADDRESS	Source	Type	MCD	Floodplain
Kiel City Hall	621 6th St	County	Administrative Building	City of Kiel	No
B360015	STH 32-STH 57 / SHEBOYGAN RIVER	County/HSI 2019	Bridge	City of Kiel	Yes
B360022	ROCKVILLE RD / SHEBOYGAN RIVER	County/HSI 2019	Bridge	City of Kiel	Yes
B360132	STH 67 / SHEBOYGAN RIVER	County/HSI 2019	Bridge	City of Kiel	Yes
Emergency Siren	417 Paine St	County	Communication Facility	City of Kiel	No
Emergency Siren	102 Rockville Rd	County	Communication Facility	City of Kiel	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
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
Kiel Police Department	619 Paine St	Hazus MH	Fire and Safety	City of Kiel	No
Small Steps Family Child Care	1025 1st St	County 2019	Licensed Childcare Facility	City of Kiel	No
Chatterbox Child Learning Center	65 Riverview Road	County 2019	Licensed Childcare Facility	City of Kiel	No
Kiel Cooperative Preschool	621 6th Street	County 2019	Licensed Childcare Facility	City of Kiel	No
Field of Dreams	505 Belitz Dr	County 2019	Licensed Healthcare Facility	City of Kiel	No
Affinity Medical	632 Fremont St	County 2019	Licensed Healthcare Facility	City of Kiel	No
Aurora Kiel Clinic	1001 Service Rd	County 2019	Licensed Healthcare Facility	City of Kiel	No
Ascension Medical Group Kiel	1160 Service Rd, Kiel	County 2019	Licensed Healthcare Facility	City of Kiel	No
Fieldstone Community	Lexington Ct/Concord Dr	City 2023	Manufactured Housing	City of Kiel - Calumet County	
Bleck Management	13835 Cedar Lake Rd	City 2023	Manufactured Housing	City of Kiel - Calumet County	No
Kiel Mart Mobile Home Park	STH 32/57	City 2023	Manufactured Housing	City of Kiel - Calumet County	
Power Facility	705 Washington Ave	ATC	Power Facility/Bulk Fuel Storage	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
Zielanis Elementary	1010 Adams St	County 2019	School	City of Kiel	No
Trinity Lutheran School	387 Cemetery Rd	County 2019	School	City of Kiel	No
Kiel Elementary	416 Paine St	County 2019	School	City of Kiel	No
Sewage Lift Station	619 STH 67	City	Wastewater Treatment Facility	City of Kiel	Yes
Wastewater Treatment Facility	100 Rockville Rd	City	Wastewater Treatment Facility	City of Kiel	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
Well #3, Water Storage Tower	1401 1st St	City	Water Supply	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
Water Storage Tower	198 3rd St		Water Supply	City of Kiel	No
Well #1	705 Washington St		Water Supply	City of Kiel	No
Manitowoc Public Works	2655 S 35th St	City	Administrative Building	City of Manitowoc	No
Manitowoc Public Utilities	1303 S 8th St	City	Administrative Building	City of Manitowoc	No
Manitowoc County Courthouse	1010 S 8th St	County	Administrative Building	City of Manitowoc	No
Manitowoc City Hall	900 Quay St	County	Administrative Building	City of Manitowoc	No
Manitowoc Public School District	2902 Lindbergh Dr	County	Administrative Building	City of Manitowoc	No
Manitowoc County Office Complex	4319 Expo Dr	County	Administrative Building	City of Manitowoc	No
Public Utilities	1520/1540 Dewey St	City	Administrative Building	City of Manitowoc	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 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
Manitowoc Senior Center	3330 Custer Street	City 2023	Administrative Building	City of Manitowoc	
Msnioyev Public Library	707 Quay Street	City 2023	Administrative Building	City of Manitowoc	
B360026	USH 151 / SILVER CREEK	County/HSI 2019	Bridge	City of Manitowoc	Yes
B360035	CTH B / LITTLE MANITOWOC RIVER	County/HSI 2019	Bridge	City of Manitowoc	Yes
B360112	USH 10 WB-STH 42 SB-WALDO BLVD / MANITOWOC RIVER	County/HSI 2019	Bridge	City of Manitowoc	Yes
B360124	BROADWAY ST / MANITOWOC RIVER	County/HSI 2019	Bridge	City of Manitowoc	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
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
B360900	STH 42-WALDO BLVD / LITTLE MANITOWOC RIVER	County/HSI 2019	Bridge	City of Manitowoc	Yes
P360174	CTH LS / SILVER CREEK	County/HSI 2019	Bridge	City of Manitowoc	Yes
P360707	REED AVE / LITTLE MANITOWOC RIVER	County/HSI 2019	Bridge	City of Manitowoc	Yes
P360914	CTH Q / LITTLE MANITOWOC RIVER	County/HSI 2019	Bridge	City of Manitowoc	Yes
B360029	USH 10-STH 42-WALDO BLVD / WISCONSIN CENTRAL RR	County/HSI 2019	Bridge	City of Manitowoc	No
B360062	CTH CL-VIEBACH 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
B360106	18TH ST / SPRING ST CONNECTOR	County/HSI 2019	Bridge	City of Manitowoc	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
Building	820 S 21st St (Wisconsin Public Service Corp.)		Communication Facility	City of Manitowoc	No
Tower	1024 S 9th St	BLRPC	Communication 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	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

NAME	ADDRESS	Source	Type	MCD	Floodplain
Radio Tower	4009 Viebahn St (Seehafer Broadcasting)	County	Communication Facility	City of Manitowoc	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	26th 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	Harvest Cir & Broadway St	County	Communication Facility	City of Manitowoc	No
Emergency Siren	Silver Ridge Subdivision	City 2023	Communication Facility	City of Manitowoc	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	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
Tower	3730 Mangin St	County	Communication Facility	City of Manitowoc	No
Silver Creek Fire Department - Station 2	6510 Calumet Ave	BLRPC	Fire and Safety	City of Manitowoc	No
Manitowoc Sheriff's Department	1025 S 9th St	Hazus MH	Fire and Safety	City of Manitowoc	No
Manitowoc Police Department	910 Jay St	Hazus MH	Fire and Safety	City of Manitowoc	No
Manitowoc Fire Station 1	911 Franklin St	Hazus MH	Fire and Safety	City of Manitowoc	No
911/EOC	1024 S 9th St	County	Fire and Safety	City of Manitowoc	No
Manitowoc Fire Station 4	1125 Fleetwood St	County	Fire and Safety	City of Manitowoc	No
Manitowoc Fire Station 2	1410 N 8th St	County	Fire and Safety	City of Manitowoc	No
Manitowoc Fire Station 3	3820 Dewey St	County	Fire and Safety	City of Manitowoc	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
Manitowoc Two Rivers YMCA - Orion	2210 Woodland Dr	County 2019	Licensed Childcare Facility	City of Manitowoc	No
Falling Star Child Care LLC	1501 N Rapids Road	County 2019	Licensed Childcare Facility	City of Manitowoc	No
The Peanut Gallery CC and Learning Center	2411 Wollmer Street	County 2019	Licensed Childcare Facility	City of Manitowoc	No
Manitowoc/Two Rivers YMCA SACC - Franklin	800 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
Redeemer Lutheran Christian Preschool	1712 Menasha Ave	County 2019	Licensed Childcare Facility	City of Manitowoc	No
CESA 7 Head Start - Manitowoc	4400 Michigan Avenue	County 2019	Licensed Childcare Facility	City of Manitowoc	No
CESA 7 Head Start	1130 S 9th Street	County 2019	Licensed Childcare Facility	City of Manitowoc	No
Cooperative Nursery Center Preschool	501 8th Street	County 2019	Licensed Childcare Facility	City of Manitowoc	No
Trinity Christian School 4-year-old Kindergarten	2201 S 42nd St	County 2019	Licensed Childcare Facility	City of Manitowoc	No
Vista Adult Daycare	2005 Johnston Dr	City 2023	Licensed Childcare Facility	City of Manitowoc	No
Azura Memory Care	3720 Menasha Ave	County 2019	Licensed Healthcare Facility	City of Manitowoc	No
Shady Lane Nuring Care Center	1235 S 24th St	County 2019	Licensed Healthcare Facility	City of Manitowoc	No
Maritime Gardens Assisted Living	1945 Dewey St, Manitowoc	County 2019	Licensed Healthcare Facility	City of Manitowoc	No
Manitowoc Healthcare Center	2021 S Alverno Rd	County 2019	Licensed Healthcare Facility	City of Manitowoc	No
Holy Family Memorial Medical Center/Froedert	2300 Western Ave	City 2023	Licensed Healthcare Facility	City of Manitowoc	No
River Woods Place	960 S Rapids Rd	County 2019	Licensed Healthcare 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
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
HIL Lighthouse	1301 N 24th St	County 2019	Licensed Healthcare Facility	City of Manitowoc	No
HIL Whittail Court	4705 W Whittail Ct	County 2019	Licensed Healthcare Facility	City of Manitowoc	No
HIL 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
Whittail 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
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
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
Hill The Winds	2408 Knuell 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

NAME	ADDRESS	Source	Type	MCD	Floodplain
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
Hil 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
Trails End Park	2000 Johnson Dr	County 2019	Manufactured Housing	City of Manitowoc	No
Newport Village MHP	770 E Albert Dr	County 2019	Manufactured Housing	City of Manitowoc	No
Newport Village West	88 W Albert Dr	County 2019	Manufactured Housing	City of Manitowoc	No
Lakeland Manor	3910 Waldo Blvd	County 2019	Manufactured Housing	City of Manitowoc	No
University Village Heights	2350 S 23rd St	County 2019	Manufactured Housing	City of Manitowoc	No
Army Reserve	3215 S 10th St	BLRPC	Military Installation	City of Manitowoc	No
City of Manitowoc Gravel Pit	Gravel Pit Ln	County	Post-Disaster Recovery Site	City of Manitowoc	Yes
Power Facility	5740 W Guster St	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	1605 N 8th St	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	2015 Mirro Dr	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	Lakeview Dr	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	101 Revere Dr	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	712 N Rapids Rd	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	2039 S 30th St	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	701 Columbus St	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Power Facility	4200 Ellis St	ATC	Power Facility/Bulk Fuel Storage	City of Manitowoc	No
ANR	4707 Hessel Ct		Power Facility/Bulk Fuel Storage	City of Manitowoc	No
Franklin Elementary	800 S 35th St	County 2019	School	City of Manitowoc	No
Roncalli Catholic High	2000 Mirro Dr	County 2019	School	City of Manitowoc	No
Manitowoc Lutheran High	4045 Lancer Cir	County 2019	School	City of Manitowoc	No
First German Evangelical Lutheran	1025 S 8th St	County 2019	School	City of Manitowoc	No
Immanuel Evangelical Lutheran	916 Pine St	County 2019	School	City of Manitowoc	No
Jackson Elementary	1201 N 18th St	County 2019	School	City of Manitowoc	No
Jefferson Elementary	1415 Division St	County 2019	School	City of Manitowoc	No
Lincoln High	1433 S 8th St	County 2019	School	City of Manitowoc	No
Madison Elementary	701 N 4th St	County 2019	School	City of Manitowoc	No
Monroe Elementary	2502 S 14th St	County 2019	School	City of Manitowoc	No
Stangel Elementary	1002 E Cedar Ave	County 2019	School	City of Manitowoc	No
Washington Junior High	2101 Division St	County 2019	School	City of Manitowoc	No
Wilson Junior High	1201 N 11th St	County 2019	School	City of Manitowoc	No
Riverview Elementary	4400 Michigan Ave	County 2019	School	City of Manitowoc	No
Bethany Evangelical Lutheran	3209 Meadow Ln	County 2019	School	City of Manitowoc	No
Life Academy	2810 Wollmer St	County 2019	School	City of Manitowoc	No
Saint Francis of Assisi Middle	2109 Marshall St	County 2019	School	City of Manitowoc	No
UW Green Bay - Manitowoc Campus	705 Viebahn St	County 2019	School	City of Manitowoc	No
Manitowoc County Airport	1815 Freedom Way	Hazus MH	Transportation Facility	City of Manitowoc	No
Car Ferry Dock	900 S Lakeview Dr		Transportation Facility	City of Manitowoc	No
Manitowoc City Transit System	915 S 11th St	Hazus MH	Transportation Facility	City of Manitowoc	No
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
Manitowoc Wastewater Treatment	1015 S Lakeview Dr	Hazus MH	Wastewater Treatment 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 Silveridge 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 Maritime Dr	City	Wastewater Treatment Facility	City of Manitowoc	No
Water Storage Tower	5715 West Dr		Water Supply	City of Manitowoc	No
Water Supply Filter Treatment Plant	S Lakeview Dr		Water Supply	City of Manitowoc	No
Water Supply Filter Treatment Plant	701 Columbus St		Water Supply	City of Manitowoc	No
Water Supply Booster/Pumping Station	1600 S 39th St		Water Supply	City of Manitowoc	No
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
Collector Well C	3983 S 10th St		Water Supply	City of Manitowoc	No
B360117	STH 42-WASHINGTON ST / WEST TWIN RIVER	County/HSI 2019	Bridge	City of Two Rivers	Yes
B360136	CTH VV-45TH ST / EAST TWIN RIVER	County/HSI 2019	Bridge	City of Two Rivers	Yes
B360155	STH 42-22ND ST / EAST TWIN RIVER	County/HSI 2019	Bridge	City of Two Rivers	Yes
B360176	STH 310 MADISON ST / WTWIN RIVER	County/HSI 2019	Bridge	City of Two Rivers	Yes
B360189	17TH ST / E TWIN RIVER	County/HSI 2019	Bridge	City of Two Rivers	Yes
Paddlers Park (draft: East Twin River access)	1223 27th St	Manitowoc County Fire Assoc.	Fire and Safety	City 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
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

NAME	ADDRESS	Source	Type	MCD	Floodplain
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 VV (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
Wisteria Haus Assisted Living	2741 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
US Coast Guard	13 East St	BLRPC	Military Installation	City of Two Rivers	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
Atrium Senior Living of Two Rivers at Northland	2500 Garfield St	County 2019	Licensed Healthcare Facility	City of Two Rivers	No
Emergency Siren	3900 block of Bellevue 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
Communication Tower for Utility & Public Works	1415 Lake Street	City	Communication Facility	City of Two Rivers	No
Building (Switch Station)	2205 Forest Ave (Lakefield Telephone Co. LLC)	County	Communication Facility	City of Two Rivers	No
Water Reservoir	3900 Bellevue Pl	TAC	Water Supply	City of Two Rivers	No
Good Shepherd Lutheran Preschool 4k	3234 Michicot Road	County 2019	Licensed Childcare Facility	City of Two Rivers	No
Follow Your Heart Learning Center LLC	2132 32nd Street	County 2019	Licensed Childcare Facility	City of Two Rivers	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 - Two Rivers	3234 Mishicot Road	County 2019	Licensed Childcare Facility	City of Two Rivers	No
Children's House Montessori of Manitowoc	4020 Memorial Drive	County 2019	Licensed Childcare Facility	City of Two Rivers	No
Learning Center	1630 28th Street	County 2019	Licensed Childcare Facility	City of Two Rivers	No
St Peter the Fisherman Preschool	2203 12th Street	County 2019	Licensed Childcare Facility	City of Two Rivers	No
Two Rivers Nursery School	1218 Madison Street	County 2019	Licensed Childcare Facility	City of Two Rivers	No
Holy Family Lakefront Campus	800 Lakefront Way, Two Rivers	County 2019	Licensed Healthcare Facility	City of Two Rivers	No
Lighthouse Learning Acad	4521 Lincoln Ave	County 2019	School	City of Two Rivers	No
C360013	STH 42 / Drainage Way	County/HSI 2019	Bridge	City of Two Rivers	No
C361016	STH 42 / Drainage way	County/HSI 2019	Bridge	City of Two Rivers	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
Eggers Industries Pond (dry hydrant)	1 Eggers Dr	Manitowoc County Fire Assoc.	Fire and Safety	City of Two Rivers	No
Clarks Mill	Manitowoc River	DNR 2019	Dam	Town of Cato	Yes
B360020	N CTH S / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Cato	Yes
B360131	S CTH J / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Cato	Yes
P360919	LEIST RD / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Cato	Yes
Cato Town Hall	14004 Upper Falls Rd	Town	Administrative Building	Town of Cato	No
Wastewater Treatment Facility	Meier Ln	Town	Wastewater Treatment Facility	Town of Cato	No
Gravel Pit (Sauer)	1534 Highway H Rd	County	Post-Disaster Recovery Site	Town of Cato	No
Gravel Pit (Graymont Western Lime)	16377 Lime Kiln Rd	County	Post-Disaster Recovery Site	Town of Cato	No
Saint Mary/Saint Michael School	19 S CTH J	County 2019	School	Town of Cato	No
B360034	N CTH J / BRANCH OF BRANCH RIVER	County/HSI 2019	Bridge	Town of Cato	No
C360037	USH 10 / TRIB. OF BRANCH RIVER	County/HSI 2019	Bridge	Town of Cato	No
C360039	GRIMMS RD / TRIB. TO BRANCH RIVER	County/HSI 2019	Bridge	Town of Cato	No
P360154	OLD WOODEN BRIDGE RD / SOO LINE	County/HSI 2019	Bridge	Town of Cato	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	16919 USH 10	County 2019	Communication Facility	Town of Cato	No
Clarks Mills (dry hydrant; Manitowoc River access)	13845 Old Mill Ln	Manitowoc County Fire Assoc.	Fire and Safety	Town of Cato	No
Seven Lakes (dry hydrant)	3108 N CTH S	Manitowoc County Fire Assoc.	Fire and Safety	Town of Cato	No
B360036	I-43 / FISCHER CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
B360047	I-43 SB / POINT CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
B360110	I-43 SB / CENTER ROAD	County/HSI 2019	Bridge	Town of Centerville	Yes

NAME	ADDRESS	Source	Type	MCD	Floodplain
B360111	I-43 NB / CENTER ROAD	County/HSI 2019	Bridge	Town of Centerville	Yes
B360119	WESTVIEW RD / FISCHER CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
B360129	CTH F / POINT CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
B360168	POINT CREEK RD / POINT CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
B360174	CTH LS-LAKESHORE RD / POINT CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
B360221	CENTER RD / NORTH BRANCH OF CENTERVILLE CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
B360230	I-43 NB / POINT CREEK	County/HSI 2019	Bridge	Town of Centerville	Yes
C360017	I-43 / CENTERVILLE CREEK	County/HSI 2019	Bridge	Town of Centerville	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
Natural Gas Substation	Point Creek Rd	Town	Power Facility/Bulk Fuel Storage	Town of Centerville	No
Manitowoc County Highway Shop	10510 I-43	TAC	Administrative Building	Town of Centerville	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
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
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
B360061	I-43 NB / WESTVIEW RD	County/HSI 2019	Bridge	Town of Centerville	No
C360002	I-43 / TRIB. TO FISCHER CREEK	County/HSI 2019	Bridge	Town of Centerville	No
C360019	I-43 / Unnamed Creek	County/HSI 2019	Bridge	Town of Centerville	No
C360021	I-43 / SOUTH BRANCH OF CENTERVILLE CREEK	County/HSI 2019	Bridge	Town of Centerville	No
P360935	CTH X / FISCHER CREEK	County/HSI 2019	Bridge	Town of Centerville	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
B360032	ROSECRANS RD / DEVILS RIVER	County/HSI 2019	Bridge	Town of Cooperstown	Yes
B360076	CTH R / DEVILS RIVER	County/HSI 2019	Bridge	Town of Cooperstown	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
B360183	CTH T / DEVILS RIVER	County/HSI 2019	Bridge	Town of Cooperstown	Yes
B360216	PLEASANT RD / DEVILS RIVER	County/HSI 2019	Bridge	Town of Cooperstown	Yes
C360040	KOCIAN RD / TRIB. TO BRANCH RIVER	County/HSI 2019	Bridge	Town of Cooperstown	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
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
Gravel Pit (Cherney Construction)	15201 CTH NN	County	Post-Disaster Recovery Site	Town of Cooperstown	No
Gravel Pit (JPC Investments)	14511 CTH Z	County	Post-Disaster Recovery Site	Town of Cooperstown	No
Gravel Pit (Triple P)	CTH NN	County	Post-Disaster Recovery Site	Town of Cooperstown	No
Gravel Pit (MCC)	12599 Hidden Vally Rd	County	Post-Disaster Recovery Site	Town of Cooperstown	No
Gravel Pit (Kolarik)	Cooperstown Rd	County	Post-Disaster Recovery Site	Town of Cooperstown	No
B360083	HIDDEN VALLEY RD / I-43	County/HSI 2019	Bridge	Town of Cooperstown	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
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
B360130	ZANDER RD / DEVILS RIVER STATE TRAIL	County/HSI 2019	Bridge	Town of Cooperstown	No
B360148	COOPERSTOWN RD / TRIBUTARY OF THE DEVILS RIVER	County/HSI 2019	Bridge	Town of Cooperstown	No
C360028	I-43 / KRIWANEK CREEK	County/HSI 2019	Bridge	Town of Cooperstown	No
C360090	I-43 / Unnamed Creek	County/HSI 2019	Bridge	Town of Cooperstown	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
P360903	DEVILS RIVER STATE TRAIL / HOSTAK RD	County/HSI 2019	Bridge	Town of Cooperstown	No
Cell Tower	10167 Schley Rd	County 2019	Communication Facility	Town of Cooperstown	No
Cell Tower	8304 Pautz Rd	County 2019	Communication Facility	Town of Cooperstown	No
B360075	STH 67 / CEDAR CREEK	County/HSI 2019	Bridge	Town of Eaton	Yes
B360163	QUARRY RD / MANITOWOC R	County/HSI 2019	Bridge	Town of Eaton	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
Gravel Pit (Biese)	Glen Flora Rd	County	Post-Disaster Recovery Site	Town of Eaton	No
Gravel Pit (Broker)	STH 67	County	Post-Disaster Recovery Site	Town of Eaton	No
Gravel Pit (Litiz)	Glen Flora Rd	County	Post-Disaster Recovery Site	Town of Eaton	No
Co HWY Dept Gravel Pit (Olm)	Hickory Hills Rd	County	Post-Disaster Recovery Site	Town of Eaton	No
Co HWY Dept Gravel Pit (Sukowaty)	USH 151	County	Post-Disaster Recovery Site	Town of Eaton	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
Cell Tower	22520 Groh Rd	County 2019	Communication Facility	Town of Eaton	No
B360118	GRIMMS RD / BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	Yes
B360139	W HILLCREST RD / BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	Yes
B360145	REIFS MILLS RD / BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	Yes

NAME	ADDRESS	Source	Type	MCD	Floodplain
B360166	CTH T / BRANCH R	County/HSI 2019	Bridge	Town of Franklin	Yes
B360177	CTH J / BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	Yes
B360214	HILLCREST RD / BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	Yes
B360220	HILLCREST RD / BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	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
P360904	CTH K / BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	Yes
P360915	MANCAL RD / TRIB. OF BRANCH RIVER	County/HSI 2019	Bridge	Town of Franklin	Yes
Power Facility	11103 CTH K	ATC	Power Facility/Bulk Fuel Storage	Town of Franklin	No
Franklin Town Hall	7524 CTH J	BLRPC	Administrative Building	Town of Franklin	No
Menchalville Fire Department	15331 County Rd K	TAC	Fire and Safety	Town of Franklin	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	Hempton Lake Rd	County 2019	Communication Facility	Town of Franklin	No
Kalies Pond Dry Hydrant	7206 E Taus Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Franklin	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
Homes Rd / East Twin River (from bridge)	503 Holmes Rd	Town	Fire and Safety	Town of Gibson	Yes
B360001	OLD Y RD / WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Gibson	Yes
B360133	HOLMES RD / EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Gibson	Yes
B360135	STH 147 W / WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Gibson	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
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
B360915	CTH B / EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Gibson	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
Gibson Town Hall	14920 CTH Q	Town	Administrative Building	Town of Gibson	No
Emergency Siren	CTH Q	County	Communication Facility	Town of Gibson	No
Co HWY Dept Gravel Pit	12415 CTH Q	County	Post-Disaster Recovery Site	Town of Gibson	No
Co HWY Dept Gravel Pit	3198 STH 147 W	County	Post-Disaster Recovery Site	Town of Gibson	No
Co HWY Dept Gravel Pit	2941 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 Gibson	No
Harpt Lake Boat Landing (dry hydrant)	6001 North Lake Rd	Town	Fire and Safety	Town of Gibson	No
Genex	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
Lakeside Mennonite School	722 Hillview Road	County 2019	School	Town of Gibson	No
B360030	CTH R / DEVILS RIVER STATE TRAIL	County/HSI 2019	Bridge	Town of Gibson	No
B360159	CTH BB / BLACK CREEK	County/HSI 2019	Bridge	Town of Gibson	No
Cell Tower	7318 Old Y Rd	County 2019	Communication Facility	Town of Gibson	No
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
B360021	CTH V / WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Kossuth	Yes
B360125	DANMAR RD / BRANCH RIVER	County/HSI 2019	Bridge	Town of Kossuth	Yes
B360186	MEADOW LN / FRANCIS CREEK	County/HSI 2019	Bridge	Town of Kossuth	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
Wastewater Treatment Facility	CTH V	Village	Wastewater Treatment Facility	Town of Kossuth	No
Building	Berringer Rd (parcel address is 7117 CTH R)	County	Communication Facility	Town of Kossuth	No
Rockwood Fire Department	5401 CTH R	County	Fire and Safety	Town of Kossuth	No
Manitowoc County Hwy Shop (floating strainer)	3500 STH 310	Manitowoc County Fire Assoc.	Fire and Safety	Town of Kossuth	No
Kappelman's Pond (dry hydrant)	2405 Berringer Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Kossuth	No
Wastewater Treatment Facility	Tower Ave	Village	Wastewater Treatment Facility	Town of Kossuth	No
Water Storage Tower	CTH T	Village	Water Supply	Town of Kossuth	No
Cable TV/DSL/Cell Tower	CTH T	Village	Communication Facility	Town of Kossuth	No
Dry Hydrant	Forest Home Dr	Village	Fire and Safety	Town of Kossuth	No
Manitowoc County Highway Shop	3500 STH 310	County	Administrative Building	Town of Kossuth	No
Kids Crayon Club	7219 CTH T	County 2019	Licensed Childcare Facility	Town of Kossuth	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	CTH Q	County	Post-Disaster Recovery Site	Town of Kossuth	No
Co HWY Dept Gravel Pit	3500 STH 310	County	Post-Disaster Recovery Site	Town of Kossuth	No
Co HWY Dept Gravel Pit	Parkway Rd	County	Post-Disaster Recovery Site	Town of Kossuth	No
Co HWY Dept Gravel Pit	Reifs Mills Rd	County	Post-Disaster Recovery Site	Town of Kossuth	No
Co HWY Dept Gravel Pit	4005 Rockwood Rd	County	Post-Disaster Recovery Site	Town of Kossuth	No
B360077	I-43 SB / USH 10 WB-STH 310	County/HSI 2019	Bridge	Town of Kossuth	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
B360084	POLIFKA RD / I-43	County/HSI 2019	Bridge	Town of Kossuth	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
B360317	SHOTO RD / BRANCH OF WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Kossuth	No
C360025	I-43 / Unnamed Creek	County/HSI 2019	Bridge	Town of Kossuth	No
P360068	OLD Q RD / TRIB. TO WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Kossuth	No
P360127	FRANCIS CREEK RD / TRIB. TO FRANCIS CREEK	County/HSI 2019	Bridge	Town of Kossuth	No
P360920	CTH Q / TRIB. OF WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Kossuth	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

NAME	ADDRESS	Source	Type	MCD	Floodplain
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
B360160	CTH A / TRIB. OF MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Liberty	Yes
P360165	TOMKINS RD / TRIB. OF MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Liberty	Yes
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
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
Co HWY Dept Gravel Pit	Robley Rd	County	Post-Disaster Recovery Site	Town of Liberty	No
Cnty Hwy Dept Gravel Pit	CTH F	County	Post-Disaster Recovery Site	Town of Liberty	No
Co HWY Dept Gravel Pit	English Lake Rd	County	Post-Disaster Recovery Site	Town of Liberty	No
Co HWY Dept Gravel Pit	15322 CTH C	County	Post-Disaster Recovery Site	Town of Liberty	No
Co HWY Dept Gravel Pit	13701 English Lake Rd	County	Post-Disaster Recovery Site	Town of Liberty	No
Co HWY Dept Gravel Pit	English Lake Rd	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
Co HWY Dept Gravel Pit	CTH C	County	Post-Disaster Recovery Site	Town of Liberty	No
B360170	PINE RIVER RD / POINT CREEK	County/HSI 2019	Bridge	Town of Liberty	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
Pigeon Lake Public Access (dry hydrant)	8964 Pigeon Lake Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Liberty	No
B360165	SILVER CREEK RD / SILVER CREEK	County/HSI 2019	Bridge	Town of Manitowoc	Yes
B360182	VALLEY DR / SILVER CREEK	County/HSI 2019	Bridge	Town 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
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
P360917	S 19TH ST / SILVER CREEK	County/HSI 2019	Bridge	Town of Manitowoc	Yes
Natural Gas Substation	3104 Nagle Ave		Power Facility/Bulk Fuel Storage	Town of Manitowoc	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
Manitowoc Town Hall	1822 Silver Creek Rd	BLRPC	Administrative Building	Town of Manitowoc	No
Emergency Siren	21st St & Viebahn St	County	Communication Facility	Town of Manitowoc	No
Co HWY Dept Gravel Pit	S 15th St	County	Post-Disaster Recovery Site	Town of Manitowoc	No
B360461	STH 42 / SILVER CREEK	County/HSI 2019	Bridge	Town of Manitowoc	No
B360006	N RAPIDS RD / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Manitowoc Rapids	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
B360105	USH 151 / SILVER CREEK	County/HSI 2019	Bridge	Town of Manitowoc Rapids	Yes
B360113	USH 10 EB-STH 42 NB-WALDO BLVD / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Manitowoc Rapids	Yes
B360164	VILLAGE DRIVE / BRANCH RIVER	County/HSI 2019	Bridge	Town of Manitowoc Rapids	Yes
B360169	MICHIGAN AVE / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Manitowoc Rapids	Yes
B360193	USH 10 / BRANCH R	County/HSI 2019	Bridge	Town of Manitowoc Rapids	Yes
P360022	MILL RD (PEDESTRIAN BRIDGE) / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Manitowoc Rapids	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
Branch River Fill Site (float)	7901 Union Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Manitowoc Rapids	Yes
Natural Gas Substation	Middle Ct		Power Facility/Bulk Fuel Storage	Town of Manitowoc Rapids	No
Manitowoc Rapids Town Hall	8624 CTH JJ	BLRPC	Administrative Building	Town of Manitowoc Rapids	No
Water Tower	3145 Basswood Rd	City	Water Supply	Town of Manitowoc Rapids	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
B360078	I-43 NB / USH 10 WB-STH 310	County/HSI 2019	Bridge	Town of Manitowoc Rapids	No
B360085	CTH P-HOMESTEAD RD / I-43-USH 10	County/HSI 2019	Bridge	Town of Manitowoc Rapids	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
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
Manitowoc County Material Recycling Facility	3000 Basswood Rd	County	Administrative Building	Town of Manitowoc Rapids	No
Branch Fire Dept	8124 Village Dr	County	Fire and Safety	Town of Manitowoc Rapids	No
Matthias Pond	1540 N Union Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Manitowoc Rapids	No
B360144	USH 10 / EAST BRANCH OF MUD CREEK	County/HSI 2019	Bridge	Town of Maple Grove	Yes
B360237	HICKORY HILLS RD / MUD CREEK	County/HSI 2019	Bridge	Town of Maple Grove	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
P360925	CTH K / MUD CREEK	County/HSI 2019	Bridge	Town of Maple Grove	Yes
Maple Grove Town Hall	8432 N CTH W	County	Administrative Building	Town of Maple Grove	No
Co HWY Dept Gravel Pit	Schaefer Rd	County	Post-Disaster Recovery Site	Town of Maple Grove	No
Co HWY Dept Gravel Pit	Tamarack Rd	County	Post-Disaster Recovery Site	Town of Maple Grove	No
Co HWY Dept Gravel Pit	9803 Long Lake Rd	County	Post-Disaster Recovery Site	Town of Maple Grove	No
C360058	USH 10 / Unnamed Creek	County/HSI 2019	Bridge	Town of Maple Grove	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
Marquette Pond (dry hydrant)	19420 Marquette Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Maple Grove	No
B360134	STH 42 / MEEME RIVER	County/HSI 2019	Bridge	Town of Meeme	Yes
B360167	E SPRING VALLEY RD / MEEME RIVER	County/HSI 2019	Bridge	Town of Meeme	Yes

NAME	ADDRESS	Source	Type	MCD	Floodplain
B360185	S CLEVELAND RD / MEMEE RIVER	County/HSI 2019	Bridge	Town of Meeme	Yes
B360188	PIONEER RD / MEEME RIVER	County/HSI 2019	Bridge	Town of Meeme	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
B360218	MINERAL SPRINGS RD / PIGEON RIVER	County/HSI 2019	Bridge	Town of Meeme	Yes
B360910	CTH XX / MEEME RIVER	County/HSI 2019	Bridge	Town of Meeme	Yes
P360066	CTH M / PIGEON RIVER	County/HSI 2019	Bridge	Town of Meeme	Yes
P360193	W WASHINGTON RD / MEEME RIVER	County/HSI 2019	Bridge	Town of Meeme	Yes
Meeme	Meeme River	County 2019	Dam	Town of Meeme	Yes
Meeme Town Hall	15318 CTH X	BLRPC	Administrative Building	Town of Meeme	No
Co HWY Dept Gravel Pit	15233 CTH X	County	Post-Disaster Recovery Site	Town of Meeme	No
Co HWY Dept Gravel Pit	Mineral Springs Rd	County	Post-Disaster Recovery Site	Town of Meeme	No
Meeme Leads Charter School	12121 XX	County 2019	School	Town of Meeme	No
B360180	STH 42 / TRIB. TO MEEME CR	County/HSI 2019	Bridge	Town of Meeme	No
P360191	WILLMAS RD / MEEME RIVER	County/HSI 2019	Bridge	Town of Meeme	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
Horseshoe Lake Boat Landing (dry hydrant)	13716 Northwood Ct	Manitowoc County Fire Assoc.	Fire and Safety	Town of Meeme	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
School Hill Cistern (Marken Rd and Lincoln Ave)	12228 Marden Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Meeme	No
B360028	STURM RD / EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Mishicot	Yes
B360109	STH 147 / EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Mishicot	Yes
B360127	E ZANDER RD / EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Mishicot	Yes
B360511	TISCH MILLS RD / EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Mishicot	Yes
P360069	CTH Q / WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Mishicot	Yes
E Zander Rd / East Twin River (river access)	522 E Zander Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Mishicot	Yes
Tower	11811 Saxonburg Rd	Town	Communication Facility	Town of Mishicot	No
Co HWY Dept Gravel Pit	E Tapawingo Rd	County	Post-Disaster Recovery Site	Town of Mishicot	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
P360130	CHURCH ST / TRIB. TO EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Mishicot	No
P360924	E CTH V / TRIB. OF EAST TWIN RIVER	County/HSI 2019	Bridge	Town of Mishicot	No
Cell Tower	9940 STH 147	County 2019	Communication Facility	Town of Mishicot	No
Cell Tower	2786 Sturm Rd	County 2019	Communication Facility	Town of Mishicot	No
B360033	CTH LS / PINE CREEK	County/HSI 2019	Bridge	Town of Newton	Yes
B360038	GASS LAKE RD / PINE CREEK	County/HSI 2019	Bridge	Town of Newton	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
B360146	CTH CR / SILVER CREEK	County/HSI 2019	Bridge	Town of Newton	Yes
B360187	CTH CR / CALVIN CREEK	County/HSI 2019	Bridge	Town of Newton	Yes
P360168	HECKER RD / SILVER CREEK	County/HSI 2019	Bridge	Town of Newton	Yes
P360910	S UNION RD / SILVER CREEK	County/HSI 2019	Bridge	Town of Newton	Yes
Carstens Lake Public Access (lake access)	6205 Carstens Lake Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Newton	Yes
English Lake Public Access (lake access)	9348 S Lake Dr	Manitowoc County Fire Assoc.	Fire and Safety	Town of Newton	Yes
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
Newton 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
Newton Town Hall	6532 Carstens Lake Rd	Town	Administrative Building	Town of Newton	No
Co HWY Dept Gravel Pit	3107 Fricke Dr	County	Post-Disaster Recovery Site	Town of Newton	No
Co HWY Dept Gravel Pit	5202 Silver Creek Rd	County	Post-Disaster Recovery Site	Town of Newton	No
Hil Newport Home	3609 Hecker Rd	County 2019	Licensed Healthcare Facility	Town of Newton	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
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
B360179	NEWTON RD / POINT CREEK	County/HSI 2019	Bridge	Town of Newton	No
B360181	STH 42 / TRIB. TO POINT CREEK	County/HSI 2019	Bridge	Town of Newton	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
C360020	I-43 / PINE CREEK	County/HSI 2019	Bridge	Town of Newton	No
C360035	STH 42 / POINT CREEK	County/HSI 2019	Bridge	Town of Newton	No
C361024	STH 42 / DRAINAGE WAY	County/HSI 2019	Bridge	Town of Newton	No
P360171	CTH U / PINE CREEK	County/HSI 2019	Bridge	Town of Newton	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	3636 CTH CR	County 2019	Communication Facility	Town of Newton	No
Grotgut Pond (pond on farm)	7407 Newton Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Newton	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
Stocks Pond	6007 Gass Lake Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Newton	No


NAME	ADDRESS	Source	Type	MCD	Floodplain
Collins Marsh	Mud Creek	DNR 2019	Dam	Town of Rockland	Yes
Water Pumping Station	20708 Main St		Wastewater Treatment Facility	Town of Rockland	Yes
B360019	CTH JJ / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Rockland	Yes
B360147	S CTH W / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Rockland	Yes
B360157	COLLINS RD / MANITOWOC RIVER	County/HSI 2019	Bridge	Town of Rockland	Yes
B360173	CTH JJ / MUD CREEK	County/HSI 2019	Bridge	Town of Rockland	Yes
P360158	W GOODWIN RD / MUD CREEK	County/HSI 2019	Bridge	Town of Rockland	Yes
Collins / Manitowoc River (dry hydrant)	1184 Collins Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Rockland	Yes
Hilltop Dry Hydrant (at Mud Creek)	19586 Hilltop Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Rockland	Yes
Natural Gas Substation	3932 CTH W	Town	Power Facility/Bulk Fuel Storage	Town of Rockland	No
Rockland Town Hall	615 Milwaukee St	County	Administrative Building	Town of Rockland	No
Collins Fire Department	607 Milwaukee St	Town	Fire and Safety	Town of Rockland	No
Water Supply Filter Treatment Plant	20023 CTH JJ		Water Supply	Town of Rockland	No
Co HWY Dept Gravel Pit	Quarry Rd	County	Post-Disaster Recovery Site	Town of Rockland	No
Collins Marsh Sub-impound	Trib. of Mud Creek	DNR 2019	Dam	Town of Rockland	No
B360138	CTH W / BRANCH OF MUD CREEK	County/HSI 2019	Bridge	Town of Rockland	No
B360158	BOXWOOD RD / BRANCH OF MUD CREEK	County/HSI 2019	Bridge	Town of Rockland	No
C360034	CTH W / NORTH BRANCH OF MUD CREEK	County/HSI 2019	Bridge	Town of Rockland	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
P360927	BOOT LAKE RD / LONG LAKE TRIB	County/HSI 2019	Bridge	Town of Rockland	No
West Shore Retreat	3301 Long Lake Rd	County 2019	Manufactured Housing	Town of Rockland	No
Bullhead Lake Public Access (dry hydrant)	507 Bullhead Lake Ln	Manitowoc County Fire Assoc.	Fire and Safety	Town of Rockland	No
Millhome	Sheboygan River	DNR 2019	Dam	Town of Schleswig	Yes
Rockville	Sheboygan River	DNR 2019	Dam	Town of Schleswig	Yes
B360011	STH 32 NB-STH 57 NB / SHEBOYGAN RIVER	County/HSI 2019	Bridge	Town of Schleswig	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
B360137	STH 32 SB-STH 57 SB / SHEBOYGAN RIVER	County/HSI 2019	Bridge	Town of Schleswig	Yes
B360172	STEINTHAL RD / SHEBOYGAN RIVER	County/HSI 2019	Bridge	Town of Schleswig	Yes
Schleswig Town Hall	21935 Rockville Rd	Town	Administrative Building	Town of Schleswig	No
Tower	23233 Mueller Rd	County	Communication Facility	Town of Schleswig	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	14601 Lax Shapel Rd	County	Post-Disaster Recovery Site	Town of Schleswig	No
Co HWY Dept Gravel Pit	16318 Little Elkhart Lake Rd	County	Post-Disaster Recovery Site	Town of Schleswig	No
Co HWY Dept Gravel Pit	Lax Shapel Rd	County	Post-Disaster Recovery Site	Town of Schleswig	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
B360224	CTH X / TRIB. TO SHEBOYGAN RIVER	County/HSI 2019	Bridge	Town of Schleswig	No
C360046	STH 32 / MILLHOME CREEK	County/HSI 2019	Bridge	Town of Schleswig	No
P360199	POINT CREEK RD / TRIB TO SHEBOYGAN RIVER	County/HSI 2019	Bridge	Town of Schleswig	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
Cedar Lake Boat Landing (lake access; draft)	18584 Split Rail Ln	Manitowoc County Fire Assoc.	Fire and Safety	Town of Schleswig	No
Rokilio Pump (pump on north side of Cedar Lake)	14004 Rokilio Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Schleswig	No
Wilke Lake Boat Landing (draft; lake access)	10901 Wilke Lake Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Schleswig	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
Emergency Siren	STH 42	County	Communication Facility	Town of Two Creeks	No
Emergency Siren	Nuclear Rd & Twin Elder Rd	County	Communication Facility	Town of Two Creeks	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
B360178	STH 42 / S TWO CREEKS	County/HSI 2019	Bridge	Town of Two Creeks	No
B360227	STH 42 / UNNAMED TRIB. TO LAKE MICHIGAN	County/HSI 2019	Bridge	Town of Two Creeks	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
P360942	LAKESHORE RD / TRIB. TO LAKE MICHIGAN	County/HSI 2019	Bridge	Town of Two Creeks	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	6610 Nuclear Rd	County 2019	Communication Facility	Town of Two Creeks	No
Pt Peach NPP Hydrant (hydrant on north end)	6610 Nuclear Rd	Manitowoc County Fire Assoc.	Fire and Safety	Town of Two Creeks	No
Neshoto - South	West Twin River	DNR 2019	Dam	Town of Two Rivers	Yes
B360120	CTH O / MOLASH CREEK	County/HSI 2019	Bridge	Town of Two Rivers	Yes
B360154	CTH B / WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Two Rivers	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
Neshoto - North	West Twin River	DNR 2019	Dam	Town 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
Power Facility	1618 E STH 310	ATC	Power Facility/Bulk Fuel Storage	Town of Two Rivers	No
Two Rivers Town Hall	6525 CTH B	BLRPC	Administrative Building	Town of Two Rivers	No
Co HWY Dept Gravel Pit	CTH VV	County	Post-Disaster Recovery Site	Town of Two Rivers	No
Co HWY Dept Gravel Pit	6800 Manitou Dr	County	Post-Disaster Recovery Site	Town of Two Rivers	No
B360143	CTH B / WEST TWIN RIVER	County/HSI 2019	Bridge	Town of Two Rivers	No
C360005	STH 42 / MOLASH CREEK	County/HSI 2019	Bridge	Town of Two Rivers	No
P360911	LAKESHORE RD / RABE FOREST CREEK	County/HSI 2019	Bridge	Town of Two Rivers	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

NAME	ADDRESS	Source	Type	MCD	Floodplain
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
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
Sewage Lift Station	1162 N Westview St	Village 2024	Wastewater Treatment Facility	Village of Cleveland	Yes
Village of Cleveland Public Works Garage	1151 Lakeshore Dr	County	Administrative Building	Village of Cleveland	Yes
Sewage Lift Station at Hika Park	1151 Lakeshore Dr	County	Wastewater Treatment Facility	Village of Cleveland	Yes
B360012	DAIRYLAND DR / NORTH BRANCH OF CENTERVILLE CREEK	County/HSI 2019	Bridge	Village of Cleveland	Yes
B360151	N WESTVIEW ST / NORTH BRANCH OF CENTERVILLE CREEK	County/HSI 2019	Bridge	Village of Cleveland	Yes
B360913	CTH XX-E WASHINGTON AVE / S BR. CENTERVILLE CREEK	County/HSI 2019	Bridge	Village of Cleveland	Yes
B360248	Linden St/South Branch, Centerville Crk	Village 2024	Bridge	Village of Cleveland	Yes
P360700	CTH LS-LAKESHORE DR / CENTERVILLE CREEK	County/HSI 2019	Bridge	Village of Cleveland	Yes
Cleveland Wastewater Treatment Facility	245 Whitetail Ln	BLRPC	Wastewater Treatment Facility	Village of Cleveland	No
Wind Turbines at Lakeshore Technical College	1290 North Ave	Village 2024	Power Facility/Bulk Fuel Storage	Village of Cleveland	No
Wisconsin Electric Substation	W Washington Ave/N Maple St	Village 2024	Power Facility/Bulk Fuel Storage	Village of Cleveland	No
Bonde's Quik Mart	1517/1519 North Ave	Village 2024	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 Emergency Operations Center	1290 North Ave	Village 2024	Fire and Safety	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	Dairyland Dr/North Ave	Village 2024	Mobile Home Park	Village of Cleveland	No
Cleveland Fire Department	1274 W Washington Ave	Village	Fire and Safety	Village of Cleveland	No
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
Emergency Siren near Cleveland Fire Department	Dairyland Dr/W Washington Ave (Lat 45.914, Long -87.755)	County	Communication Facility	Village of Cleveland	No
Emergency Siren at Cleveland Elementary School	411 E Washington Ave	County	Communication Facility	Village of Cleveland	No
Lakeshore Tech College Child Care	1290 North Avenue	County 2019	Licensed Childcare Facility	Village of Cleveland	No
Cleveland Elementary School	411 E Washington Ave	County 2019	School	Village of Cleveland	No
Manitowoc Co Communication Facility at Water Tower	824 Polk Ln	Village 2024	Communication Facility	Village of Cleveland	No
TDS Telecom (Eastcoast Telecom)	1140 W Washington Ave	Village 2024	Communication Facility	Village of Cleveland	No
Cell Tower at Lakeshore Technical College	1290 North Ave	County 2019	Communication Facility	Village of Cleveland	No
B360082	I-43 / FRANCIS CREEK	County/HSI 2019	Bridge	Village of Francis Creek	Yes
B360121	CTH R / N PACKER DR / FRANCIS CREEK	County/HSI 2019	Bridge	Village of Francis Creek	Yes
Francis Creek Fire Department	310 Norwood Dr	Village	Fire and Safety	Village of Francis Creek	No
Francis Creek Village Hall	200 Norwood Dr	Village	Administrative Building	Village of Francis Creek	No
Kossuth Town Hall	129 S Packer Dr	County	Administrative Building	Village of Francis Creek	No
Francis Creek Ctgo Pond (dry hydrant)	333 Semi Dr	Village	Fire and Safety	Village of Francis Creek	No
K-Ville Mobile Home Park	444 Pleasant Ln	County 2019	Manufactured Housing	Village of Kellnersville	No
Emergency Siren	1214 Main St	County	Communication Facility	Village of Kellnersville	No
Kellnersville Fire Department and First Responders	807 Main St	Village	Fire and Safety	Village of Kellnersville	No
Pump House	Zeman Rd	Village 2023	Water Supply	Village of Kellnersville	No
Water Treatment Facility	14701 Pleasant Rd	Town	Wastewater Treatment Facility	Village of Maribel	No
Water Storage Tower	10416 E Belmar Ave	Village	Water Supply	Village of Maribel	No
Maribel Fire Department	15127 N Maribel Rd	Village	Fire and Safety	Village of Maribel	No
Maribel Village Hall	14905 Mulberry St	Village 2023	Administrative Building	Village of Maribel	No
St. John's Lutheran School	14323 S Maribel Rd	County 2019	School	Village of Maribel	No
Cell Tower	10416 E Belmar Rd	County 2019	Communication Facility	Village of Maribel	No
Mishicot Village Hall	511 E Main St	BLRPC	Administrative Building	Village of Mishicot	No
Mishicot Town Hall	710 N State St	BLRPC	Administrative Building	Village of Mishicot	No
Manitowoc County Highway Shop	740 N State St	Village 2023	Administrative Building	Village of Mishicot	No
Utility Support Building	1418 S Main St	Village	Administrative Building	Village of Mishicot	No
B360123	STH 147-S MAIN ST / EAST TWIN RIVER	County/HSI 2019	Bridge	Village of Mishicot	Yes
B360318	CTH B-S STATE ST / EAST TWIN RIVER	County/HSI 2019	Bridge	Village of Mishicot	Yes
P360133	STEINERS CORNERS RD / EAST TWIN RIVER	County/HSI 2019	Bridge	Village of Mishicot	Yes
C360026	STH 147-S MAIN ST / JOHNSON CREEK	County/HSI 2019	Bridge	Village of Mishicot	No
Emergency Siren	Salvage Rd & S Rockway St	County	Communication Facility	Village of Mishicot	Yes
Communications Building	250 S Main St	Village 2023	Communication Facility	Village of Mishicot	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
Mishicot	East Twin River	DNR 2019	Dam	Village of Mishicot	Yes
Mishicot Fire Department/Ambulance Service	214 S Main St	Village	Fire and Safety	Village of Mishicot	Yes
Mishicot Police Department	511 E Main St	BLRPC	Fire and Safety	Village of Mishicot	No
Fox Hills Pond (dry hydrant)	898 W Samz Rd	Village	Fire and Safety	Village of Mishicot	No
Forever Friends Family Child Care	824 Randolph St	County 2019	Licensed Childcare Facility	Village of Mishicot	No
Chatterbox Kids Campus	510 Woodlawn Dr	County 2019	Licensed Childcare Facility	Village of Mishicot	No
St Peter's Lutheran Tiny Treasures Preschool	325 Randolph St	County 2019	Licensed Childcare Facility	Village of Mishicot	No
Happy Hearts Childcare	440 Elizabeth Street	County 2019	Licensed Childcare Facility	Village of Mishicot	No
Aurora Mishicot Clinic	175 S State St	County 2019	Licensed Healthcare Facility	Village of Mishicot	No
Mishicot High	660 Washington St	County 2019	School	Village of Mishicot	No
Mishicot Middle	660 Washington St	County 2019	School	Village of Mishicot	No
Schultz Elementary	510 Woodlawn Dr	County 2019	School	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
Water Storage Tower	425 E Samz Rd	Village	Water Supply	Village of Mishicot	No
Water Storage Tower	Randolph St & N Rockway St	Village	Water Supply	Village of Mishicot	No
Water Supply Well #2	1310 S Main St	Village	Water Supply	Village of Mishicot	No
Water Supply Well #1	309 Washington St	Village	Water Supply	Village of Mishicot	No
B360126	MILL ST / MUD CREEK	County/HSI 2019	Bridge	Village of Reedsville	Yes
B360213	MANITOWOC ST / MUD CREEK	County/HSI 2019	Bridge	Village of Reedsville	Yes

NAME	ADDRESS	Source	Type	MCD	Floodplain
B360217	N 4TH ST / MUD CREEK	County/HSI 2019	Bridge	Village of Reedsville	Yes
B360892	USH 10-MAIN ST / MUD CREEK	County/HSI 2019	Bridge	Village of Reedsville	Yes
SS John & James Lutheran School	223 Manitowoc St	County 2019	School	Village of Reedsville	No
Reedsville Elementary	350 S Park St	County 2019	School	Village of Reedsville	No
Reedsville High	340 Manitowoc St	County 2019	School	Village of Reedsville	No
Reedsville Middle	350 S Park St	County 2019	School	Village of Reedsville	No
Wastewater Treatment Facility	Mud Creek Rd	Village	Wastewater Treatment Facility	Village of Reedsville	No
Cable Housing	Industrial Park Dr	Village	Communication Facility	Village of Reedsville	No
Reedsville Fire Department	100 Industrial Park Dr	Village	Fire and Safety	Village of Reedsville	No
Water Supply Well	Manitowoc St		Water Supply	Village of Reedsville	No
Water Storage Tower	111 Industrial Park Dr		Water Supply	Village of Reedsville	No
Aurora Reedsville Clinic	106 Mill St	County 2019	Licensed Healthcare Facility	Village of Reedsville	No
Manitowoc County Highway Shop	212 Menasha St	Village	Administrative Building	Village of Reedsville	No
Reedsville Police Department	217 Menasha St	County	Fire and Safety	Village of Reedsville	No
Reedsville Village Hall	217 Menasha St	County	Administrative Building	Village of Reedsville	No
Building (Switch Station)	502 Madison St (GTE Telephone Operations)	Village	Communication Facility	Village of Reedsville	No
Meadowbrook Court	Meadowbrook Ct	County 2019	Manufactured Housing	Village of Reedsville	No
Well #5	Deerview Dr	Village	Water Supply	Village of Reedsville	No
Emergency Siren	520 Manitowoc St	County	Communication Facility	Village of Reedsville	No
Saint Francis of Assisi Elementary	223 Manitowoc St	County 2019	School	Village of Reedsville	No
Cell Tower	111 Industrial Park Dr	County 2019	Communication Facility	Village of Reedsville	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
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
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
Voigt's Maple Terrace Mobile Home Court	400 E Main St	County 2019	Manufactured Housing	Village of St. Nazianz	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
Wee Care - Jodi's Day Care	124 Jefferson St	County 2019	Licensed Childcare Facility	Village of Valders	No
Emergency Siren	207 S Liberty St	County	Communication Facility	Village of Valders	No
Co HWY Dept Gravel Pit	Quarry Ln	County	Post-Disaster Recovery Site	Village of Valders	No
Chatterbox Kids Campus - Valders	331 Wilson Street	County 2019	Licensed Childcare Facility	Village of Valders	No
Building Blocks Day Care Center and Preschool	315 S Adams Street	County 2019	Licensed Childcare Facility	Village of Valders	No
Magic Ladder Nursery School	255 Roosevelt Street	County 2019	Licensed Childcare Facility	Village of Valders	No
Aurora Valders Clinic	106 Wilson St, Valders	County 2019	Licensed Healthcare Facility	Village of Valders	No
Cell Tower	250 N Calumet Dr	County 2019	Communication Facility	Village of Valders	No
Whitelaw Fire Department	330 E Menasha Ave	Village	Fire and Safety	Village of Whitelaw	No
Water Storage Tower	338 E Menasha Ave		Water Supply	Village of Whitelaw	No
Water Supply Booster/Pumping Station	338 E Menasha Ave		Water Supply	Village of Whitelaw	No
Whitelaw Village Hall	147 W Menasha Ave	BLRPC	Administrative Building	Village of Whitelaw	No
Wastewater Treatment Facility	312 N Hickory St	BLRPC	Wastewater Treatment Facility	Village of Whitelaw	No
Precious Memories Daycare LLC	132 W Menasha Avenue	County 2019	Licensed Childcare Facility	Village of Whitelaw	No
West Lift Station with Generator	CTH R/N Packer Drive and Norwood Drive	Village	Wastewater Treatment Facility	Village of Francis Creek	
East Lift Station with Generator	923 Forest Home Drive	Village	Wastewater Treatment Facility	Village of Francis Creek	
Water Tower	Cty. Rd. T	Village 2023	Water Supply	Village of Kellnersville	
Wastewater Treatment Plant	100 Tower Ave	Village 2023	Wastewater Treatment Facility	Village of Kellnersville	
VFW	314 W Main St	Village 2023	Communication Facility	Village of Mishicot	
Wastewater Treatment Facility	4024 Rockwood Road	Town 2023	Wastewater Treatment Facility	Town of Kossuth	
Cell Tower	6111 Apple Blossom Ln	Town 2023	Communication Facility	Town of Kossuth	

Appendix D

Public Meeting Notice and Sign-In Sheets



Manitowoc County Emergency Services
 1024 South 9th Street - Manitowoc, WI 54220
Director Rhonda Green
 920-683-4207 - rhondagreen@manitowoccountywi.gov

Public Notice
 Manitowoc County Hazard Mitigation Plan Ready for Public Review
 Notice of Public Advisory

Manitowoc County Emergency management, response, and planning personnel from the private and public sectors have been working together as a steering committee to update the Manitowoc County Hazard Mitigation Plan. The plan was originally developed in 2007 under funding from the Federal Emergency Management Agency (FEMA). This will be the fourth update to the plan.

Development of the plan update is being led by the County Emergency Management 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 county planning and zoning, law enforcement, health department, highway, and forestry. The steering committee also includes representatives from electric utilities, county board, and others.


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 physical copy of the plan will be available for review at a public informational open house held on **June 20, 2024**, from **2:00 p.m. – 4:00 p.m.** at the **Manitowoc County Emergency Operations Center (EOC) 1024 S 9th Street, Manitowoc, WI 54220**.

The draft plan can be viewed online at: <https://baylakerpc.org/ManitowocHMP>

If you have any questions, please contact Rhonda Green with Manitowoc County Emergency Management at 920 683-4207 or Brandon Robinson with the Bay-Lake Regional Planning Commission at 920-448-2820, Ext. 105


 Rhonda Green
 Manitowoc County
 Emergency Services Director

COMMUNITY ENGAGEMENT



Manitowoc County Hazard Mitigation Plan 2025-2030



What is a Hazard Mitigation Plan?
 Hazard mitigation planning forms the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage in the next disaster. State, County, and Tribal governments are required to develop a hazard mitigation plan as a condition of receiving certain types of hazard mitigation disaster assistance, emergency and non-emergency.

How can the community get involved?
 A steering committee formed by the county has worked with the Bay-Lake Regional Planning Commission during the last eight months to help guide decisions of the plan update. The upcoming public open houses are venues to gather public and stakeholder input and feedback as the planning process nears its endpoint.

Please visit the project website for additional information: baylakerpc.org/ManitowocHMP

Upcoming Open Houses

29
MAY

Kiel Community Center
510 3rd Street | Kiel, WI

2:00 PM - 4:00 PM

12
JUNE

Mishicot Village Hall
511 E Main Street | Mishicot, WI

2:00 PM - 4:00 PM

20
JUNE

Communications & Technology Building - Room 111/112
1024 S 9th Street | Manitowoc, WI

2:00 PM - 4:00 PM

Note: the same material will be presented at each of the meetings.

PLAN PREPARED BY
 Bay-Lake Regional Planning Commission
 1801 North Drive, Oshtemo, WI
 920.448.2820 | info@baylakerpc.org

BAY LAKE
 Regional Planning Commission | Since 1952

COMMUNITY FEEDBACK

We welcome any feedback, comments, or concerns regarding this plan update from the public. Feel free to use the link below to submit a feedback form or contact any of the project staff listed for the project.

FEEDBACK FORM

MEETINGS/ EVENTS



UPCOMING EVENTS

Open Houses

May 29, 2024 @ Kiel Community Center 2PM-4PM

June 12, 2024 @ Mishicot Village Hall 2PM-4PM

June 20, 2024 @ Communications & Technology Building
 1024 S 9th St., Manitowoc 2PM-4PM

PAST EVENTS

Meeting #4

April 9, 2024

Meeting #3

February 26, 2024

Meeting #2

November 30, 2023

Meeting #1 - Kickoff

October 2, 2023

Public Meeting Sign-In Sheets

May 29, 2024

June 12, 2024

**Manitowoc County Hazard Mitigation Plan Update
Public Open House Sign-In**

May 29, 2024 at 2:00 pm
Kiel Community Center (510 3rd Street, Kiel, WI)

	Name	Affiliation
1	Melissa Brandt	citizen
2	Brandon Robinson	Bay Lake RPC
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**Manitowoc County Hazard Mitigation Plan Update
Public Open House Sign-In**

June 12, 2024 at 2:00 pm
Mishicot Village Hall (511 E Main Street, Mishicot, WI)

	Name	Affiliation
1	Brandon Robinson	Bay Lake RPC
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June 20, 2024

**Manitowoc County Hazard Mitigation Plan Update
Public Open House Sign-In**

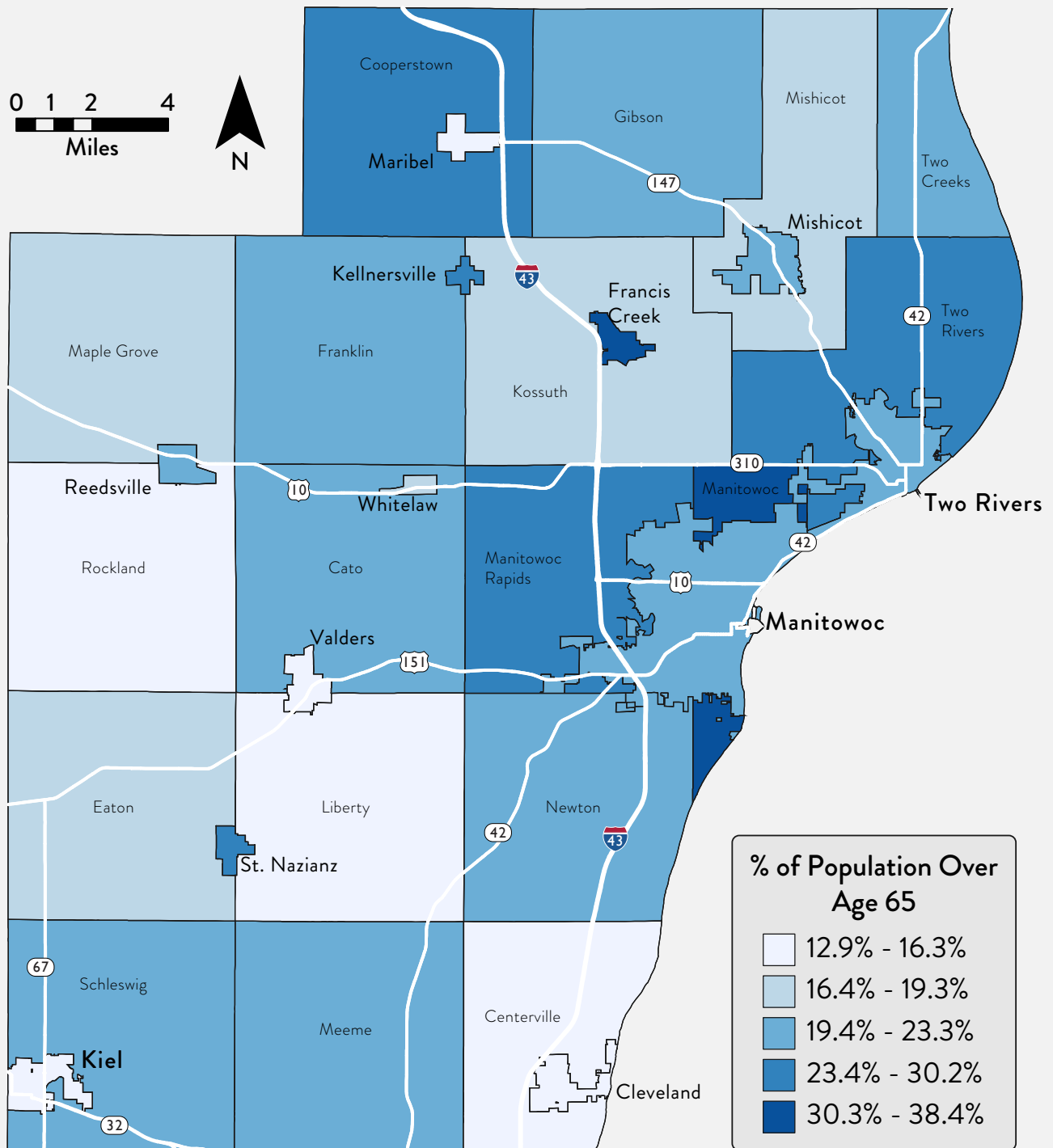
June 20, 2024 at 2:00 pm
Communications and Technology Building (1024 South 9th Street, Manitowoc, WI)
Room 111/112

	Name	Affiliation
1	Frank [unclear]	Bay Lake RPC
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Appendix E

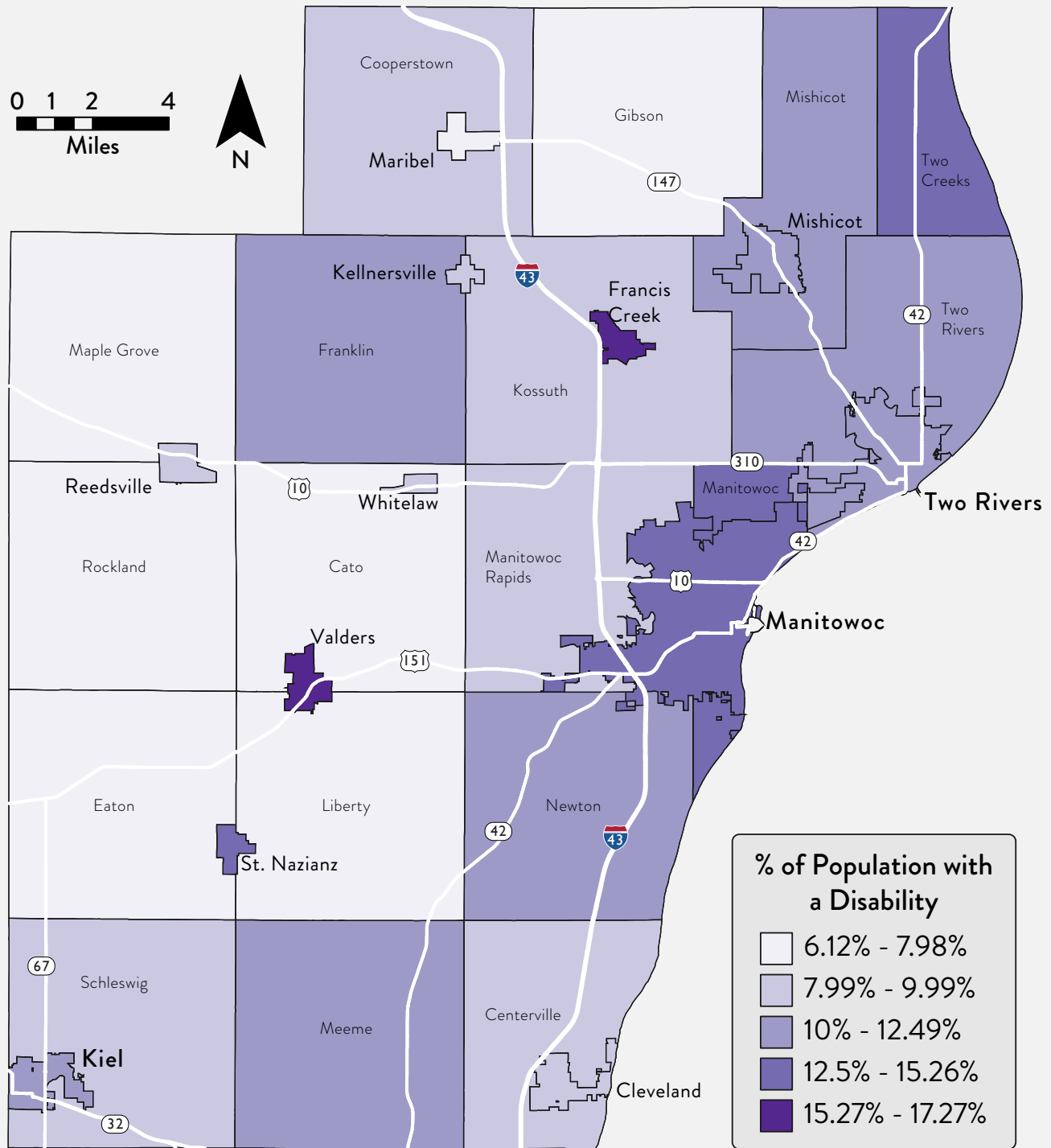
Underserved/Vulnerable Populations

Map E.1: Populations of Persons Over Age 65 by MCD



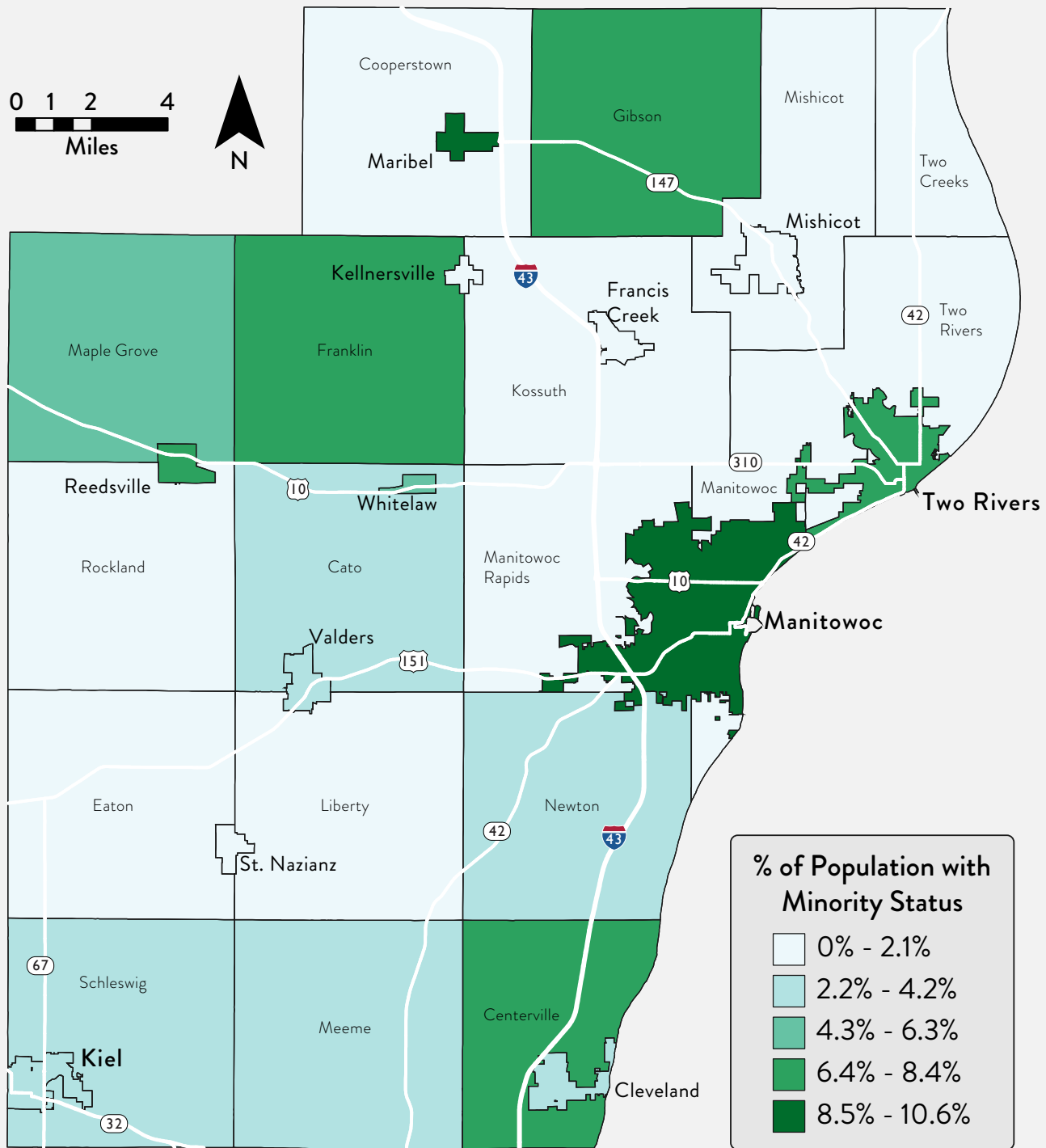
Sources: US Census, ACS 5-Year Estimates 2018-2022, S0101; Bay-Lake RPC, 2024.
 Disclaimer: This map is neither a legally recorded map nor a survey, and is not intended to be used as one. This drawing is a compilation of records, information, and data used for reference purposes only. Bay-Lake RPC is not responsible for any inaccuracies.

Map E.2: Populations of Persons with a Disability by MCD



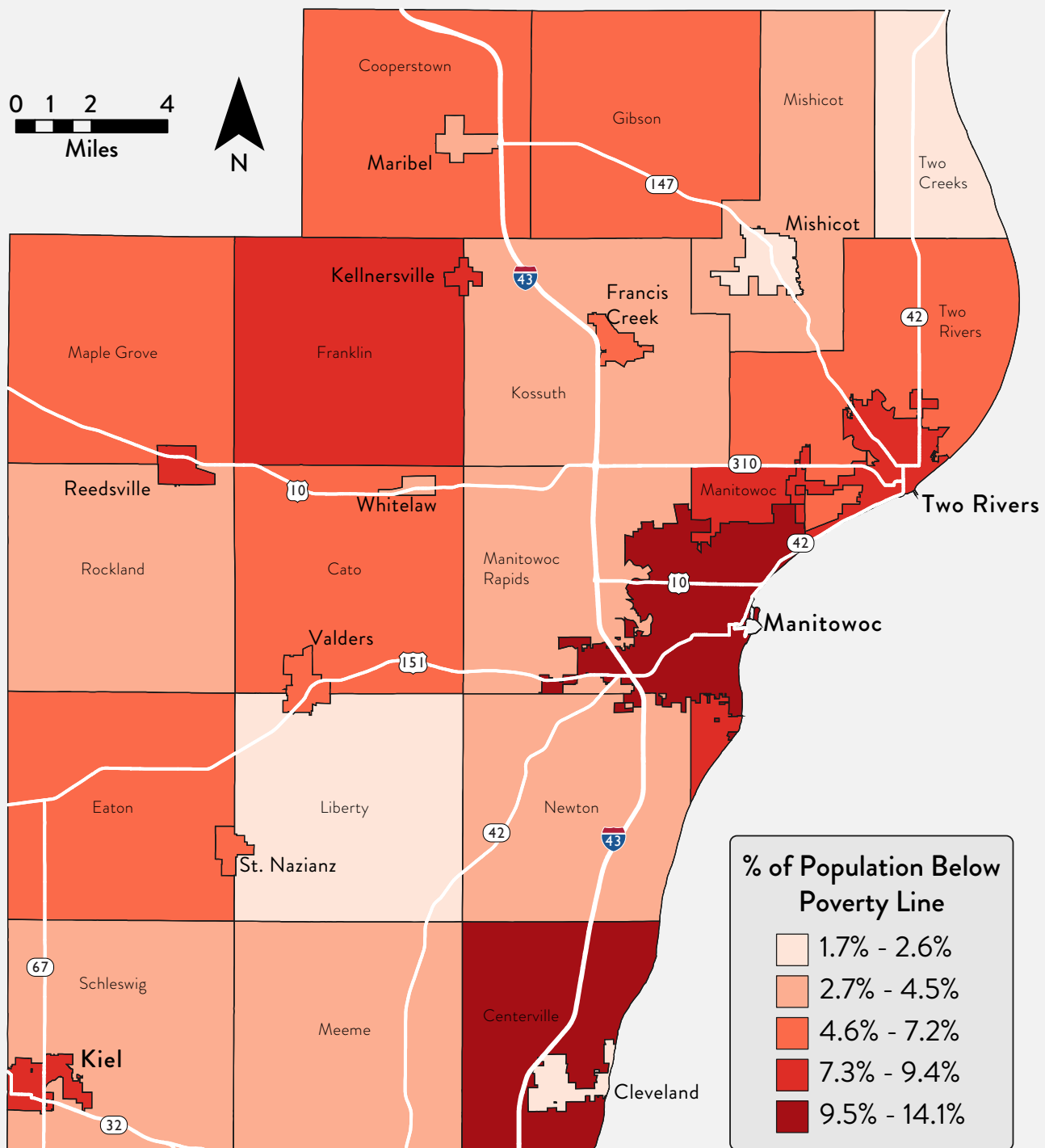
Sources: US Census, ACS 5-Year Estimates 2018-2022, DP02; Bay-Lake RPC, 2024.
 Disclaimer: This map is neither a legally recorded map nor a survey, and is not intended to be used as one. This drawing is a compilation of records, information, and data used for reference purposes only. Bay-Lake RPC is not responsible for any inaccuracies.

Map E.3: Populations of Persons of Minority Status by MCD



Sources: US Census, ACS 5-Year Estimates 2018-2022, DP05; Bay-Lake RPC, 2024.
 Disclaimer: This map is neither a legally recorded map nor a survey, and is not intended to be used as one. This drawing is a compilation of records, information, and data used for reference purposes only. Bay-Lake RPC is not responsible for any inaccuracies.

Map E.4: Populations of Persons Living Below Poverty Level by MCD



Sources: US Census, ACS 5-Year Estimates 2017-2021, B17001; Bay-Lake RPC, 2024.
 Disclaimer: This map is neither a legally recorded map nor a survey, and is not intended to be used as one. This drawing is a compilation of records, information, and data used for reference purposes only. Bay-Lake RPC is not responsible for any inaccuracies.

