



Sheboygan County

Hazard Mitigation Plan Update

2014

Prepared by:
Sheboygan County
Hazard Mitigation Plan Steering Committee

With Assistance from:



**2012-2013 SHEBOYGAN COUNTY HAZARD MITIGATION PLAN
STEERING COMMITTEE**

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Betsy Alles	Sheboygan County Chamber of Commerce
Dave Biebel	City of Sheboygan Public Works
Bill Blashka	Town of Sheboygan Public Works
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Robert Downs	US Coast Guard
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Steve Smith	St. Nicholas Hospital
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Sheboygan County, Wisconsin Hazard Mitigation Plan Update

Prepared by:
Sheboygan County
Hazard Mitigation Plan Steering Committee



With Assistance by:
Bay-Lake Regional Planning Commission
441 South Jackson Street
Green Bay, Wisconsin 54301
Contract #11016-08



January 21, 2014

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COUNTY RESOLUTION OF ADOPTION

SHEBOYGAN COUNTY RESOLUTION NO. 28 (2013/14)

Re: **Adopting Updated County All Hazards Mitigation Plan**

WHEREAS, Sheboygan County recognizes the threat that natural hazards pose to people and property, and

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

WHEREAS, an adopted natural hazards mitigation plan is required as a condition of future grant funding for mitigation projects, and

WHEREAS, Sheboygan County participated jointly in the planning process with the other local units of government within the County to prepare an All Hazards Mitigation Plan;

WHEREAS, through the adoption of Resolution 31 (2007/08), the Sheboygan County Board adopted an all Hazards Mitigation Plan, and

WHEREAS, in accordance with Federal Emergency Management Agency requirements, Sheboygan County has adopted an update to its Plan, a copy of which is on file with the Clerk;

NOW, THEREFORE, BE IT RESOLVED that Sheboygan County Board approves the updated Plan on file with the Clerk and directs the Sheboygan County Emergency Management Director to submit on behalf of the participating municipalities the updated All Hazards Mitigation Plan to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Respectfully submitted this 21st day of January, 2014.

LAW COMMITTEE

Thomas V. Epping
Thomas V. Epping, Chairperson

Vernon Koch
Vernon Koch, Vice-Chairperson

Mark S. Winkel
Mark S. Winkel, Secretary

Michael S. Ogea
Michael S. Ogea

Fay Uraynar
Fay Uraynar

Opposed to Introduction:

ADOPTED 02.18.2014

FEMA/WEM APPROVAL LETTERS

Rec'd 5/30/14

U.S. Department of Homeland Security
Region V
536 S. Clark St., 6th Floor
Chicago, IL 60605-1509



FEMA

MAY 22 2014

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

Dear Ms. ^{Rox.}Gray:

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

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

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

Please pass on our congratulations to Sheboygan County for this significant action. If you or the communities have any questions, please contact Rebecca Leitschuh at (312) 408-4421.

Sincerely,

Christine Stack

Christine Stack, Director
Mitigation Division



STATE OF WISCONSIN
DEPARTMENT OF MILITARY AFFAIRS
DIVISION OF EMERGENCY MANAGEMENT

Brian M. Satula
Administrator

Scott Walker
Governor

June 10, 2014

Steve Steinhardt, Director
Sheboygan County Emergency Management
525 N. 6th Street
Sheboygan, WI 53081

Dear Steve:

It gives me great pleasure to inform you that the Sheboygan County *Hazard Mitigation Plan Update* has been approved by FEMA for the County. Please submit adoption resolutions for the other participating jurisdictions as you receive them. The plan complies with the requirements of the Disaster Mitigation Act of 2000. The County is now eligible to apply for funding through the Hazard Mitigation Grant Program, the Pre-Disaster Mitigation program, and the Flood Mitigation Assistance program through May 22, 2019, for projects identified in the Plan. Per the regulations, the Plan is required to be updated and resubmitted for approval every five years to remain eligible for mitigation funding.

With the FEMA Meets Requirements letter you received the Local Hazard Mitigation Plan Review Tool which includes recommended revisions for the five-year update.

Congratulations on the approval of the Plan! I also want to commend the County for its commitment to mitigation and reducing future disaster losses, and I look forward to working with you in the future.

If you have any questions, please call me at 608-242-3222 or Roxanne Gray at 608-242-3211.

Sincerely,

Katie Sommers, CFM
Disaster Response and Recovery Planner
Wisconsin Emergency Management

Enclosure

Cc: Steve Fenske, East Central Regional Emergency Management Director
Becky Powers, East Central Regional Office Operations Associate
Angela Pierce, Bay-Lake Regional Planning Commission

EXECUTIVE SUMMARY

2008 COUNTY PLAN UPDATE SUMMARY

The *Sheboygan County Hazard Mitigation Plan Update* (2013) is an update to the *Sheboygan County All Hazard Mitigation Plan* adopted in 2008. To aid in identifying the changes made to the initial 2008 plan, Table 0.1 below lists the plan updates and the changes made to the identified mitigation actions.

SIGNIFICANT HAZARD EVENTS OF NOTE

Since the adoption of the previous plan in 2008, the County has experienced a number of hazard events; however, one flooding event in June 2008 was significant enough to require a federal disaster declaration.

On June 9, 2008 Governor Jim Doyle declared a State of Emergency for 30 counties due to storm events that cause significant flooding throughout the state. Sheboygan was included in this 2008 federal disaster declaration.

PLAN ADDENDUM: CITY OF SHEBOYGAN HAZARD MITIGATION PLAN

This update to the *Sheboygan County Hazards Mitigation Plan* includes the City of Sheboygan, whereas the initial 2008 County plan did not. In 2008, the County plan was developed as a multi-jurisdictional plan without the inclusion of the City of Sheboygan since the city had a current stand alone plan at the time when the County plan was being developed. In March 2012, the City of Sheboygan adopted an updated hazard mitigation plan as an addendum to the county hazard mitigation plan with the intention of it being included as part of the County's multi-jurisdictional hazard mitigation plan going forward. The City of Sheboygan participated as a partner in the development of the County mitigation plan update, and adopted the County plan.

Table 0.1: Sheboygan County Hazard Mitigation Plan Update Summary

Plan Chapter		Overview of Plan Update
Chapter 1: Introduction		Updated recent disasters, planning process participants, and public review information. Several updates were made to the original steering committee to reflect changes in positions since the last plan was adopted. The steering committee updated the prioritized order of the hazards to be addressed and added coastal hazards, landslide, subsidence, and dam failure.
Chapter 2: Planning Area		Updated demographic profile information using the 2010 Census. Updated land use information.
Chapter 3: Risk Assessment		All hazard profiles, occurrences, and probabilities were updated. In addition, the risk assessments were updated. Hazard occurrences were updated to include all from 1995 to 2011 (original plan covered 1990 to 2005). Hazard probabilities were updated based on updated occurrences. Update critical facilities and changed some categories names. A risk assessment was added for coastal hazards, landslide, subsidence, and dam failure.
Chapter 4: Mitigation Strategy		Updated the mitigation action plan to account for completed projects, updated timetables, and new project additions.
Chapter 5: Plan Maintenance and Adoption Process		Updated plan maintenance process and plan update schedule.
Project		Changes
All Hazards		
All		Changed order of listed hazard to reflect updated prioritization.
Establish Mutual Aid Agreements for utility and communications systems including 9-1-1 that are similar to the Mutual Aid Box Alarm System (MABAS).		Completed for Fire Departments and Utilities.
Acquire and 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.		Updated Project Timetable from "2008" to "2013-2018"

Table 0.1: Sheboygan County Hazard Mitigation Plan Update Summary (cont'd)

Project		Changes
All Hazards (cont'd)		
Develop land use policies that guide development away from hazardous areas; reduce density in hazardous areas; and/or encourage greater development restrictions in hazardous areas.		A Countywide Comprehensive Plan was adopted on December 15, 2009 and included land use policies that guide development away from floodplains and steep slopes.
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.		No change ¹ .
Collect "building footprints" for all structures in the County to allow for analysis of where facilities/structures are located.		Updated Project Timetable from "2009-2010" to "2013-2018."
Work with County, State, and Federal agencies to maintain a consistent critical facility database.		No change ¹ .
Collect building height data for all structures in the County.		Updated Project Timetable from "2009-2010" to "2013-2018."
Create a hardened emergency communication facility.		Addition.
Flooding		
Continue to the issuance of early warnings through flood advisory bulletins.		Reworded Project to "Continue to issue early warnings through flood advisory bulletins" for clarity.
Dissemination of instructions to the public through the media.		No change ¹ .
Maintain information regarding, and coordination of, congregate care facilities.		No change ¹ .
Handle the evacuation of people and property in the case of a severe flood event.		No change ¹ .
Sand-bagging when necessary.		Reworded Project from "Sand-bagging when necessary" to "Provide sand and bags for volunteers to sandbag" for a more accurate description.
Protection of existing buildings and other structures.		Removed due to being too vague.
Review and update floodplain zoning ordinances as necessary.		No change ¹ .
Land use planning.		Completed with the adoption of comprehensive plans for the county and local jurisdictions.
Land use/comprehensive planning review and updates.		Addition.
Promotion of the sale of flood insurance.		Added "Lenders" to the list of Responsible Parties.
Study effects of current and future development in the approximate floodplain and any other areas that have not yet been studied.		Corrected estimated costs.

Table 0.1: Sheboygan County Hazard Mitigation Plan Update Summary (cont'd)

Project	Changes
Storms: Lightning Storms and Thunderstorms	
Protection of structures through use of fire resistant materials.	No change ¹ .
Continue to distribute awareness/educational materials to inform public of safety procedures to follow in a lightning storm.	No change ¹ .
Disseminate severe weather safety information to the public.	No change ¹ .
Use of early warning system through pagers and NOAA weather radios to first responders.	Added "Sheboygan City Police Department" to list of Responsible Parties.
Storms: Hail	
Harden utility infrastructure to make more resistant to hail (i.e., burying of telephone lines).	Moved to "All Natural Hazards" as it applies to more than just hail. Changed Priority from "high" to "low." Changed Project Timetable from "2010-2012" to "As requested within local communities."
Promote purchase of hail crop insurance.	Removed as not applicable.
Tornadoes and High Winds	
Assist National Weather Service in conducting tornado spotter training programs and organizing local tornado spotter networks.	No change ¹ .
Use of early warning system through pagers, NOAA weather radios, and sirens to first responders.	Added "Sheboygan City Police Department" to list of Responsible Parties.
Consider construction of safe shelters for mobile home parks, fairgrounds, shopping malls, or other vulnerable public areas.	Removed "fairgrounds and shopping malls" from Project to leave "mobile home parks and other vulnerable public areas." Changed Priority from "high" to "medium." Changed Project Timetable from "2011-2012" to "Ongoing."
Harden utility infrastructure to make more resistant to tornadoes and high winds (i.e., burying of telephone lines).	Moved to "All Natural Hazards" as it applies to more than just tornado and high winds.
Assist personnel in schools and businesses, public facility managers, and citizens in determining "best available" tornado safety areas.	No change ¹ .
Review and update Comprehensive Safety Plan for all county buildings.	No change ¹ .
Continue to hold tornado safety drill.	No change ¹ .
Continue to test and oversee outdoor warning system.	No change ¹ .

Table 0.1: Sheboygan County Hazard Mitigation Plan Update Summary (cont'd)

Project	Changes
Tornadoes and High Winds (cont'd)	
Anchor mobile homes and exterior attachments (such as carports and porches).	Change Project Timetable from "2010" to "Ongoing." Updated Estimated Cost from "~\$25.00/mobile home" to "\$35.00-\$50.00/mobile home."
Educate public to secure loose items (such as yard and patio furniture) during tornado or high wind events.	Change Responsible Party from "Sheboygan County Emergency Management" to "National Weather Service."
Extreme Temperature (Cold and Heat)	
Organize outreach to vulnerable populations during periods of extreme temperature, including the establishment and promotion of accessible heating or cooling centers in the community.	No change ¹ .
Continue to provide safety information to the public during periods of extreme temperature.	Change Responsible Party from "American Red Cross" to "County Health Department."
Storms: Winter	
Ensure that plow and sanding equipment is operational and available.	No change ¹ .
Utilization of the media to disseminate emergency information.	Removed "all participating jurisdictions" from Responsible Parties.
Provide educational materials to the public regarding safety during winter storm events.	No change ¹ .
Fog	
Dissemination of fog advisories.	No change ¹ .
Addition of a fog warning sign along State Highway 43 in the Cedar Grove area.	Completed.
Upkeep existing signage in areas of high fog event incidence.	No change ¹ .
Wildland Fires	
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.	No change ¹ .
Develop local ordinances to require burn permits and restriction of campfires and outdoor burning.	Changed Project Timetable from "2009-2012" to "Ongoing."
Encourage citizens to install and maintain smoke detectors and fire extinguishers on each floor of their homes or other buildings.	No change ¹ .
Schedule regular training and exercise sessions for response personnel.	No change ¹ .

Table 0.1: Sheboygan County Hazard Mitigation Plan Update Summary (cont'd)

Project	Changes
Drought	
Identification of areas with potential ground water level problems and inspection of shallow wells in those areas for adequate depth and construction.	Removed as no longer a priority.
Development of water usage regulations during periods of drought by local communities.	No change ¹ .
Encourage citizens to take water-saving measures during periods of drought where regulations are not in place.	No change ¹ .
Coastal Hazards	
Map high hazard areas for coastal erosion/landslides.	New addition.
Landslides	
Map high hazard areas for coastal erosion/landslides.	New addition.
Subsidence	
Provide management information to residents as needed.	New addition.
Dam Failure Flooding	
Review and update evacuation procedures for persons located in affected area as needed.	Dam Failure Flooding are covered under the Flooding hazard.
Hazardous Materials Incidents	
Support Local Emergency Planning Committee.	No change ¹ .
Continue to review and update County-Wide Hazardous Materials Response Plan.	No change ¹ .
Support County-Wide Hazardous Materials Response Team, including additional training and acquisition of necessary equipment.	Changed Estimated Costs from "Covered by grants through 2010 (\$10,000 per year)" to "Covered by grants and state contract (\$25,000 per year)".
Develop facility off-site plans for known/identified planning facilities.	No change ¹ .
Follow infrastructure provided by the Emergency Planning and Community Right-to-Know Act to plan for chemical emergencies.	Removed as Project context is unclear.
Improve road design, routing, and traffic control at problem roadways to reduce risk of transportation-related accidents.	No change ¹ .
Consider training, planning, and preparedness for mass-casualty events involving all modes of transportation.	Removed as not applicable.
Improve interoperability with private businesses.	Removed as not applicable.

Table 0.1: Sheboygan County Hazard Mitigation Plan Update Summary (cont'd)

Project		Changes
Communicable and Livestock Diseases		
Continue to review and update the Sheboygan County medical and mass casualty plan as needed.		No change ¹ .
Continue to review and update the Sheboygan County Emergency Medical Services Plan as needed.		Changed Project Timetable from "As needed" to "Annually."
Continue to plan and coordinate periodic disaster exercises.		No change ¹ .
Encourage immunization against communicable diseases.		No change ¹ .
Maintain public and livestock health systems with sufficient disease monitoring and surveillance as well as public awareness campaigns that emphasize the causes, symptoms, and protective actions for disease outbreaks or other potential public health emergencies.		Removed "and livestock" from Project and created a new addition in order to address livestock separately. Removed "DATCP" from Responsible Parties.
Maintain livestock health systems with sufficient disease monitoring and surveillance as well as public awareness campaigns that emphasize the causes, symptoms, and protective actions for disease outbreaks or other potential public health emergencies.		New addition.
Water Supply Contamination		
Identify pathways of contamination to groundwater (e.g.: by soil type, fractures in bedrock, etc.) to ensure protection and increase public awareness.		Removed "County Emergency Management" from Responsible Parties and added "Wisconsin Department of Natural Resources"
Replace or repair equipment or accessories at municipal water supply systems if in poor condition or if inadequate, and monitor components periodically if they are in average condition (e.g., electrical pumps, auxiliary generators, and valves).		No change ¹ .
Increase public awareness on water contamination and safety issues.		Changed Priority from "high" to "medium." Changed Project Timetable from "TBD" to "Ongoing." Changed Estimated Cost from "TBD" to "Costs to be determined based on specific needs of project area." Added "Local Public Water Utilities" and "Wisconsin Department of Natural Resources" to Responsible Parties.
Violence (Civil Disturbances, Workplace and School Violence, and Jail Disturbances)		
Assist in the development of bomb threat policies and procedures by each school, hospital, business, and management building located in Sheboygan County.		No change ¹ .
Provide law enforcement agencies with training, staffing, and resources.		No change ¹ .

1. Due to financial or political support, a number of mitigation actions have had no changes from the 2008 plan and appear again in this plan update.

CHAPTER 1 - INTRODUCTION

PURPOSE OF THE PLAN

The primary focus of the *Sheboygan County Hazard Mitigation Plan Update* is to reevaluate 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 mitigation planning requirements.

Completion of this plan will assist County emergency management personnel in identifying areas of risk, assess the magnitude of the risk, and develop strategies for reducing this risk. Through the process of developing this plan, the County addressed issues related to the protection of lives and property from natural 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 will also maintain Sheboygan County's eligibility to apply for future FEMA disaster relief and mitigation project funds, enabling the County to implement some of the recommended mitigation strategies.

Disaster Mitigation Act of 2000

The development and update of the *Sheboygan 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 attempts to stem the losses from disasters, reduce future public and private expenditures, and speed up response and recovery from disasters. The Act (Public Law 106-390) was amended by the Robert T. Stafford Relief and Emergency Assistance Act. The following is a summary of the parts of the Disaster Mitigation Act of 2000 that pertain to local governments and tribal organizations:

- The Act establishes a new requirement for local governments and tribal organizations to prepare a hazard mitigation plan in order to be eligible for funding from FEMA through the Pre-Disaster Mitigation Assistance Program and the Hazard Mitigation Grant Program.
- The Act establishes a requirement that natural hazards need to be addressed in the risk assessment/vulnerability analysis part of a hazard mitigation plan. Man-made/technological hazards are encouraged, but not required, to be addressed.
- The Act authorizes up to seven percent of Hazard Mitigation Grant Program funds available to a state after a federal disaster to be used for development of state, local and tribal organization hazard mitigation plans.
- The Act established November 1, 2004, as the date by which local governments and tribal organizations are to prepare and adopt their respective plans in order to be eligible for the FEMA Hazard Mitigation Grant Program; this deadline was November 1, 2003, for the Pre-Disaster Mitigation Program.
- If a plan is not prepared by November 1, 2004, and a major disaster is declared, in order for a local government or tribal organization to be eligible to receive funding through the Hazard Mitigation Grant Program, they must agree to prepare a hazard mitigation plan within one year.

- In addition, by not having a current, FEMA-approved, and adopted hazard mitigation plan, local and tribal governments cannot utilize funding through the Pre-Disaster Mitigation Grant Program.

Funding to Update the County Hazard Mitigation Plan

In December 2011, Sheboygan County received a planning grant to develop an update to the hazard mitigation plan in the amount of \$35,623 through the Pre-Disaster Mitigation (PDM) program. Through the grant, FEMA provided 75 percent of the funds (\$26,715), Wisconsin Emergency Management provided 12.5 percent (\$4,454), while the remaining 12.5 percent (\$4,454) was required to be the local match.

Sheboygan County entered into a contract (#11016-08) with the Bay-Lake Regional Planning Commission to prepare the update to the hazard mitigation plan. Development of the plan began in March 2012.

Five Parts of this All Hazards Mitigation Plan

The *Sheboygan County Hazard Mitigation Plan Update* was divided into five chapters in order to address FEMA's local mitigation plan requirements. The five chapters are as follows:

- Chapter 1 – Introduction (Planning Process);
- Chapter 2 – Planning Area;
- Chapter 3 – Risk Assessment;
- Chapter 4 – Mitigation Strategy; and
- Chapter 5 – Plan Maintenance and Adoption Process.

PLANNING PROCESS

Development of the *Sheboygan County Hazard Mitigation Plan Update* was based on the planning requirements and guidance provided by the Federal Emergency Management Agency and the Wisconsin Department of Military Affairs, Wisconsin Emergency Management. Following these requirements and guidance, the plan meets the requirements of the Disaster Mitigation Act of 2000. Since the Wisconsin Emergency Management guidance for All Hazards Mitigation Plans recommended that planning areas “be consistent with a community’s comprehensive planning boundary,” the planning area for this *Sheboygan County Hazard Mitigation Plan Update* includes all of Sheboygan County. The plan includes: the cities of Plymouth, Sheboygan, and Sheboygan Falls; the villages of Adell, Cascade, Cedar Grove, Elkhart Lake, Glenbeulah, Howards Grove, Kohler, Oostburg, Random Lake, and Waldo; and the towns of Greenbush, Herman, Holland, Lima, Lyndon, Mitchell, Mosel, Plymouth, Rhine, Russell, Scott, Sheboygan, Sheboygan Falls, Sherman, and Wilson.

The development of the plan update was guided by a steering committee comprised of county and local officials, emergency management personnel, and organizations, over an 18-month timeframe beginning in March 2012. Professional planning support was provided by the Bay-Lake Regional Planning Commission. Public review and input was encouraged through an Open House to present the plan goals, mitigation actions plan, and mapped hazard areas.

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

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

Phase II: Reassessing risks

Phase III: Updating the mitigation action plan

Phase IV: Reviewing the policies and procedures for plan implementation

Phase V: Documenting the planning process and plan adoption

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

Phase II was comprised of a meeting with the steering committee to reassess natural hazards and potential risks to the County.

Phase III involved updating the mitigation action plan to address identified risks including removing completed task and adding new mitigation methods to address risks.

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

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

The maps in the *Planning Area* and *Risk Assessment* chapters of the plan were developed using the Bay-Lake Regional Planning Commission's Geographic Information System (GIS), allowing greater manipulation and analysis from the use of a consistent base map. Maps included in this plan are for general planning purposes only, and are not for legal or formal survey purposes.

Steering Committee

Sheboygan County Emergency Management reconvened the Hazard Mitigation Plan steering committee that was developed in 2006 for the initial plan. The steering committee members are shown in Table 1.1. Several updates were made to the original steering committee to reflect changes in positions since the last plan was adopted.

The steering committee reviewed and analyzed each section of the plan during five meetings that were held to update the plan: March 21, 2012; April 18, 2012; May 23, 2012; August 12, 2012; and November 29, 2012. Additional plan review and update exercises occurred through e-mail occurred outside of these meetings. Copies of the minutes/meeting notes (which list participants) are included in Appendix A.

The steering committee identified the following natural hazard to be addressed in this plan update. The natural hazards are listed by order of priority.

1. Tornadoes/High Winds;
2. Winter Storms (includes heavy snow storms, ice storms and blizzards);
3. Lightning Storms and Thunderstorms (including hail storms);
4. Flooding (including flash, riverine, lake, stormwater, and dam failure flooding);
5. Extreme Heat;
6. Fog;
7. Extreme Cold;

8. Drought;
9. Wildland Fires;
10. Coastal Hazards;
11. Subsidence; and
12. Landslide.

The steering committee identified the following man-made hazards to be addressed in this plan update. The man-made hazards are listed by order of priority.

1. HAZMAT (fixed facility, railway, roadway, waterway, pipeline, and aircraft) combined as a single hazard;
2. Water supply contamination;
3. Communicable diseases; and
4. Violence (combines civil disturbances, workplace violence, and school violence).

Table 1.1: Sheboygan County Hazard Mitigation Plan Update Steering Committee

First Name	Last Name	Organization
Brault	Aaron	Sheboygan County Planning
Dave	Albright	Sheboygan Area School District
Betsy	Alles	Sheboygan County Chamber of Commerce
Dave	Biebel	City of Sheboygan Public Works
Bill	Blashka	Town of Sheboygan Public Works
Chuck	Butler	City of Sheboygan Fire Department
Robert	Downs	US Coast Guard
Darryl	Emrath	US Coast Guard
David	Gartman	Town of Wilson
Brian	Goelzer	Plymouth Ambulance
Laura	Goetz-Gumm	Alliant Energy
Maj Alan	Hellstrom	Salvation Army
Dale	Hippensteel	Sheboygan County Public Health
Roxanne	Kahan	Certified Emergency Management Professional
Mark	Landgraf	Elkhart Lake EMS Unit
Mark	Leibham	Sheboygan County Highway
John	MacKinnon	Plymouth Utilities
Lt. Daryl	Mangeri	Salvation Army
Eustacio	Medina	Hispanic Service Club
John	Miller	Charter Communications
Richard	Miller	Aurora Sheboygan Memorial Medical Center
Bruce	Neerhof	Village of Kohler Public Works
Ron	Nicolaus	Plymouth Fire Department
Nathan	Nissen	Kohler Company
Chad	Pelishek	City of Sheboygan Planning and Development
Angela	Pierce	Bay-Lake Regional Planning Commission
Jessica	Potter	Village of Elkhart Lake
Steve	Riffel	Sheboygan Falls Police Department
William	Rutten	Village of Kohler Police Department
Greg	Schnell	Sheboygan County Highway
James	Schwinn	Town of Sheboygan
Dr. Joseph	Sheehan	Sheboygan School District
Steve	Smith	St. Nicholas Hospital
Steven	Steinhardt	Emergency Management Director, Sheboygan County
Ted	Vallis	Wisconsin Public Service
Mark	Veldman	Sargento Foods, Inc.
Travis	Waack	American Red Cross
Bob	Wallace	City of Sheboygan Police Department
Chasong	Yang	Hmong Mutual Assistance Association of Sheboygan

Source: Sheboygan County Emergency Management, 2012.

Participation by Incorporated Jurisdictions in Sheboygan County

Incorporated jurisdictions in Sheboygan County were encouraged to participate in the plan development process to ensure that the plan was as comprehensive as possible. Those incorporated jurisdictions involved in the planning process offered assistance in developing a county-wide critical facilities database as well as the risk assessment and mitigation strategies portions of the plan. By participating in the plan development process, incorporated communities are eligible to adopt the plan by resolution, thereby qualifying the community for funding through the FEMA Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation (PDM) Grant Program, and the Flood Mitigation Assistance (FMA) Program.

Through local review exercises or through participation on the Steering Committee, representatives from the cities of Plymouth, Sheboygan, and Sheboygan Falls; and the villages of Adell, Cascade, Cedar Grove, Elkhart Lake, Glenbeulah, Howards Grove, Kohler, Oostburg, Random Lake, and Waldo provided review and input throughout the planning process.

The plan goals, hazards addressed, the mitigation action plan, and critical facilities were reviewed by the local municipalities and feedback was provided. See Appendix D for additional information on multi-jurisdictional cooperation including the letter sent out with review materials, a list of community representatives, and dates of signatures.

Public Review Process

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

Copies of the draft plan were made available at the Mead Public Library from January 30, 2013 through February 28, 2013. No comments or questions concerning the plan were received.

An open house on the draft plan was held at the Mead Public Library on January 30, 2013. Copies of the draft plan were available at this meeting, along with key display maps from the Planning Area and Risk Assessment chapters of the plan. A notice of the meeting was provided to *The Sheboygan Press*, *Plymouth Review*, and *Sheboygan Falls News*. A copy of the public notice and published articles can be found in Appendix C. No comments or questions concerning the plan or open house were received.

Sheboygan County Board of Supervisors Meeting

On January 21, 2014, the Sheboygan County Board of Supervisors considered and adopted the *Sheboygan County Hazard Mitigation Plan Update* at a public meeting. A copy of the resolution of adoption can be found at the front of this document.

Neighboring Jurisdictions

A draft of the Sheboygan County Hazard Mitigation Plan was sent to the emergency management directors in Washington, Ozaukee, Fond du Lac, Calumet, and Manitowoc counties for their review and comment on January 30, 2013. No comments on plan content were received.

Contact Information

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CHAPTER 2 - PLANNING AREA

GENERAL GEOGRAPHY

The planning area for the *Sheboygan County Hazard Mitigation Plan Update* is shown in Map 2.1. The planning area includes all of Sheboygan County.

Table 2.1 indicates the geographical size of Sheboygan County, along with the geographical size of all cities, villages, and towns within the county. Sheboygan County covers over 518 square miles of territory.

Table 2.1: Geographical Size by Jurisdiction (Sheboygan County)

Jurisdiction	Size of Jurisdiction (Square Miles)
<u>CITIES</u>	
City of Plymouth	5.2
City of Sheboygan	14.5
City of Sheboygan Falls	5.4
<u>VILLAGES</u>	
Village of Adell	0.6
Village of Cascade	0.8
Village of Cedar Grove	2.2
Village of Elkhart Lake	1.3
Village of Glenbeulah	0.7
Village of Howards Grove	2.2
Village of Kohler	5.5
Village of Oostburg	2.0
Village of Random Lake	1.8
Village of Waldo	1.0
<u>TOWNS</u>	
Town of Greenbush	47.4
Town of Herman	34.0
Town of Holland	40.8
Town of Lima	35.8
Town of Lyndon	34.2
Town of Mitchell	36.1
Town of Mosel	21.1
Town of Plymouth	30.6
Town of Rhine	34.7
Town of Russell	24.1
Town of Scott	36.6
Town of Sheboygan	10.7
Town of Sheboygan Falls	31.4
Town of Sherman	34.1
Town of Wilson	23.0
TOTAL	517.8

Source: Sheboygan County Planning, April 2012.

DEMOGRAPHIC AND ECONOMIC PROFILE

Population

Table 2.2 examines the population of jurisdictions in Sheboygan County between 2000 and 2010 and indicates that 19 of the 28 cities, villages, and towns in Sheboygan County experienced a population gain from 2000 to 2010. Population decreases were experienced in the City of Sheboygan, two villages (Adell and Elkhart Lake) and six towns (Greenbush, Holland, Mosel, Rhine, Russell, and Sherman) from 2000 to 2010.

The likely reason for the significant population decrease in the Town of Greenbush, coupled with the significant population increase in the Town of Mitchell is due to the location of the Kettle Moraine Correctional Institute on the border between the two towns and the institutionalized population being counted by the U.S. Census in one town of the other from one census decade to the next.

Table 2.2: Population Change by Jurisdiction (Sheboygan County), 2000 and 2010

Jurisdiction	2000 Census	2010 Census	Percent Change 2000 - 2010
<u>CITIES</u>			
City of Plymouth	7,781	8,445	8.5%
City of Sheboygan	50,792	49,288	-3.0%
City of Sheboygan Falls	6,772	7,775	14.8%
<u>VILLAGES</u>			
Village of Adell	517	516	-0.2%
Village of Cascade	681	709	4.1%
Village of Cedar Grove	1,887	2,113	12.0%
Village of Elkhart Lake	1,021	967	-5.3%
Village of Glenbeulah	378	463	22.5%
Village of Howards Grove	2,792	3,188	14.2%
Village of Kohler	1,926	2,120	10.1%
Village of Oostburg	2,660	2,887	8.5%
Village of Random Lake	1,551	1,594	2.8%
Village of Waldo	450	503	11.8%
<u>TOWNS</u>			
Town of Greenbush	2,619	1,534	-41.4%
Town of Herman	2,044	2,151	5.2%
Town of Holland	2,360	2,239	-5.1%
Town of Lima	2,948	2,982	1.2%
Town of Lyndon	1,463	1,542	5.4%
Town of Mitchell	1,286	2,335	81.6%
Town of Mosel	839	790	-5.8%
Town of Plymouth	3,115	3,195	2.6%
Town of Rhine	2,244	2,134	-4.9%
Town of Russell	399	377	-5.5%
Town of Scott	1,804	1,836	1.8%
Town of Sheboygan	5,874	7,271	23.8%
Town of Sheboygan Falls	1,706	1,718	0.7%
Town of Sherman	1,520	1,505	-1.0%
Town of Wilson	3,227	3,330	3.2%
County Total	112,656	115,507	2.5%

Source: U.S. Bureau of the Census, 2000 and 2010; Wisconsin Department of Administration, 2011; and Bay-Lake Regional Planning Commission, 2012.

The following jurisdictions had the largest (greater than ten percent) increases in population between 2000 and 2010:

1. Town of Mitchell (81.6% increase);
2. Town of Sheboygan (23.8% increase);
3. Village of Glenbeulah (22.5% increase);
4. City of Sheboygan Falls (14.8% increase);
5. Village of Howards Grove (14.2% increase);
6. Village of Cedar Grove (12.0% increase);
7. Village of Waldo (11.8% increase); and
8. Village of Kohler (10.1% increase).

Of the municipalities that experienced population gains from 2000 to 2010, only three towns (Lima, Scott, and Sheboygan Falls) experienced gains less than that of the county average of 2.5 percent.

Households

Table 2.3 indicates households and housing units by jurisdiction (city, village, or town) within Sheboygan County in 2000 and in 2010. Only the City of Sheboygan and the Town of Mosel saw a decrease in the number of households (2.3 percent and 0.6 percent, respectively) from 2000 to 2010; all other local jurisdictions gained households and housing units in the past decade. Overall, Sheboygan County had a 6.5 percent increase in households from 2000 to 2010. The following jurisdictions had the largest (greater than ten percent) increases in households between 2000 and 2010:

1. Town of Sheboygan (39.6% increase);
2. Village of Glenbeulah (26.8% increase);
3. City of Sheboygan Falls (26.8% increase);
4. Village of Howards Grove (23.6% increase);
5. Village of Cedar Grove (20.5% increase);
6. Village of Waldo (16.6% increase);
7. City of Plymouth (13.7% increase);
8. Village of Oostburg (11.3% increase); and
9. Town of Mitchell (10.7% increase).

It should be noted that the number of persons per household in Sheboygan County decreased from 2.59 to 2.49 from 2000 to 2010. This is part of a trend which has been observed in the area since the mid 1990s, and is a trend which is expected to continue for several years to come.

Table 2.3: Household and Housing Unit Data by Jurisdiction (Sheboygan County)

Jurisdiction	Households		Housing Units	
	2000	2010	2000	2010
<u>CITIES</u>				
City of Plymouth	3,262	3,710	3,395	4,039
City of Sheboygan	20,779	20,308	21,762	22,339
City of Sheboygan Falls	2,745	3,480	2,826	3,681
<u>VILLAGES</u>				
Village of Adell	207	210	216	224
Village of Cascade	259	274	274	291
Village of Cedar Grove	699	842	724	881
Village of Elkhart Lake	436	457	599	706
Village of Glenbeulah	153	194	160	204
Village of Howards Grove	1,007	1,245	1,022	1,276
Village of Kohler	737	784	792	871
Village of Oostburg	980	1,091	996	1,154
Village of Random Lake	613	659	656	720
Village of Waldo	169	197	174	209
<u>TOWNS</u>				
Town of Greenbush	526	568	551	594
Town of Herman	574	611	592	646
Town of Holland	828	856	1,019	1,117
Town of Lima	1,008	1,089	1,029	1,153
Town of Lyndon	545	589	629	692
Town of Mitchell	419	464	437	489
Town of Mosel	310	308	323	328
Town of Plymouth	1,092	1,152	1,178	1,229
Town of Rhine	829	871	961	1,065
Town of Russell	140	149	149	156
Town of Scott	658	697	700	749
Town of Sheboygan	2,148	2,999	2,245	3,175
Town of Sheboygan Falls	657	706	675	736
Town of Sherman	533	566	544	597
Town of Wilson	1,235	1,314	1,323	1,445
County Total	43,548	46,390	45,951	50,766
2000 Persons per Household	2.59	2000 Housing Vacancy Rate	5.2%	
2010 Persons per Household	2.49	2010 Housing Vacancy Rate	8.6%	

Source: U.S. Bureau of the Census, 2000 and 2010; and Bay-Lake Regional Planning Commission, 2012.

Housing Units

Table 2.3 indicates that no municipalities saw decreases in the number of housing units from 2000 to 2010. Overall, Sheboygan County had a 10.5 percent increase in housing units in the past decade. The following jurisdictions had the largest (greater than ten percent) increases in housing units between 2000 and 2010:

1. Town of Sheboygan (41.4% increase);
2. City of Sheboygan Falls (30.3% increase);
3. Village of Glenbeulah (27.5% increase);

4. Village of Howards Grove (24.9% increase);
5. Village of Cedar Grove (21.7% increase);
6. Village of Waldo (20.1% increase);
7. City of Plymouth (19.0% increase);
8. Village of Elkhart Lake (17.9% increase);
9. Village of Oostburg (15.9% increase);
10. Town of Lima (12.1% increase);
11. Town of Mitchell (11.9% increase);
12. Town of Rhine (10.8% increase);
13. Town of Lyndon (10.0% increase); and
14. Village of Kohler (10.0% increase).

It should be noted that the housing vacancy rate for Sheboygan County (percentage of housing units not occupied by households) was 5.2 percent in 2000, and increased to 8.6 percent in 2010.

Employment

Table 2.4 indicates employment in Sheboygan County (industry by occupation) in 2000 and in 2010.

Table 2.4: Employment (Sheboygan County), 2000 and 2010

Employment Category	Number Employed in 2000	Percent Employed in 2000	Number Employed in 2010	Percent Employed in 2010	Percent Change 2000 - 2010
Agriculture, forestry, fishing and hunting, and mining	1,158	1.9%	1,035	1.8%	-10.6%
Construction	3,290	5.5%	3,529	6.1%	7.3%
Manufacturing	22,760	38.3%	19,205	33.3%	-15.6%
Wholesale trade	1,479	2.5%	846	1.5%	-42.8%
Retail trade	5,717	9.6%	5,813	10.1%	1.7%
Transportation and warehousing, and utilities	1,690	2.8%	1,901	3.3%	12.5%
Information	810	1.4%	372	0.6%	-54.1%
Finance and insurance, and real estate and rental and leasing	2,490	4.2%	3,160	5.5%	26.9%
Professional, scientific, and management, and administrative and waste management services	2,879	4.8%	3,264	5.7%	13.4%
Educational services, and health care and social assistance	10,228	17.2%	10,584	18.4%	3.5%
Arts, entertainment, and recreation, and accommodation and food services	3,844	6.5%	5,034	8.7%	31.0%
Other services, except public administration	1,918	3.2%	2,112	3.7%	10.1%
Public administration	1,191	2.0%	820	1.4%	-31.2%
TOTAL	59,454	100.0%	57,675	100.0%	-3.0%

Source: U.S. Bureau of the Census, 2000 and 2010; and Bay-Lake Regional Planning Commission, 2012.

The most important employment sectors in 2000 and 2010 were *Manufacturing; Educational services, and health care and social assistance; and Retail trade*.

There were significant decreases in employment (more than 30 percent) from 2000 to 2010 in *Information; Wholesale trade; and Public administration* sectors. There were increases in employment (more than 25 percent) from 2000 to 2010 in *Arts, entertainment, and recreation, and accommodation and food services; and Finance and insurance, and real estate, and rental*

and leasing. The county saw an overall employment decrease of 3.0 percent (across all sectors) between 2000 and 2010.

GENERAL DEVELOPMENT PATTERN

Land Use and Development Pattern

A detailed field inventory of land uses in Sheboygan County was conducted in 2002 by the Bay-Lake Regional Planning Commission. An update was made to the City of Sheboygan urbanized area in 2009. This land use information was then compiled into generalized land use categories, and is presented in Table 2.5 and in Map 2.2. As a result of this inventory, several conclusions and issues have been identified; these conclusions and issues are documented in the narrative which follows.

Table 2.5: Land Use (Sheboygan County)

Land Use Type	Total Acres	Percentage of Total Land	Percentage of Developed
DEVELOPED			
Residential	14,992.8	4.5%	39.9%
Single Family	13,325.9	4.0%	35.5%
Two Family	667.6	0.2%	1.8%
Multi-Family	491.8	0.1%	1.3%
Group Quarters	4.1	0.0%	0.0%
Mobile Homes	214.8	0.1%	0.6%
Land Under Development	288.5	0.1%	0.8%
Commercial	2,064.9	0.6%	5.5%
Industrial	3,111.7	0.9%	8.3%
Transportation	5,915.7	1.8%	15.8%
Communications/Utilities	522.2	0.2%	1.4%
Institutional/Governmental	1,891.2	0.6%	5.0%
Recreational	5,286.4	1.6%	14.1%
Agricultural Structures	3,744.8	1.1%	10.0%
Total Developed Acres	37,529.7	11.3%	100.0%
UNDEVELOPED			
Agricultural Lands	181,765.3	54.9%	61.9%
Woodlands	72,333.1	21.8%	24.6%
Natural Areas	35,319.2	10.7%	12.0%
Wetlands/Water Features	4,201.0	1.3%	1.4%
Vacant Lands	109.0	0.0%	0.0%
Total Undeveloped Acres	293,727.6	88.7%	100.0%
Total Land Area (Acres)	331,257.4	100.0%	NA

Source: Bay-Lake Regional Planning Commission, 2002 and 2009.

Sheboygan County Land Mass

Sheboygan County comprises over 331,250 total acres of land. Of this, over 37,500 acres, or over 11 percent of the land mass of the county, is developed, leaving over 293,700 acres (nearly 89 percent) of undeveloped lands in the county. These undeveloped lands consist largely of agricultural lands, woodlands/grasslands, and other natural areas.

Residential Lands

Residential land in Sheboygan County accounts for nearly 15,000 acres, or nearly 5 percent of the land within the county, the largest developed land category in the county. The majority of the residential land in the county (over 13,300 acres) is single family residential. Other residential land uses in Sheboygan County include two-family residential (668 acres), multi-family residential (492 acres), group quarters (4.1 acres), and mobile homes (215 acres). In addition, there were nearly 289 acres of land under development in Sheboygan County.

Commercial Lands

Commercial land in Sheboygan County accounts for nearly 2,100 acres, or 0.6 percent of the land within the county. Although commercial land is scattered throughout the county, significant areas of commercial development in the county include central business districts in cities and some villages, as well as commercial strip development along certain urban corridors. Increasingly, interchanges with Interstate 43 and with State Highway 23 are also emerging as nodes of commercial development.

Industrial Lands

Industrial land in Sheboygan County accounts for over 3,100 acres, or nearly one percent of the land within the county. Although the majority of the industrial land is dedicated to manufacturing, significant proportions of the industrial land involve extractive (mining and quarry) uses as well as open and enclosed storage uses. Traditionally, industrial lands are generally situated along rail corridors and along rivers. More recently, industrial parks have emerged in many cities and villages as well as some towns across Sheboygan County.

Transportation Lands

Transportation land uses in Sheboygan County account for over 5,900 acres, or nearly 2.0 percent of the land within the county, the second largest developed land category (after residential) in the county. Streets and roads constitute the majority of this land use, but off-street parking and rail and air related uses are significant transportation land uses in Sheboygan County as well.

Communications/Utilities Lands

Communications/Utilities land uses in Sheboygan County account for over 520 acres, or 0.2 percent of the land within the county. Some of the more significant communications/utilities related land uses (in terms of land mass occupied) in Sheboygan County include cellular towers, landfills, recycling plants (and other non-landfill disposal facilities), sewage treatment plants, electric power plants and substations, and water utility facilities. Other key uses which fall under this category include natural gas terminals, local telephone services, radio stations and towers, and incinerators.

Institutional/Governmental Lands

Institutional/governmental uses are defined as land for public and private facilities for education, health, or assembly, for cemeteries and/or related facilities, and for all government facilities used for administration or safety, except public utilities and areas of outdoor recreation. This category accounts for nearly 1,900 acres of land, or just 0.6 percent of the land within Sheboygan County. Examples of institutional or governmental facilities in Sheboygan County include city, village and town halls; post offices; hospitals and clinics; municipal garages; fire stations; law enforcement facilities (including prisons and jails), all educational facilities, churches and

cemeteries. Some of the more significant institutional/governmental land uses in Sheboygan County (in terms of land mass) include prisons and jails, schools, fraternal organizations and clubhouses, churches and cemeteries.

Recreational Lands

Land used in this category is for outdoor sports and general recreation, for camping or picnicking facilities, for nature exhibits or for the preservation of historic or cultural resources. This category accounts for nearly 5,300 acres of land, or 1.6 percent of the land within Sheboygan County, the third largest developed land category in the county. Some of the more significant recreational land uses in Sheboygan County (in terms of land mass) include campgrounds, parks, playfields/athletic fields, golf courses and driving ranges, and race tracks.

Agricultural Structures

Agricultural structures include farm buildings and accessories (barns, silos and sheds used for agricultural purposes), as well as lands devoted to animal husbandry and fish hatcheries/aquaculture. This category accounts for over 3,700 acres of land, or 1.1 percent of the land within Sheboygan County. The vast majority of land in this category involves farm buildings and accessories.

Agricultural Lands

Nearly 55 percent (nearly 181,800 acres) of the total land area of Sheboygan County involves agricultural lands such as croplands and pastures.

Woodlands

Nearly 22 percent (over 72,300 acres) of the total land area of Sheboygan County involves woodlands. While much of this land involves the Kettle Moraine State Forest, woodlands are scattered throughout Sheboygan County.

Natural Areas

Nearly 11 percent (over 35,300 acres) of the total land area of Sheboygan County involves other natural areas, which are scattered throughout the county. Uses in this category include lands primarily in a natural state for their natural functions, including non-wooded wetlands, grasslands, beaches, designated scientific sites or areas, and other publicly-owned natural areas.

Wetlands/Water Features

Wetlands/Water features include wetlands, lakes, reservoirs and ponds, rivers and streams, and other impoundments. Over one percent (4,200 acres) of the total land area of Sheboygan County involves water features. Significant water features in Sheboygan County (excluding Lake Michigan) include the Black, Mullet, Milwaukee (North Branch), Onion, Pigeon and Sheboygan Rivers, numerous creeks, lakes and ponds, several unnamed tributaries, and the Sheboygan Marsh.

Vacant Lands

Only a small portion (0.03 percent, or 109 acres) of the total land area of Sheboygan County involves vacant lands.

General Development Trends

The following development trends have been observed in Sheboygan County. It is expected that these trends will influence the county's future growth and preservation. All local jurisdictions in

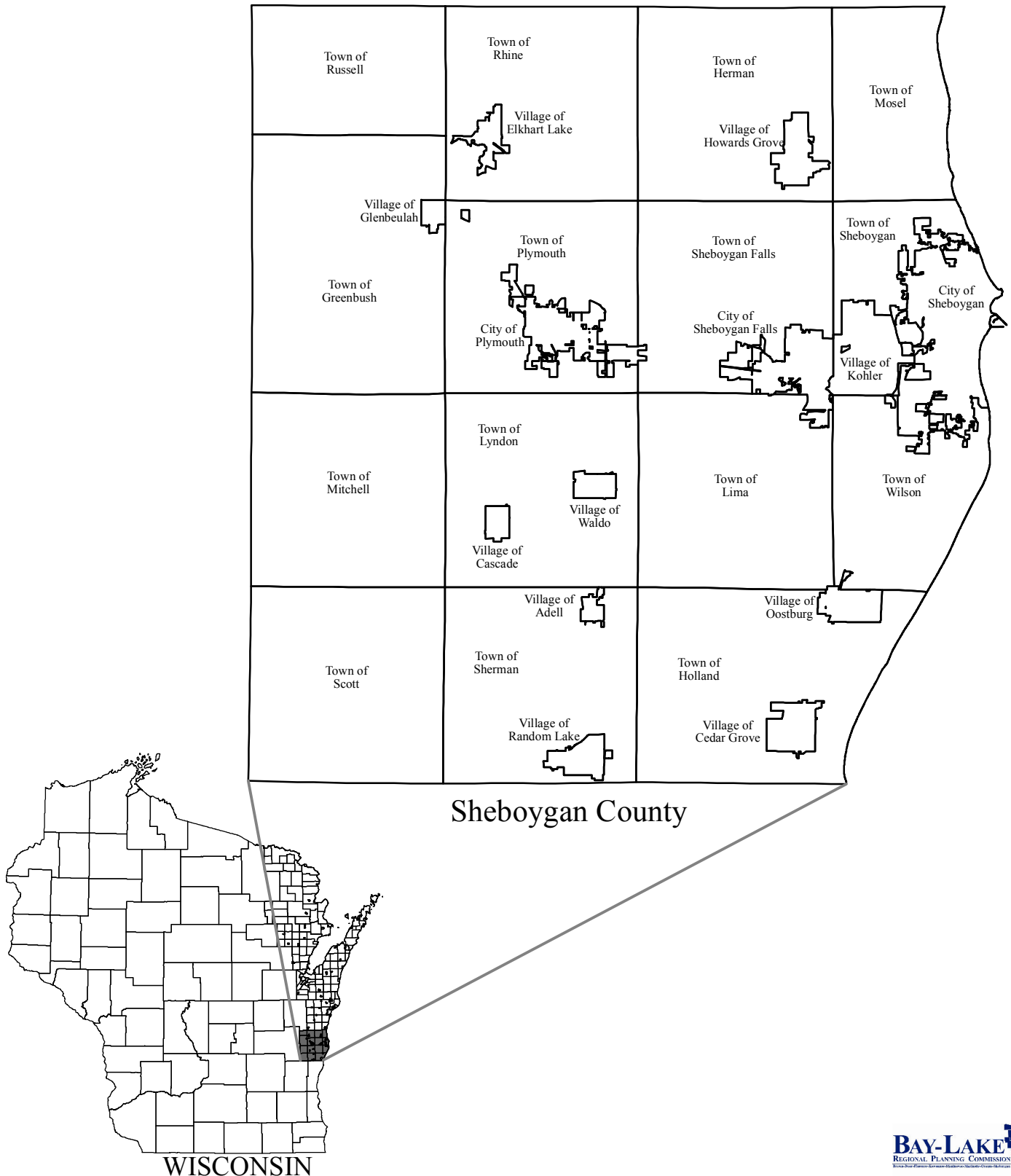
the county will need to address these trends over the next several years in their planning processes. Observed general development trends are as follows:

- The demand for larger lot sizes will increase and the ratio of persons per household will decrease, resulting in greater acreage needs to accommodate future residential growth.
- Existing areas of higher density development will continue as new areas outside established neighborhoods in cities and villages develop at lower densities.
- Commercial uses will likely continue to increase along main transportation corridors (Interstate and state highways and interchanges with Interstate Highway 43 and with State Highway 23) to capitalize on good visibility and ease of access.
- Sheboygan County will experience an increased demand for services as the median age of the population continues to increase.

Location Map

Sheboygan County Hazard Mitigation Planning Area

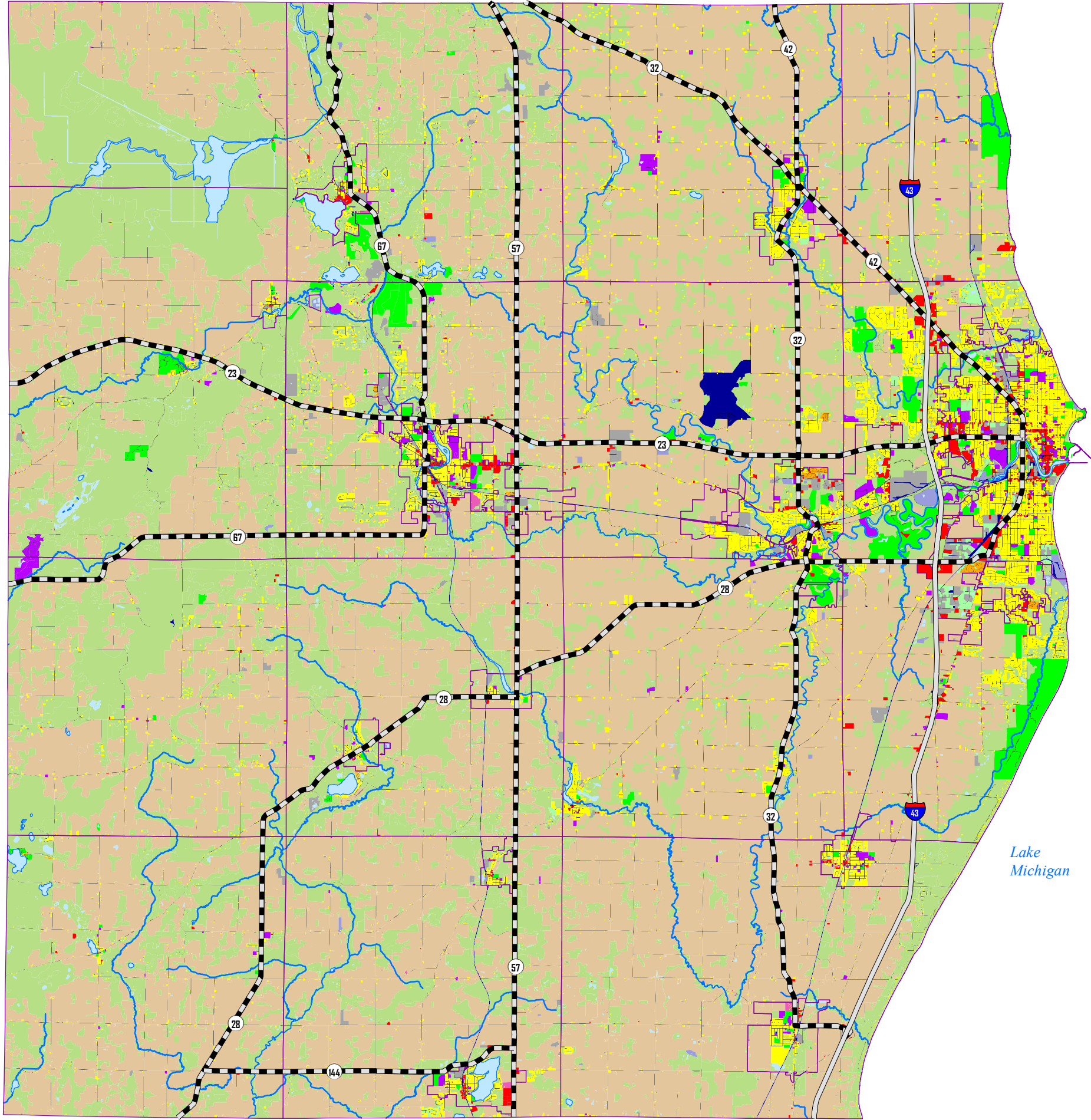
Sheboygan County, WI



Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
 Source: Sheboygan County, Bay-Lake Regional Planning Commission, 2013.

This map is neither a legally recorded map nor a survey, and is not intended to be used as either. It is a compilation of records, information and data to be used for reference purposes only. The Bay-Lake RPC are not responsible for any inaccuracies herein contained.

Sheboygan County Land Use
Sheboygan County Hazard
Mitigation Planning Area
Sheboygan County, Wisconsin

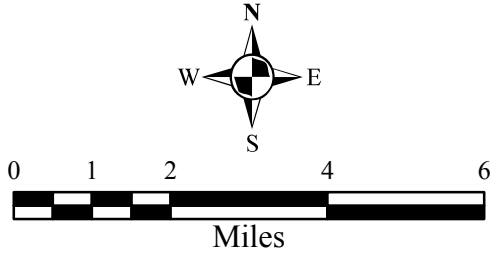


- Residential
- Mobile Homes
- Commercial
- Industrial
- Transportation
- Communications/Utilities
- Governmental/Institutional
- Parks and Recreation
- Open Space/Fallow Fields
- Agricultural
- Woodlands/Natural Areas

Note: See Table 2.5 in Chapter 2 for land use totals.

Base Map Features

- MCD Boundaries
- Interstate Highway
- State Highway
- Local Road
- Surface Water Features



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Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
Source: WDNR, 2009; Sheboygan County,
Bay-Lake Regional Planning Commission, 2013.



CHAPTER 3 - RISK ASSESSMENT

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

HAZARD IDENTIFICATION

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

Hazard Risk Assessment Survey

Members of the plan steering committee completed an update to the *Risk Assessment Matrix* worksheet in April 2012. The worksheet with the averaged scores from the steering committee members is included in Appendix B.

Each plan steering committee member was asked to assign a risk rating (1 = low, 2 = moderate, and 3 = high) to the various risk assessment criteria for each identified hazard. The total number of points for each of the hazards was then calculated. An averaged summary of the risk rating for each hazard that was rated is as follows. Table 3.1 shows the ranking for natural hazards, while Table 3.2 shows the ranking for man-made hazards.

Table 3.1: Natural Hazards Risk Assessment Ranking

Rank	Natural Hazards	Score
1	Tornadoes/High Winds	23
2	Winter Storms (includes heavy snow storms, ice storms and blizzards)	21
3	Lightning Storms and Thunderstorms (including hail storms)	19
3	Flooding (including flash, riverine, lake, stormwater, and dam failure flooding)	19
4	Extreme Heat	14
4	Fog	14
5	Extreme Cold	13
6	Drought	11
6	Wildland Fires	11
7	Coastal Hazards	10
7	Subsidence	10
8	Landslide	9

Source: Sheboygan County Hazard Mitigation Plan Steering Committee, 2012.

Table 3.2: Man-made Hazards Risk Assessment Ranking

Rank	Man-made Hazards	Score
1	Hazardous Materials	13
2	Water Supply Contamination	11
3	Communicable Diseases	11
4	Violence	11

Source: Sheboygan County Hazard Mitigation Plan Steering Committee, 2012.

Natural Hazard Events Historical Summary

Statistics on past hazard occurrences assisted the steering committee in ranking the natural hazards to be evaluated in the plan. The National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) publishes National Weather Service (NWS) data describing past weather events and the resulting deaths, injuries, and damages associated with each of these events. Event occurrence information is available at a local, county, or regional level – depending on the area covered by the hazard event. Historical hazard events were evaluated from January 1, 1995 through September 30, 2011. The query for that time period resulted in 345 events recorded (Table 3.3).

The data from the NCDC shows that of the 345 events, the most prominent natural hazard events in Sheboygan County (for the last 17 years) has been Tornadoes/High Winds (99 events), Winter Storms (70 events), fog (62 events), and lightning storms/thunderstorms (43 events). Other events occurring less than 40 times in the county in the last 17 years include extreme heat (22 events), flooding (20 events), extreme cold (18 events), and drought (11 events). Some of these hazard events may not have been specific to the Sheboygan County, as they may have been recorded for a larger regional area, or statewide. Additionally, some of the common hazard events, such as lightning storms/thunderstorms, may only get recorded by the NCDC if they are extreme events that cause property damage, injury, or death.

A number of deaths (101 deaths) and injuries (103 injuries) were reported in Sheboygan County from hazard events in the last 17 years. 82 deaths and 43 injuries were the result of extreme heat. However, nearly 60 people died statewide (54% of the County's total deaths) as the result of an extreme heat event in July 1995 that affected the whole state, including Sheboygan County. Additionally, 40 people suffered extreme heat related injuries during a July 2006 extreme heat event that affected much of southeastern Wisconsin, including Sheboygan County (34% of the Counties total injuries). Eight deaths and 52 injuries were the result of extreme cold. The most costly event in terms of property damage since 1995 has been flooding, which has resulted in nearly \$309 million in property damage (including crop damages).

Table 3.3: Natural Hazard Occurrences Data (Sheboygan County), 1995-2011

Natural Hazard	# of Events¹	Avg #/Year	Risk²	Deaths	Injuries	Property Damage^{3,4}
Tornadoes/High Winds	99	6	high	4	15	\$14,572,000
Winter Storms	70	4	high	0	6	\$21,000
Fog	62	4	high	11	39	\$0
Lightning/Thunderstorms	43	3	high	0	2	\$381,000
Extreme Heat	22	1	medium	82	43	\$0
Flooding	20	1	medium	0	0	\$308,905,000
Extreme Cold	18	1	medium	8	52	\$23,000
Drought	11	1	low	0	0	\$4,450,000
Wildland Fires	11	-	low	-	-	-
Coastal Hazards	No Record	-	medium ⁵	-	-	-
Landslide and Subsidence	No Record	-	low	-	-	-
Total Events	345	--		105	157	\$328,352,000

1. January 1, 1995 to September 30, 2011 (16.75 years)

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

3. Includes Crop Damages.

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

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

Source: NOAA/NCDC, 2012; and Bay-Lake Regional Planning Commission, 2012.

Natural Hazards Prioritization

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

1. Tornadoes/High Winds (includes funnel cloud, waterspout, thunderstorm winds, strong winds, and high winds)
2. Winter Storms (includes winter weather, snow, heavy snow, ice storms, freezing drizzle, freezing rain, blowing snow, glaze, and blizzards)
3. Lightning Storms and Thunderstorms (includes hail and heavy rain)
4. Flooding (includes flash, riverine, lake, stormwater, dam failure flooding, and urban/small stream flooding)
5. Extreme Heat (includes record warmth and excessive heat)
6. Fog
7. Extreme Cold (includes cold, extreme wind chill, and wind chill)
8. Drought (includes dry)
9. Wildland Fires
10. Coastal Hazards

11. Subsidence

12. Landslide

Other 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 Sheboygan County. These natural hazards are excluded from the full assessment, but are briefly discussed here to meet the comprehensive requirements for developing a natural hazards mitigation plan under Federal law.

Earthquakes

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

The nearest active earthquake fault outside of Wisconsin is the New Madrid Fault, which stretches from northeast Arkansas to southern Illinois. Sheboygan County falls within the second 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, Sheboygan County falls within a 1%g to 2%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, Sheboygan County is considered unlikely to be substantially affected by earthquakes in the long-term future. The earthquake threat to Sheboygan County is considered very low.

Man-made Hazard Events Historical Summary

Statistics on past man-made hazard occurrences were acquired from the National Response Center, Oil and Chemical Spill Data Public Reports for hazardous materials data; and from the Wisconsin Department of Health and Family Services for communicable diseases. Historical hazard occurrences were evaluated for the last ten years from January 1, 2000 through December 31, 2009. During that time period, 484 man-made hazard events were recorded (Table 3.4).

The man-made hazard events data shows that of the 484 events, the most prominent man-made hazard in Sheboygan County (for the last 10 years) has been communicable diseases (380 occurrences). Approximately 38 communicable disease occurrences are reported each year. Additionally, two deaths and 29 injuries have been reported for 104 hazard materials incidents (approximately 10 per year).

Table 3.4: Man-made Hazard Occurrences Data (Sheboygan County), 2000-2009

Man-made Hazard	# of Events¹	Avg #/Year	Deaths	Injuries
Hazardous Materials	104	10	2	29
Water Supply Contamination	NA	NA	0	0
Communicable Diseases	380	38	NA	NA
Violence	NA	NA	0	0
Total Events	484	--	2	29

1. January 1, 2000 to December 31, 2009 (10 years)

Source: National Response Center, Oil and Chemical Spill Data Public Reports, 2000 – 2009; and Wisconsin Department of Health and Family Services, 2012.

Man-made Hazards Prioritization

The plan steering committee identified the following ranked man-made hazards to be the focus of the plan assessment and mitigation action strategies. Ranking the potential risks associated with each man-made hazard helped the steering committee prioritize the mitigation action strategies that are addressed later in the plan. The following man-made hazards are listed in order of their prioritized ranking:

1. Hazardous Materials
2. Water Supply Contamination
3. Communicable Diseases
4. Violence

Other Man-made Hazards Determined Not to Pose a Significant Risk

The following man-made hazards were determined to have a minimal chance of occurring or pose minimal risk to the safety of residents or property in Sheboygan County. These man-made hazards are excluded from the full assessment, but are briefly discussed here.

Transportation (Including Railway, Roadway, Waterway, and Airway) Incident

Transportation incidents include accidental and intentional crashes or collisions involving any means of transportation. Serious transportation incidents generally involve large commercial vehicles. These incidents can be the result of a number of causes including human error, mechanical failure, poor weather conditions, hijacking, and sabotage.

Nuclear Power Plant Incident

A nuclear power plant incident can be defined as one that involves the uncontrolled release of potentially dangerous radioactive materials in to the environment from a commercial nuclear power plant. A portion of the State of Wisconsin's total energy is provided by two nuclear power plants (three reactors). Both plants are located within 50 miles of Sheboygan County. To date, no nuclear power plant incidents have occurred that have affected Sheboygan County.

RISK AND VULNERABILITY ASSESSMENT

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

planning area, and the potential risk to the population and property that could occur because of each of these natural hazards.

Critical Facilities

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

Critical facilities in the planning area have been identified and mapped, and are illustrated in Map 3.1. Table 3.5 lists the types of critical facilities in the planning area. There are 649 critical facilities in the County. However, 223 of the critical facilities are bridges.

Table 3.5: Critical Facilities by Type (Sheboygan County)

Type	Total
Bridge	223
School	63
Communications	60
Water	57
Electric	36
Government	32
Fire/Rescue	29
Sewage Treatment	28
Natural Gas	21
Dam	20
Hospital/Clinic	18
LP Tanks	16
Public Works	16
Mobile Home Park	13
Law Enforcement	10
Military Installation	3
Disaster Response	2
Airport	1
Chemical	1
Total	649

Source: Bay-Lake Regional Planning Commission, 2012.

HAZARD PROFILES: NATURAL HAZARDS

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

Natural hazard probabilities are represented as high, medium, and low. High probability hazards are defined as hazards that occur an average of more than twice per year; medium probability

hazards are those that occur an average of more than once per year, but less than twice per year; and low probability hazards occur less frequently than once per year.

Tornadoes and High Winds

Description of Hazard






A tornado is a relatively short-lived storm comprised of an intense rotating column of air, extending from a thunderstorm cloud system. It is nearly always visible as a funnel, although its lower end does not necessarily touch the ground. Average winds in a tornado, although never accurately measured, are between 100 and 200 miles per hour, but some tornadoes may have winds in excess of 300 miles per hour.

A tornado path averages four miles, but may reach up to 300 miles in length. Widths average 300 to 400 yards, but severe tornadoes have cut swaths a mile or more in width, or have formed groups of two or three funnels traveling together. On average, tornadoes move between 25 and 45 miles per hour, but speeds over land of up to 70 miles per hour have been recorded.

Tornadoes rarely last more than a couple of minutes in a single location or more than 15 to 20 minutes in a ten mile area, but their short periods of existence do not limit their devastation of an area.

Table 3.6 shows the Fujita Scale, which is recognized as the acceptable tornado magnitude measurement rating.

Table 3.6: Tornado Magnitude Measurement, Fujita Scale

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

Source: NOAA National Weather Service, 2011.

The destructive power of the tornado results primarily from its high 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.

On the basis of 40 years of tornado history and more than 100 years of hurricane history, the United States has been divided into four zones that geographically reflect the number and strength of extreme wind storms. The zone which includes most of the southern two-thirds of Wisconsin (known as Zone IV) has experienced the most and the strongest tornado activity that has affected the entire U.S., with wind speeds of up to 250 miles per hour being recorded at some point. This zone includes the entire county for this Natural Hazards Mitigation Plan.

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornadoes (commonly known as "tornado alley"), which extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the southern and western portions of

Wisconsin have a higher frequency of tornadoes; however, every county in Wisconsin has had tornadoes and is considered to be susceptible to a tornado disaster. Tornadoes have occurred in Wisconsin in every month except February.

Wisconsin's tornado season runs from the beginning of April through September. The most severe tornadoes statewide typically occur during the months of April, May, and June. Many tornadoes strike in late afternoon or early evening. However, tornadoes have occurred during other times of the day. Personal property damage, deaths, and injuries have and will continue to occur due to tornado events in Wisconsin.

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Sheboygan County has experienced 99 significant tornado/high wind events in the last 17 years from January 1, 1995 to September 30, 2011.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Sheboygan County experiences approximately six significant tornado/high wind event each year. The majority of these events are high wind events.

Probability of Hazard Occurring in the Future

Based on the hazard frequency, Sheboygan County is considered to have a **high** probability of experiencing a tornado event in any given year.

Areas at Greatest Risk

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

Impacts from Hazard

Death and Injury

Four deaths and 15 injuries have been reported from tornado/high wind events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data. The reported deaths or injuries may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Structures at Risk

Although tornadoes strike at random, making all buildings vulnerable, there are three types of structures that are most likely to suffer damage. These structure types include mobile homes, homes on crawlspaces (because they are more susceptible to lift), and buildings with large spans (such as airplane hangars, gymnasiums, warehouses, and factories).

Structures within the direct path of a tornado vortex are often reduced to rubble. However, structures adjacent to the path of the tornado are often severely damaged by high winds flowing into the tornado vortex (these winds are known as inflow winds). It is here, adjacent to the tornado's path, where the building type and construction techniques are critical to the structure's survival.

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

Critical Facilities

Hospitals can see increases in patient load following tornadoes. Schools can sustain damage, and if they do not sustain damage, they often function as temporary shelters in the aftermath of tornadoes. Police and fire departments often see an increased workload during and after tornadoes.

Any critical facility in the planning area is capable of being hit. However, schools are a main concern for two reasons: (1) they have large numbers of people present, either during school or as a storm shelter; and (2) they have large span areas, such as gyms and theaters.

Economic Impacts

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

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

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

Property Damage

Reported property damage (including crop damages) from significant tornado/high wind events for Sheboygan County has totaled approximately \$14,572,000 over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data.

Estimate of Potential Dollar Losses

Since mobile homes are especially vulnerable to tornadoes, a “worst case scenario” for this hazard would involve the total destruction of all mobile homes in the county. In such a “worst case scenario,” the total destruction of all buildings and facilities in the 13 mobile home parks in the County would result in estimated dollar losses of approximately \$7.7 million plus with an additional estimated value of building contents of \$3.8 million (calculated as 50 percent of the building value), for total estimate of potential dollar losses of \$11.5 million.

Winter Storms

Description of Hazard

Winter storms can vary in size and strength, and can include heavy snow storms, blizzards, freezing rain, sleet, ice storms and blowing and drifting snow conditions. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such

as frostbite and death. Winter storms can occur as a single event or they can occur in combination, which can make an event more severe. For example, a moderate snowfall could create severe conditions if it were followed by a freezing rain and subsequent extremely cold temperatures. The aftermath of a winter storm can impact a community or region for weeks, and even months.

A variety of weather phenomena and conditions can occur during winter storms. For purposes of classification, the following are National Weather Service approved descriptions of winter storm elements:

Heavy Snowfall – the accumulation of six or more inches of snow in a 12-hour period, or eight or more inches in a 24-hour period.

Winter Storm – the occurrence of heavy snowfall accompanied by significant blowing snow, low wind chills, sleet or freezing rain.

Blizzard – the occurrence of sustained wind speeds in excess of 35 miles per hour accompanied by heavy snowfall or large amounts of blowing or drifting snow.

Ice Storm – an occurrence where rain falls from warmer upper layers of the atmosphere to the colder ground, freezing upon contact with the ground and exposed objects near the ground.

Freezing drizzle/freezing rain – the effect of drizzle or rain freezing upon impact on objects that have a temperature of 32 degrees Fahrenheit or below.

Sleet – solid grains or pellets of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. This ice does not cling to surfaces.

Wind chill – an apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin.

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 only five times per season. True blizzards are rare in Wisconsin, and are more likely to occur in northwestern Wisconsin than in southern portions of the state, even though heavy snowfalls are more frequent in southeastern Wisconsin. However, blizzard-like conditions often exist during heavy snow storms when gusty winds cause the severe blowing and drifting of snow.

Both ice and sleet storms can occur at any time throughout the winter season from October into April. Early- and late-season ice and sleet storms are generally restricted to northern Wisconsin. Otherwise, the majority of these storms occur in southern Wisconsin. In a typical winter season, there are three to five freezing rain events, and a major ice storm occurs on a frequency of about once every other year. If a half inch of rain freezes on trees and utility wires, extensive damage can occur, especially if accompanied by high winds that compound the effects of the added weight of the ice. There are also between three and five instances of glazing (less than one quarter inch of ice) throughout Wisconsin during a normal winter.

Winter storms present a serious threat to the health and safety of affected citizens, and can result in significant damage to property. This can occur when the heavy snow or accumulated ice causes structural collapse of buildings, downs power lines, severely affects electrical power distribution, or cuts off people from assistance or services.

Winter storms in Wisconsin are caused by Canadian and Arctic cold fronts that push snow and ice deep into the interior of the United States.

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Sheboygan County has experienced 70 significant winter storm events in the last 17 years from January 1, 1995 to September 30, 2011. Many of these hazard events may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Hazard Frequency

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

Probability of Hazards Occurring in the Future

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

Winter storms tend to be a regional phenomenon in that they affect much of southeastern Wisconsin on nearly all of the occasions in which they affect Sheboygan County.

Areas at Greatest Risk

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

Impacts from Hazard

Death and Injury

No deaths, but six injuries have been reported from significant winter storm events for Sheboygan County over the last 17 years from January 1, 1995 to September 31, 2011 according to NCDC data. The reported injuries may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

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 Sheboygan than it has been in larger cities.

Economic Impacts

Loss of power often means that businesses and manufacturing concerns must close down. Loss of access due to snow or ice covered roads can have a similar effect, especially when trucks cannot travel on major thoroughfares to make “just in time” deliveries to business and industry in the planning area. The effects are particularly difficult when the storm is widespread.

Property Damage

Reported property damage (including crop damages) from significant winter storm events for Sheboygan County has totaled approximately \$21,000 over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data.

Estimate of Potential Dollar Losses

An estimate of potential dollar losses cannot be calculated for winter storm events, since no vulnerable structures have been identified. Based on previous damages reported by the NCDC, property damages from winter storms has been minimal over the past 17 years.

Lightning Storms and Thunderstorms

Description of Hazard

The lightning storms and thunderstorms include hail, thunderstorm winds, strong winds, and high winds. Thunderstorms 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. The biggest threats from thunderstorms are lightning, high winds, and hail.

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.

Thunderstorms 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.

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, having developed sufficient weight, they 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.

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), Sheboygan County has experienced 43 significant lightning storm/thunderstorm events in the last 17 years from January 1, 1995 to September 30, 2011. Some of these reported occurrences may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Sheboygan County experiences approximately three significant lightning storm/thunderstorm events per year.

Probability of Hazard Occurring in the Future

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

Areas at Greatest Risk

Based on review of the historic patterns of lightning storms and thunderstorms, there are no specific areas that are a higher than average risk. The events are relatively uniform throughout Sheboygan County. However, mobile home residents are often most vulnerable to death, injury, and property damage from lightning and thunderstorms. Therefore, mobile home parks in the planning area are the areas of greatest risk from this hazard.

Impacts from Hazard

Death and Injury

No deaths, but two injuries from lightning storms/thunderstorms have been reported for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011, according to NCDC data. The reported injuries may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Structures at Risk

Mobile homes are at a high risk to damage from thunderstorms. Garages are also frequently damaged by thunderstorms. Wind and water damage can result when windows are broken by flying debris or hail. Lightning can cause direct damage to structures (especially those without lightning protection systems), and can cause fires that damage trees and structures. In addition, hail can inflict severe damage to roofs, windows, and siding, depending on hailstone size and winds. Downed trees and limbs cause frequent damage to structures during lightning storms and thunderstorms.

Critical Facilities

Hospitals can see increases in patient load with sufficiently severe lightning storms and thunderstorms. Schools can sustain damage, and if they do not sustain damage, they often function as temporary shelters in the aftermath of severe thunderstorms. Police and fire departments often see an increased workload during and after lightning storms and/or severe thunderstorms. Emergency operations can be disrupted as lightning storms and thunderstorms affect radio communications, as antennas are a prime target for lightning.

Economic Impacts

Reported property damage (including crop damage) from significant lightning storms and thunderstorms for Sheboygan County has totaled approximately \$381,000 over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data. Some of this reported property damage may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Estimate of Potential Dollar Losses

Since mobile homes are especially vulnerable to tornadoes, a “worst case scenario” for this hazard would involve the total destruction of all mobile homes in the county. In such a “worst case scenario,” the total destruction of all buildings and facilities in the 13 mobile home parks in the County would result in estimated dollar losses of approximately \$7.7 million plus with an additional estimated value of building contents of \$3.8 million (calculated as 50 percent of the building value), for total estimate of potential dollar losses of \$11.5 million.

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.

Dam failure flooding occurs when flood waters exceed the capacity of the dam and the water overtops the dam or during structural failure of the dam. 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.

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Sheboygan County has experienced 20 significant flooding events (including hail, thunderstorm winds, strong winds, and high winds) in the last 17 years from January 1, 1995 to September 30, 2011. Some of these reported occurrences may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Sheboygan County experiences approximately one significant flooding event each 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, Sheboygan County is considered to have a **medium** probability of sustaining a 100-year flood in any given year.

Areas at Greatest Risk

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

The areas of greatest risk from dam failure flooding are those areas within the hydraulic shadow of dam of large 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).

As identified by the WDNR, there are a total of 26 dams in Sheboygan County. Of these, nine are classified by the WDNR as large dams, meaning they have a structural height of over six feet and impound 50 acre-feet or more. The rest of the dams located in the county are regarded as small dams. The WDNR assigns hazard ratings to large dams within the state based on existing land use and land use controls (zoning) downstream of the dam. A high hazard rating indicates that a failure would likely result in loss of life. A significant hazard rating indicates that a failure could result in significant property damage. A low hazard rating is given when a failure would result in only minimal property damage and loss of life is unlikely. In Sheboygan County, there is one large dam that have a high hazard rating (Plymouth Millpond) and one large dam with a significant hazard rating (Waldo Millpond). Map 3.6 displays the small and large dams in the county.

Impacts from Hazard

Death and Injury

No death or injuries from flooding has been reported for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011, according to NCDC data.

Structures at Risk

Analysis of the data used to produce Map 3.4 indicates that structures on 3,376 parcels (covering over 22,244 acres) could potentially be impacted by the base flood in the planning area. Any parcel touching the boundaries of the 100-year floodplain was considered for this analysis. Therefore, if a structure exists on a parcel that was included, it is possible that it may not be located within the boundaries of the 100-year floodplain. The number of parcels containing buildings that could potentially be impacted by the base flood in each town also includes the incorporated cities and villages within the territory of the corresponding township and range for the town. Numerous additional parcels currently without structures have the potential for development and are located in the base floodplain.

A review of FEMA flood insurance claims from January 1, 1978 through February 2, 2012, indicates that there were 36 claims submitted for flood losses in Sheboygan County. Of those claims, 21 claims were paid during this period with a total value of nearly \$225,500, while 15 claims were closed without payment (FEMA National Flood Insurance Program, W2RC1040).

Repetitive Loss Properties

Repetitive loss structure is a term that is usually associated with the National Flood Insurance Program (NFIP) to describe 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. It should also be important to a community because residents' lives are disrupted and may be threatened by the continual flooding.

There is one repetitive loss property in Sheboygan County. This property is a non-residential property that has had two claims (in 1986 and 1987) for damages to contents for a total claim amount of \$10,177. There have been no claims for this property since 1987, and no mitigation has been undertaken.

Critical Facilities

Analysis of the GIS data used to produce Map 3.5, indicates that there are 184 critical facilities potentially located within 100-year floodplains in Sheboygan County. Table 3.7 lists the critical facility types of those facilities potentially within the 100-year floodplains. Of the 184 critical facilities potential in floodplains, 142 are bridges and 21 are dams.

Table 3.7: Critical Facility Types within the 100-Year Floodplains

Type	Total
Bridge	142
Dam	21
Sewage Treatment	6
Public Works	3
Water	2
Communications	2
Mobile Home Park	2
Natural Gas	2
LP Tanks	2
Electric	1
Fire/Rescue	1
Total	184

Source: Bay-Lake Regional Planning Commission; 2012.

Economic Impacts

Property Damage

Reported property damage from flooding in Sheboygan County has totaled \$308,905,000 over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data. Some of this reported property damage may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Value of Structures at Risk

The value of all 3,376 at-risk structures in the floodplains of the county is estimated at \$921,442,300. This information was obtained from Sheboygan County database on improved values of real property. The parcel map and the 100-year floodplains were merged to determine at-risk structures in the planning area.

Transportation Route Interruptions

Loss of road access is a major flood impact that affects all residents and businesses, not just those who own property in the floodplain. Sometimes, the loss is temporary, such as during a flood. However, on some occasions, the loss of transportation lasts well after the disaster. When roads, bridges, or railroads are washed out by a flood, it can be weeks or months before they are repaired and reusable. A key evacuation and safety concern is when roads and bridges go under water. Generally, the larger the road, the more likely it will not flood, but this is not always the case.

Analysis of the GIS data used to produce Map 3.3, indicates that there are 136 bridges that could potentially be underwater during a base flood. In addition to the sites shown on the map, there may be a number of additional bridges in areas that are not included in the mapped 100-year flood zones, such as areas located along small tributary streams.

Estimate of Potential Dollar Losses

The following is an estimate of potential dollar losses to vulnerable structures. “Vulnerable structures” are those structures located in the 100-year flood hazard area, as identified in Map 3.4. Since there is no reliable building height data for buildings in these flood hazard areas, a “worst case scenario” of total structural damage for buildings in all of the flood zones of the planning area was assumed in estimating potential dollar losses to vulnerable structures. Building height/elevation data should be collected in the future in order to better assess the risks of damage to structures because of the flood hazard.

It is estimated that over \$921,442,300 in losses would occur with the 100-year flood in zones projected to be impacted by the 100-year flood in a “worst case scenario” of total structural damage for buildings in all of the flood zones in the county.

This information was obtained from a Sheboygan County database on assessed values of real property. This only involves damage to structures themselves, and may not account for damage to personal property inside or adjacent to vulnerable structures.

In addition, there may be areas outside the 100-year flood zones that will flood during an event of that magnitude (or even of lesser magnitude); this planning process has no way of knowing the susceptibility of flooding outside of flood events that have been previously mapped by other governmental agencies.

Development in Areas Subject to Flooding

Sheboygan County regulates development within the floodplain through its comprehensive Floodplain Ordinance, which is Chapter 73 of the Sheboygan County Code of Ordinances. Sheboygan County also has a Shoreland Ordinance (Chapters 72, Sheboygan County Code of Ordinances). These ordinances can be useful tools in keeping inappropriate development out of many flood hazard zones in the planning area.

In addition to the county, some local jurisdictions have developed their own ordinances to deal with development in these areas. In 1992, the Village of Oostburg adopted a Shoreland-Wetland Zoning Ordinance (Ordinance 1-1992) under Chapter 6 of their Zoning Ordinances. Additionally, in 1998, under Chapter 10, the village adopted a Floodplain Zoning Ordinance (Ordinance 1-1998). As part of the Municipal Code of the Village, Elkhart Lake has also adopted a Shoreland-Wetland Code and Shoreland Regulations, both of which help to direct development in these sensitive areas.

Comprehensive planning is another means by which communities address development in areas subject to flooding. Various comprehensive plans produced for Sheboygan County and local communities in county have addressed regulation of development in floodplains, watersheds, and natural resource areas in various ways. Most of these plans addressed this in their goals, objectives, and policies; through the natural resources chapter (or equivalent) in the plan; and through the future plan design chapter of the plan. All communities (as well as the county) have a comprehensive plan that addresses regulation of development in floodplains, watersheds, and natural resource areas in some manner.

The Bay-Lake Regional Planning Commission, the regional planning entity for northeastern Wisconsin (which includes Sheboygan County), also has tools to keep development out of flood hazard zones in the planning area. The Commission develops sewer service area plans for the Sheboygan urbanized area which take into account preservation of natural features and minimization of future development in flood hazard areas near bodies of water. The Commission reviews proposals for development in the Sheboygan urbanized area for consistency with the sewer service area plan. The Commission also developed an environmental corridor definition and map of all of Sheboygan County, which is used to comment on development proposals.

NFIP Participation

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

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

- City of Sheboygan since June 1974
- City of Sheboygan Falls since November 1973
- City of Plymouth since November 1974
- Village of Cascade since May 1974
- Village of Cedar Grove since April 2009
- Village of Glenbulah since April 2009
- Village of Howards Grove since April 2009

- Village of Kohler since February 1974
- Village of Oostburg since June 1974
- Village of Random Lake since June 1974

Not Participating in NFIP

The Villages of Adell and Elkhart Lake are not participating in NFIP as of April 2013. Since there are no special flood hazard areas (SFHAs) within their municipal boundaries, neither was provided a floodplain map after they were mapped in 2009. Neither the Village of Adell nor the Village of Elkhart Lake has been asked to participate in the NFIP, and therefore, neither is participating.

NFIP Suspension

The Village of Waldo began participating in NFIP in December 1974, but was suspended in July 1987.

The National Flood Insurance Act of 1968 prohibits FEMA from providing flood insurance in a community unless the community adopts and enforces floodplain management regulations that meet or exceed minimum NFIP criteria. A community can be suspended from the NFIP for failure to adopt compliant floodplain management measures or if it repeals or amends previously compliant floodplain management measures. A community can also be suspended from the NFIP for failure to enforce its floodplain management regulations. New flood insurance coverage cannot be purchased and policies cannot be renewed in a suspended community.

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. The elderly, disabled, and other vulnerable populations are especially susceptible to extreme heat.

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Sheboygan County has experienced 22 significant extreme heat events in the last 17 years from January 1, 1995 to September 30, 2011. Many of these hazard events may not have been specific to Sheboygan County, and may have been recorded for a larger regional area or statewide.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Sheboygan County experiences approximately one significant extreme heat event each year.

Probability of Hazard Occurring in the Future

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

Extreme heat episodes tend to be a regional phenomenon in that they affect much of southeastern Wisconsin on nearly all of the occasions in which they affect the planning area.

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

82 deaths and 43 injuries have been reported from significant extreme heat events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data. The reported deaths and injuries were not specific to Sheboygan County, but were recorded for a larger regional area and statewide. Specifically, 57 of the deaths occurred during one statewide event that occurred on July 13, 1995 and impacted all of Wisconsin.

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 in a manner similar to what was experienced in the northeastern United States and in eastern Canada in the summer of 2003. 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. The water utility will incur the expenses involved with additional demand for water during extreme heat episodes, and these expenses will be passed on to area consumers.

One less tangible economic impact of extreme heat involves lower productivity from persons who must work outside or in less than ideal conditions. In addition, people will be less motivated to shop at local businesses and may defer non-essential activities until the heat episode is over, negatively impacting the local economy. Extreme heat can negatively impact agriculture in the surrounding area when combined with drought.

Property Damage

No property damages have been reported from extreme heat events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data.

Estimate of Potential Dollar Losses

An estimate of potential dollar losses cannot be calculated for extreme heat events, since no vulnerable structures have been identified. Based on previous damages reported by the NCDC, property damages from extreme heat has been minimal over the past 17 years.

Fog

Description of Hazard

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

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

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Sheboygan County has experienced 62 significant fog events in the last 17 years from January 1, 1995 to September 30, 2011. Many of these hazard events may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Sheboygan County experiences approximately four significant fog events each year.

Probability of Hazard Occurring in the Future

Based on the hazard frequency, Sheboygan County is considered to have a **high** probability of experiencing a significant 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. The likelihood of fog is somewhat higher along Lake Michigan, in area river valleys and in other low lying portions of the planning area under certain meteorological conditions, which increases this probability for certain portions of the planning area. Fog episodes often can be a regional phenomenon in that they affect much of the southeastern half of Wisconsin on many of the occasions in which they affect Sheboygan County.

Impacts from Hazard

Death and Injury

11 deaths and 39 injuries have been reported from significant fog events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011, according to NCDC data. However, all 11 deaths and 30 injuries occurred during one significant dense fog event on October 11, 2002. The reported deaths and injuries occurred during a severe traffic incident on Interstate 43 where it nears Lake Michigan just south of Cedar Grove, Wisconsin.

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. Fog events can also cost businesses in lost time involving late

workers and/or late shipments. If area school districts need to delay school during a fog event, there may be expenses involved with delayed busing and with paying staff for a full day while only having the benefit of a partial day of instruction. 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 property damages have been reported from fog events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011, according to NCDC data.

Estimate of Potential Dollar Losses

An estimate of potential dollar losses cannot be calculated for 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 17 years.

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), Sheboygan County has experienced 18 significant extreme cold events in the last 17 years from January 1, 1995 to September 30, 2011. Many of these hazard events may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Hazard Frequency

Based on previous hazard occurrences as reported by the NCDC, Sheboygan County experiences approximately one significant extreme cold event per year.

Probability of Hazard Occurring in the Future

Based on the hazard frequency, Sheboygan County is considered to have a **medium** probability of experiencing a significant 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

Eight deaths and 52 injuries have been reported from significant extreme cold events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data. The reported deaths and injuries may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

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 Wisconsin Public Service, the local natural gas energy utility serving the planning area. 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. The water utility 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 also 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

Reported property damage from extreme cold events in Sheboygan County has totaled \$23,000 over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data. Some of this reported property damage may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

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 17 years.

Drought

Description of Hazard

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

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

Previous Significant Hazard Occurrences

According to National Climatic Data Center (NCDC), Sheboygan County has experienced 11 significant drought events in the last 17 years from January 1, 1995 to September 30, 2011. Many of these hazard events may not have been specific to Sheboygan County, and may have been recorded for a larger regional area.

Hazard Frequency

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

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 southeastern Wisconsin on nearly all of the occasions in which it affects Sheboygan County. However, based strictly on the hazard frequency, Sheboygan County is considered to have a **medium** probability of experiencing a significant 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. Sheboygan County contains 181,765 acres of agricultural lands (based on land use data shown in Table 2.5).

Impacts from Hazard

Death and Injury

No deaths or injuries have been reported from significant drought events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011, 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.

There are few other direct impacts on critical facilities as a result of drought conditions. However, droughts can trigger other natural and man-made hazards, such as wildfires and post-drought flooding, which can have an impact on these facilities.

Economic Impacts

Wisconsin is most susceptible to agricultural drought. Even small droughts of limited duration can significantly reduce crop growth and yields, which adversely affects farm income. Substantial drought events can lead to complete crop decimation, resulting in total loss. During severe drought periods farmers are often forced to seek financial assistance from the government to supplement lost income.

Livestock can also be adversely affected by droughts. Lack of water can lead to animal deaths. In addition, as drought conditions are often accompanied by periods of prolonged sunshine and high temperatures, animals are at risk to overexposure and heatstroke. Death of livestock can also lead to substantial loss of income for farmers.

Drought can also affect local commercial and industrial businesses. During times of severe drought, limitations are often placed on water usage. These limitations could have a negative impact on businesses such as car washes and landscapers as they will likely be unable to provide services to their customers. It is also likely that areas depending on tourism will see fewer people traveling to their area in times of drought. Industries which utilize large amounts of water in processing materials may also be subject to these limitations, which could potentially reduce their production capabilities.

Property Damage

Reported property damage from significant drought for Sheboygan County has totaled approximately \$4,450,000 over the last 17 years from January 1, 1995 to September 30, 2011 according to NCDC data.

Estimate of Potential Dollar Losses

Agricultural croplands are most vulnerable to losses from drought events. A “worst case scenario” would involve the total destruction of all 181,765 acres of agricultural lands in the county (based on current land use data, shown in Table 2.5). The USDA conducts a Census of Agriculture every 5 years based on a sample of farms to estimate the market value of agricultural land and buildings. Based on the 2007 Census of Agriculture (Table 1: County Summary Highlights), the average value per acre of agricultural land in Sheboygan County was \$3,869.

Therefore, it can be estimated that if this “worst case scenario” were to occur, the total destruction of all agricultural land in Sheboygan County would cause a loss of \$703,248,785.

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 Sheboygan County since 1995.

Hazard Frequency

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

Probability of Hazard Occurring in the Future

According to the U.S. Forest Service Wildland Fire Assessment System, Sheboygan 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 Sheboygan 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 Sheboygan County (September 2008).

Overall, the probability of a naturally occurring wildland fire is **low** for the entire county. However, the probability that at least one wildland fire will occur in the county remains high as long as people continue to burn on their own property.

Areas at Greatest Risk

Sheboygan County contains approximately 72,333 acres of woodlands (based on current land use, shown in Table 2.5). 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.

The likelihood that any wildland fire in Sheboygan County would be catastrophic is low, as most susceptible areas lack enough acreage to allow for continuous burning. Areas that were identified as containing enough land to allow for catastrophic burning include the Sheboygan County Marshlands, portions of Kettle Moraine State Forest, and other publicly owned lands, which are scattered throughout the county.

Impacts from Hazard

Death and Injury

No data on deaths or injuries is available for significant wildland fire events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

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 Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

Estimate of Potential Dollar Losses

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

Coastal Hazards

Description of Hazard

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

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

Previous Significant Hazard Occurrences

There is no record of significant coastal hazards for Sheboygan County and sources for past coastal hazard occurrences could not be found. However, Sheboygan County has experienced a number of occurrences of erosion of coastal bluffs along Lake Michigan, particularly along County Highway LS in the northern part of the county.

Hazard Frequency

There is no record of significant coastal hazards for Sheboygan County in order to develop a hazard frequency.

Probability of Hazard Occurring in the Future

According to the *Resource Guide for Great Lakes Coastal Hazards in Wisconsin* website (<http://coastal.lc.wisc.edu/urpl999.htm>), Sheboygan County is at risk for coastal erosion and coastal flooding. Sheboygan County is identified as an area at “greatest risk” for coastal erosion and at “medium risk” for coastal flooding. Overall, the probability of coastal hazards is **medium** for the planning area.

Areas at Greatest Risk

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

Impacts from Hazard

Death and Injury

No data on deaths or injuries is available for significant coastal hazard events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

Structures at Risk

Homes and other structures located along Lake Michigan are at risk to damage from coastal hazards. This risk increases where structures are closer to the shoreline, especially over high bluffs. There are 387 improved privately-owned structures directly adjacent to Lake Michigan in Sheboygan County.

Critical Facilities

There are no critical facilities located along Lake Michigan at risk of damage from coastal hazards.

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.

Estimate of Potential Dollar Losses

A “worst case scenario” for potential dollar losses from coastal hazards in Sheboygan County would involve the total destruction of all private structures along Lake Michigan, which would cause a loss of \$148,789,200 in private damages. There are no assessed values available for public properties.

This information was obtained from the Sheboygan 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.

Landslides

Description of Hazard

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, groundwater flow, 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 Sheboygan County. The majority of the land within Sheboygan County does not involve steep slopes and does not pose a landslide risk. The landslide risks associated with Lake Michigan are addressed as coastal bluff erosion under the previous “Coastal Hazards” section of this chapter.

Previous Significant Hazard Occurrences

There is no record of significant landslides for Sheboygan County and sources for past landslide occurrences could not be found. However, Sheboygan County has experienced a number of occurrences of landslides due to coastal bluff erosion along Lake Michigan, particularly along County Highway LS in the northern part of the county. This risk is addressed as coastal bluff erosion under the previous “Coastal Hazards” section of this chapter.

Hazard Frequency

There is no record of significant landslides for Sheboygan County in order to develop a hazard frequency.

Probability of Hazard Occurring in the Future

There is no record of significant landslides for Sheboygan County in order to develop a hazard probability. Overall, the probability of landslides is **medium** for the planning area.

Areas at Greatest Risk

Portions of the county situated along Lake Michigan are at risk for landslides due to coastal bluff erosion.

Impacts from Hazard

Death and Injury

No data on deaths or injuries is available for significant landslide events for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

Structure at Risk

Homes and other structures located along Lake Michigan are at risk to damage from landslides due to coastal bluff erosion. This risk is addressed as coastal bluff erosion under the previous “Coastal Hazards” section of this chapter.

Critical Facilities

There are no critical facilities located along Lake Michigan at risk of damage from landslides.

Economic Impacts

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

Estimate of Potential Dollar Losses

Since landslides in Sheboygan County are the result of coastal bluff erosion along Lake Michigan, the estimate of potential dollar losses is addressed under the previous “Coastal Hazards” section of this chapter.

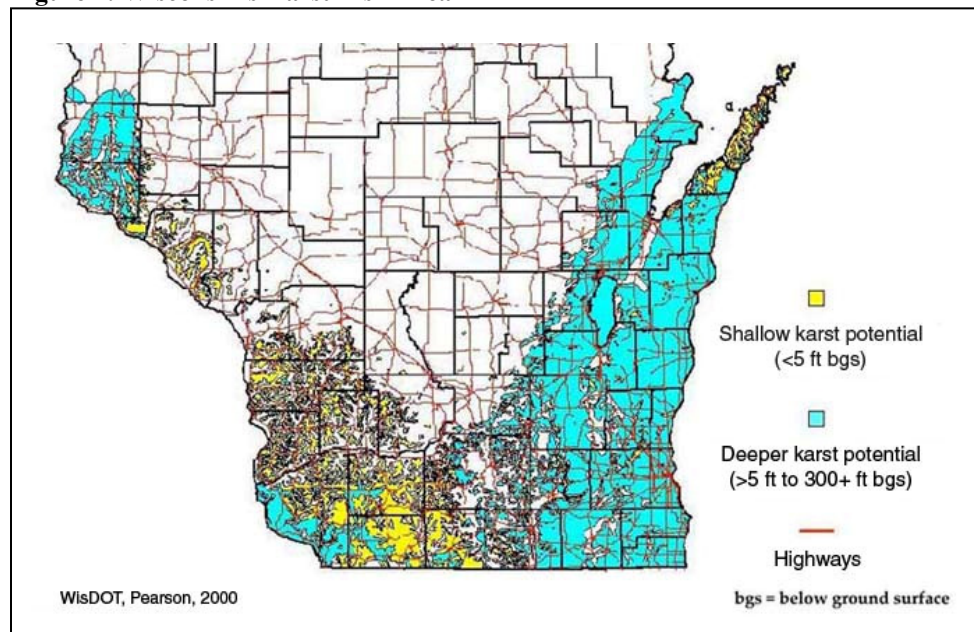
Subsidence

Description of Hazard

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

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

Figure 1: Wisconsin's Karst Risk Area



Previous Significant Hazard Occurrences

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

Hazard Frequency

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

Probability of Hazard Occurring in the Future

Although Sheboygan 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) reduces the risk of subsidence in the county. Overall, the probability of subsidence is **low** for the planning area.

Areas at Greatest Risk

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

Impacts from Hazard

Death and Injury

No data on deaths or injuries is available for significant subsidence occurrences for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

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.

HAZARD PROFILES: MAN-MADE HAZARDS

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

Man-made hazard probabilities are represented as high, medium, and low. High probability hazards are defined as hazards that occur an average of more than six times per year; medium probability hazards are those that occur an average of more than once per year, but less than six times per year, and low probability hazards are those in which occurrence data could not be found.

Hazardous Materials

Description of Hazard

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment or health of a community. They can be found in solid, liquid, or gas form and may be released from fixed or mobile containers. Hazardous materials come in the form of explosives, flammable and combustible substances, corrosives, poisons, and radioactive materials. These chemicals are used in industry, agriculture, medicine, research, and consumer goods throughout Sheboygan County. Under the Emergency Planning and Community Right to Know Act (EPCRA) there is no specific list of hazardous materials. However, an extremely hazardous substance is defined as one of 356 substances listed by the U.S. Environmental Protection Agency (EPA) in 40 CFR Part 355: Emergency Planning and Notification.

Incidents which result in the release of hazardous materials generally fall into one of two categories:

- A *Fixed-Facility Hazardous Materials Incident* is the occurrence of uncontrolled releases from a facility housed within the community. They range from flammable liquids stored or used to fuel vehicles through exotic substances to radioactive materials and biological agents. Some materials are particularly lethal even in small amounts, while others require strong concentrations with prolonged exposure periods to cause harm.
- A *Hazardous Materials Transportation Incident* is any occurrence resulting in uncontrolled release of materials during transport that can pose risk to health, safety, and property. Hazardous materials can be transported via ground along highways and railways, through the air, or by water using boats and pipelines. Transported products include hazardous materials moving from producers to users, moving between storage and use facilities, and hazardous waste moving from generators to treatment and disposal facilities.

A hazardous material spill or release can pose a risk to life, health, and property. An incident can force the evacuation of a few people, a section of a facility, or an entire neighborhood or community, resulting in significant economic impact and possible property damage. Spilled material can be costly to clean up and may render the area of the spill unusable for an extended period of time. Overall, the specific hazards created by a release are dependent on the hazardous characteristics of the material, the amount released, the location where the release occurs, and the weather and topographic conditions in the area.

Previous Significant Hazard Occurrences

From the information provided in Table 3.8 below, it can be determined that between January 1, 1995 and September 30, 2011, 91 hazardous materials occurrences were reported to the county or the National Response Center.

Table 3.8: Hazardous Materials Occurrences (Sheboygan County), 1995-2011

Date	Hazardous Material Involved	Impact on Human Welfare	Deaths	Injuries
March-95	Fuorosilic acid and hypochlorite solution	Two people treated for exposure	0	2
March-95	Unknown sheen: acid and hydrochloric	Building sealed off and at least one injury was reported	0	1
April-95	Trifluralin		0	0
May-95	Polychlorinated biphenyls		0	0
June-95	Ammonia	Facility evacuated	0	0
July-95	Zinc nophthenate		0	0
July-95	Unknown sheen: unknown oil		0	0
August-95	Various chemicals	One person treated for exposure	0	1
August-95	Styrene monomer		0	0
August-95	Anhydrous ammonia		0	0
March-96	Unknown substance		0	0
June-96	Acid kleen		0	0
August-96	Natural gas	Approximately twenty-four homes evacuated	0	0
October-96	Diesel oil	Steel workboat sank in City of Sheboygan	0	0
February-97	Formaldehyde solution		0	0
August-97	Automotive gasoline	Charter boat sank in City of Sheboygan	0	0
January-98	Anhydrous ammonia		0	0
May-98	Sulfur monochloride		0	0
June-98	Unknown sheen: aluminum nitrate		0	0
June-98	Diesel oil		0	0
July-98	Unknown oil	Small private plane crashed into Lake Michigan	0	0
November-98	Unknown		0	0
February-99	Formaldehyde (50% or more)		0	0
April-99	Hydraulic oil		0	0
December-99	Polychlorinated biphenyls		0	0
February-00	Polychlorinated biphenyls		0	0
April-00	Miscellaneous lubricant		0	0
April-00	Unknown sheen: unknown oil		0	0
November-00	Oil		0	0
December-00	Phenol	One fatality and at least twelve exposures	1	12
November-01	Phenol formaldehyde	One person treated for exposure	0	1
September-04	Formaldehyde off-gassing	Approximately twelve people transported to local hospital for observation	0	12
October-04	Mixture of chlorine and nitric acid		0	0
June-05	Low levels of radiation detected		0	0
June-05	Clandestine drug lab	Decontamination of law enforcement personnel	0	0
July-05	Phenol	One person treated for exposure	0	1
July-05	Clandestine drug lab	Decontamination of law enforcement personnel	0	0
December-05	Clandestine drug lab	Decontamination of law enforcement personnel and suspect	0	0
December-00	Polychlorinated biphenyls		0	0
March-01	Polychlorinated biphenyls		0	0
March-01	Mineral oil and polychlorinated biphenyls		0	0
April-01	Mineral oil and polychlorinated biphenyls		0	0
June-01	Unknown sheen: unknown oil		0	0
August-01	Anhydrous Ammonia	Material released through a faulty relief valve, resulting in one injury and evacuation of the facility	0	1
August-01	Polychlorinated biphenyls		0	0
September-01	Unknown sheen: unknown oil		0	0
November-01	Formaldehyde (50% or more) and phenol		0	0
November-01	Sulfuric acid		0	0
February-02	Unknown material		0	0
March-02	Cutting fluid		0	0
April-02	Hydraulic oil		0	0
July-02	Polychlorinated biphenyls		0	0
September-02	Automotive gasoline		0	0

Table 3.8 (cont'd): Hazardous Materials Occurrences, January 1995 - September 2011 (Sheboygan County)

Date	Hazardous Material Involved	Impact on Human Welfare	Deaths	Injuries
September-02	Ethylene glycol		0	0
September-02	Polychlorinated biphenyls		0	0
October-02	Polychlorinated biphenyls		0	0
July-03	Unknown sheen: unknown oil		0	0
July-03	Diesel oil		0	0
August-03	Oil		0	0
November-03	Motor oil		0	0
December-03	Other oil		0	0
April-04	Corrosive liquid		0	0
June-04	Oil		0	0
July-04	Machine cutting fluid		0	0
November-04	Unknown sheen: unknown oil		0	0
June-05	Low levels of radiation detected		0	0
June-05	Clandestine drug lab	Decontamination of law enforcement personnel	0	0
July-05	Phenol	One person treated for exposure	0	1
July-05	Clandestine drug lab	Decontamination of law enforcement personnel	0	0
December-05	Clandestine drug lab	Decontamination of law enforcement personnel and suspect	0	0
March-06	Sulfuric Acid		0	0
August-06	Hydrogen Flouride		0	0
March-07	Ammonia, Anhydrous	Material released from valve, resulting in evacuation of manufacturing facility	0	0
April-07	Sodium Chromate Solution		0	0
May-07	Sulfuric Acid		0	0
June-07	Gasoline: Automotive (Unleaded)	Operator lost control of vessel resulting in one injury	0	1
June-07	Unknown Oil (Sheen)		0	0
July-07	Antifreeze		0	0
October-07	Paint, Gallon		0	0
January-08	Ammonia, Anhydrous		0	0
January-08	Unknown Oil (Sheen)		0	0
March-08	No Release	Railroad derailment resulting in one fatality	1	0
September-08	Oil, Fuel: No. 2		0	0
June-09	Propane		0	0
December-09	Gasoline: Automotive (Unleaded)		0	0
May-10	Oil: Diesel		0	0
June-10	Ethylene Glycol		0	0
October-10	Oil: Diesel		0	0
January-11	Hydraulic Oil		0	0
June-11	Mercury		0	0
September-11	Unknown Material		0	0
TOTAL	91 Occurrences		2	33

Source: National Response Center, Oil and Chemical Spill Data Public Reports, 2000 – 2012.

Hazard Frequency

Based on previous hazard occurrences as reported by the National Response Center, Sheboygan County experiences approximately five hazardous materials incidents each year.

Probability of Hazard Occurring in the Future

Based on the hazard frequency, Sheboygan County is considered to have a **medium** probability of experiencing a hazardous materials incident in any given year.

Areas at Greatest Risk

According to the *Hazard Analysis for the State of Wisconsin*, the use of chemicals has increased in nearly every sector of the economy. Therefore, hazardous materials in quantities of concern can be found throughout the planning area, meaning there are no areas exempt from a possible

hazardous materials incident. Despite extensive precautions taken to ensure careful handling when these materials are present, accidental releases are bound to occur.

Any facility that stores one or more of the 356 listed extremely hazardous substances in excess of the listed threshold planning quantity, is required to notify the county by completing a Section 302-Emergency Planning Notification Form. Due to the presence of these substances, these facilities should be considered to be at risk for a hazardous materials release. According to the *Sheboygan County Hazardous Materials Response Plan* there are 53 such facilities located throughout the county.

In addition to these facilities, hazardous materials are also transported through the county via highway, rail, and pipelines. Some materials are being transported to facilities within the county, while others are brought through on their way to facilities located in other areas of the state. Major highways, including major and minor arterial roads and major collector roads, as well as active rail lines are therefore at risk for a hazardous materials release.

Impacts from Hazard

Death and Injury

Two deaths and 33 injuries have been reported from hazardous materials incidents for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011 according to National Response Center data.

Public Health and Safety

The impacts of a hazardous materials incident on public health would vary depending on the type of substance involved, the concentration, and the period of exposure. Treatment may range from that which can be done on-site to possible hospitalization. Any number of symptoms may arise from exposure to a hazardous material and death may even result if the exposure is serious enough.

In some cases of a hazardous material spill, evacuation could be necessary in order to protect human health and welfare. Evacuation may be isolated to the area in which the spill occurred, or may be widespread necessitating the evacuation of a large area. The size of the area that would need to be evacuated would be based on the type of hazardous material involved in the spill as well as the amount. A large scale spill, or one involving an extremely dangerous material, could result in widespread panic as well.

In emergencies where hazardous materials may have been released into the atmosphere, local authorities may give instruction to shelter-in-place as a way to keep people safe. Shelter-in-place is a precaution that is aimed to keep individuals safe while remaining indoors by selecting a small, interior room, with no or few windows, in which to take refuge. Shelter-in-place does not require the sealing off of an entire home or building.

Structures at Risk

The involvement of a flammable material(s) in a release could potentially cause damage to a building if the material were to be ignited. Ignition could cause a fire or even an explosion depending on the type of material involved.

The release of hazardous materials can also lead to contamination of the water supply. This could potentially affect the amount of water that would be available for public and private consumption.

Critical Facilities

If a spill were to occur in or near a critical facility, an evacuation of the building may be necessary in order to protect human health and welfare. Depending on the type of facility, evacuation could have a number of effects including, the disruption of public services.

Due to the threat that hazardous materials present to public health and safety, hospitals and other healthcare facilities would be most heavily impacted by an event. Patient loads would undoubtedly increase. Healthcare facilities located outside of the affected area would likely be called upon to take additional non-critical patients from local facilities, in order to make room for those needing immediate care. Hospital personnel would likely be asked to work long shifts in order to guarantee care that is given to all people that were affected by the event. Healthcare facilities may also be used to serve as decontamination centers if proper equipment and space are available.

Emergency response teams, including fire, police, and emergency medical personnel, would also be heavily impacted in the case of a hazardous materials release. Call centers would likely experience a dramatic increase in the number of calls received. During major events, communication lines can also become jammed due to heavy usage in the area. This could prevent appropriate response and slow down the clean-up process.

The possibility of water contamination would place an extra burden on wastewater treatment facilities and water utilities. After the release of a hazardous material, it would be imperative for these facilities to ensure the safety of the public drinking water supply.

Economic Impacts

Evacuation of a facility due to a hazardous material spill could result in shut down of the facility. This could cause major losses for the owner of the facility as well as those who are employed there, especially if a shut down were to last for several days.

If the spill is transportation-related, those who were receiving the material may be forced to change operations as the material would not arrive on time.

The cost of clean-up must also be considered. Containing and removing hazardous materials from a spill site can be very costly. Decontamination of staff and emergency responders may also be necessary, which is also very costly. These costs would likely be incurred by the owner of the facility or transportation vehicle where the spill took place. However, if a responsible party can not be identified, or if they are unable to pay, the burden of these costs may be placed on the taxpayer.

Instances where an unknown substance is released or discovered may impact the county as well. In many of these situations, the county HazMat team will respond and steps will be taken to identify the unknown substance. Response to such incidents can result in a variety of costs to the county.

Estimate of Potential Dollar Losses

Estimating losses as a result of a large-scale hazardous materials incident is difficult as different factors would produce different costs. However, evaluating past occurrences of large-scale hazardous materials incidents can provide information regarding the costs associated with these events. From a regional standpoint, one of the most well known incidents of this type occurred in Weyauwega, Wisconsin on March 4, 1996. On this day a large train derailment occurred due to a

broken rail. Included in the derailment were seven cars containing liquefied petroleum gas (LPG), seven cars with propane and two more containing sodium hydroxide. The cars containing the LPG and propane began to leak and immediately ignited. The fire spread to a nearby feedmill and storage building. Additionally, the tank containing sodium hydroxide began to leak. Soon after the fire began, the decision was made to evacuate the entire City of Weyauwega and some surrounding rural areas, displacing over 2,300 people. Residents were kept away from their homes for approximately two weeks. Overall, according to the Wisconsin Central Transportation Corporation 1998 Annual Report, estimated costs from the derailment, and the subsequent lawsuits that were filed, totaled \$28 million (Burke, 1996: www.firehouse.com). Therefore, a “worst-case scenario” estimate of potential dollar losses for a hazard materials incident is \$28 million.

Communicable Diseases

Description of Hazard

Communicable diseases are defined as those that can be transferred from one individual to another by direct or indirect contact. Communicable diseases can affect and cause serious illness in healthy individuals of all ages; however, young children and elderly people are generally at an increased risk of being infected. Despite advances in medical technology, vaccine development, and treatment modalities, communicable diseases continue to pose an important public health problem globally and locally. The emergence of previously unknown communicable diseases, the spread of diseases beyond traditional geographic locations, the spread of diseases from animals to humans, and the re-emergence of diseases eliminated or significantly reduced are at the forefront of public health concern. Changes in demographics, travel, lifestyle, technology, land use practices, food production and distribution methods, and childcare practices contribute to the occurrence and spread of emerging infections. Bioterrorism, or the intentional spread of communicable diseases, poses an additional threat.

The Centers for Disease Control and Prevention (CDC) has categorized diseases and their causative agents into three groups, based on risk to national security:

Category A Diseases/Agents: These are considered high-priority agents, and include organisms that pose a risk to national security because they:

- can be easily disseminated or transmitted from person to person;
- result in high mortality rates and have the potential for major public health impact;
- might cause public panic and social disruption; and
- require special action for public health preparedness.

Category B Diseases/Agents: These are the second highest priority agents, and include those that:

- are moderately easy to disseminate;
- result in moderate morbidity rates and low mortality rates; and
- require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance.

Category C Diseases/Agents: The third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of:

- availability;

- ease of production and dissemination; and
- potential for high morbidity and mortality rates and major health impact.

The following list illustrates other disease or causative agents that could potentially affect the health and welfare of persons or animals in the county. Some of the agents listed below would not be considered a communicable disease; however, if any of these agents were to be released, their impact on human health could be significant.

BIOLOGICAL AGENTS:

- Cholera
- Glanders
- Tularemia
- Q Fever
- Venezuelan Equine Encephalitis
- Viral Hemorrhagic Fevers
- Botulism
- Staph Enterotoxin B
- Ricin
- T-2 Mycotoxins

NERVE AGENTS:

- Tabun
- Sarin
- Soman
- O-ethyl-S

ASPHYXIANTS:

- Cyanide
- Cyanogen Cl
- Arsine

CHOKING AGENTS:

- Chlorine gas
- Phosgene
- Tear gas
- Vomiting gas
- Capsaicin

VESICANTS:

- Mustard
- Lewisite
- Phosgene Oxime
- Bis-2-chloro

Communicable diseases discussed in this plan include: Anthrax, food and water borne disease, Hepatitis A and C, Plague, Smallpox, Tuberculosis, Lyme disease, Mumps, Influenza, and the West Nile Virus. The following text provides a short description of each disease.

Anthrax

Anthrax is an acute infectious disease caused *Bacillus anthracis* bacteria. There are three types of anthrax, skin (cutaneous), lungs (inhalation), and digestive (gastrointestinal), which are categorized by the type of symptoms that are associated with each. Humans can become infected with anthrax by handling infected animals or animal products, by inhaling anthrax spores, or by eating undercooked meat from infected animals. Anthrax is not known to spread from person-to-person. Anthrax is classified as a Category A agent, and can be used as a bioterrorism weapon.

Food and Water Borne Disease

Food-related disease is caused by consuming contaminated foods or beverages. Contamination may occur during growth, processing, preparation, or serving. More than 250 different food-related diseases have been described. Most are infections, caused by a variety of bacteria, viruses, and parasites. Others are poisonings, caused by harmful toxins or chemicals that have contaminated the food (for example, poisonous mushrooms). The various diseases have many different symptoms, so there is no one description of food-related illness. Since the disease-causing organisms or toxins enter the body through the gastrointestinal tract, nausea, vomiting, abdominal cramps, and diarrhea are common symptoms of many of these diseases.

In the United States, the drinking water supply is normally safe. However, diseases that spread through water are still a very real problem. Private wells and community water supplies can become contaminated; usual sources of safe water may become unavailable in emergency situations; and lakes, streams, pools, or water parks may be contaminated by humans or animals. Many of the food-related organisms can also be spread through water, though parasites cause the majority of problems. Since many of the food- and water-related organisms can be acquired through recreational or drinking water, from contact with animals or their environment, or through person-to-person spread, investigation into specific cases is necessary for identifying the cause and controlling the spread of the disease.

Hepatitis A and C

Hepatitis A is viral liver disease that can cause fever, malaise, anorexia, nausea, and abdominal discomfort, followed by jaundice. The disease ranges in severity from no symptoms to a severely disabling disease lasting several months. The disease is rarely fatal. Symptoms generally appear about four weeks after exposure. The contagious period begins about two weeks prior to the onset of symptoms and lasts until one week after jaundice sets in. Once a person recovers from the virus, they will be immune for life. Hepatitis A is spread by contact with fecal material from an infected person. Once the virus enters the body, it multiplies and can then be spread by direct contact, consuming food or drink that has been handled by an infected individual, or by consuming contaminated water.

Hepatitis C (HCV) is also a liver disease that is found in the blood of infected persons. According to the Wisconsin Division of Public Health, 90 percent of HCV infections are not symptomatic. However, some individuals will experience elevated levels of the liver enzyme alanine aminotransferase, loss of appetite, fatigue, nausea and vomiting, abdominal pain and jaundice. A small percentage (15 percent) of infected persons will develop cirrhosis and an even smaller number (five percent) die from long term infection of the liver. HCV is spread primarily through exposure to human blood, but it can also be spread through sexual contact or between an infected mother and her child via breast milk.

Influenza (flu)

Influenza is caused by viruses that attack the respiratory tract (nose, throat and lungs). It spreads via droplets produced by coughing and sneezing. It usually spreads from person-to-person, though occasionally, people become infected by touching something with the virus on it and then touching their mouth or nose. Influenza disease usually comes on suddenly and may include: fever, headache, extreme tiredness, dry cough, sore throat, runny or stuffy nose, and muscle aches. It can cause mild to severe illness, and at times can lead to death.

There are three different types of influenza: seasonal (epidemic), pandemic, and avian. Seasonal outbreaks are typically caused by subtypes of influenza viruses that are already in existence among populations. Pandemic outbreaks are caused by new subtypes, those that have never circulated among humans or have not been around for a long time.

Each winter's flu vaccine is formulated to protect against the A and B strains that are expected to be circulating that season. It takes several months for manufacturers to produce the vaccine, which is prepared using hens' eggs. Some influenza strains can be treated with antiviral medications.

Lyme Disease

Lyme disease is caused by the bacteria *Borrelia burgdorferi*, and is transmitted by deer ticks (*Ixodes scapularis*). In order for transmission of the bacteria to be successful, the tick must be attached to a person's skin for about 24 hours. At its onset, Lyme disease is generally indicated by a roughly circular reddish rash occurring near the site of the tick bite. Over a prolonged period, the rash continues to expand in size and other symptoms, such as fever, headache, fatigue, stiff neck, and muscle and joint pain may be present. If the disease is left untreated, extreme complications such as meningitis, facial palsy, heart abnormalities, and arthritis may occur. Lyme disease is considered a Category B agent.

Mumps

Mumps is an acute viral illness caused by the mumps virus. The virus is spread from person to person through direct contact with respiratory secretions or saliva and through contact with contaminated objects that are capable of harboring the virus. The infection is known to cause swelling of the salivary glands along with low grade fever, headache, muscle pain, and general discomfort being other symptoms of the infection. Occasionally, mumps may cause encephalitis or be associated with the development of meningitis. Mumps can, but rarely does, cause deafness or death. Those that have been diagnosed with the disease previously or have been vaccinated are generally immune to infection. Mumps is a Category B agent.

Plague

Plague is a bacterial disease of rodents that can be spread to humans and other animals by infected fleas. Plague has three forms: bubonic plague (infection of the lymph glands), septicemia plague (infection of the blood), and pneumonic plague (infection of the lungs). Humans can become infected with plague by the bites of infected fleas, direct contact with tissues or body fluids of a plague-infected animal, by inhaling airborne droplets from infected persons or animals, or by laboratory exposure to plague bacteria. Only pneumonic plague can spread from person to person. Plague is considered a Category A agent because infection can occur by inhaling aerosolized bacteria released in a bioterrorism attack.

Smallpox

Smallpox is caused by the variola virus and is spread easily from person-to-person, generally by direct and fairly prolonged face-to-face contact. Smallpox can also be spread through direct contact with infected bodily fluids or contaminated objects or can be carried through the air in enclosed spaces. Humans are the only natural hosts, and smallpox is not known to be transmitted by insects or animals. Smallpox is known to have a significantly high mortality rate. There is no specific treatment for smallpox, and the only prevention is vaccination.

To date, the disease has been eradicated from the planet after a successful worldwide vaccination program. The last case of smallpox in the United States was in 1949, and the last naturally-occurring case in the world was in Somalia in 1977. However, smallpox is considered a Category A disease and is considered a major threat to the health of U.S. residents, especially those that have not been vaccinated.

Tuberculosis (TB)

Tuberculosis is caused by the bacteria *Mycobacterium tuberculosis*, and is spread from person-to-person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, kidneys or spine. TB bacteria enter the air when a person with TB of the lungs or throat coughs or sneezes. Tuberculosis is considered a Category A agent.

When a person inhales air that contains TB bacteria, they may become infected but will not feel sick or have any symptoms and can not spread the bacteria to others. This is often termed latent TB infection (LTBI). In some cases however, post-infection, the bacteria become active and cause TB disease. General symptoms of TB disease include feeling sick or weak, weight loss, fever and night sweats. The symptoms of TB of the lungs include coughing, chest pain, and coughing up blood. TB infection is usually treated with 9 months of one antibiotic, and TB disease is generally treated with multiple antibiotics for a period of 6 months or longer.

West Nile Virus Infection (West Nile Encephalitis or West Nile Fever)

The West Nile Virus Infection is spread to humans by the bite of a mosquito that is infected with the virus. Approximately 80 percent of people who become infected with West Nile Virus do not become ill; those who do experience mild illness that is characterized by fever, headache, eye pain, muscle aches, joint pain, skin rashes, swollen lymph nodes, nausea, and vomiting. Less than one percent of people infected with West Nile Virus become severely ill. Symptoms of severe illness include extreme muscle weakness, development of encephalitis, paralysis, and coma. In rare cases, particularly those that involve the elderly or people with weak immune systems, the infection becomes fatal. There are no treatments available to cure West Nile Virus, although health care professionals can treat the symptoms associated with the virus. Prior infection to the virus can potentially provide lifelong immunity.

Previous Significant Hazard Occurrences

The Wisconsin Department of Health and Family Services publishes *Public Health Profiles* on an annual basis in order to provide concise health and demographic information about each county in Wisconsin. Table 3.9 provides the number of cases from Sheboygan County reported to the department between 2000 and 2009 of any communicable diseases mentioned in the previous section (with the exception of influenza and food and water borne diseases).

Table 3.9: Communicable Diseases Occurrences (Sheboygan County), 2000-2009

Year	Disease				
	Hepatitis Type A	Hepatitis NANB/C	Lyme Disease	Tuberculosis	West Nile Virus (human)
2000	<5	21	7	<5	0
2001	0	29	<5	<5	0
2002	<5	7	5	<5	52
2003	<5	30	<5	<5	17
2004	18	23	<5	<5	12
2005	<5	26	6	<5	17
2006	0	16	<5	0	21
2007	0	22	5	0	13
2008	0	25	<5	<5	8
2009	<5	44	<5	<5	1
Total¹	43	243	53	40	141

Source: Wisconsin Department of Health and Family Services; and CDC; 2012.

Because minor cases of influenza are often self diagnosed and self treated, it is impossible to accumulate data regarding the specific number of cases that occur in Sheboygan County in any given year. The same is true for food and water borne disease.

There were no reported cases of anthrax, plague, or smallpox infection in Sheboygan County between January 1, 1995 and September 30, 2011.

Hazard Frequency

Anthrax

In 2001, Anthrax was deliberately spread through the postal system by sending letters with powder containing anthrax. Three main incidents were reported by the national media in which anthrax spores, in the form of a white powder, were circulated in the mail system. The first incident involved a tabloid newspaper reporter in Boca Raton, Florida, who eventually passed away after exposure to the spores. A mail room employee working in the same building as the reporter was also diagnosed with inhalation anthrax. Shortly thereafter, two additional letters containing anthrax spores were delivered to a media mogul in New York City and a high profile politician in Washington D.C. Postal workers in facilities that had handled the letters began to test positive for anthrax as well. In total, 22 cases of anthrax were reported, with 11 being inhalation anthrax and 11 being cutaneous anthrax.

Outside of terrorist attacks, natural occurrences of anthrax in the United States are very rare. The CDC estimates that only 1 to 2 incidences of cutaneous anthrax occur naturally every year, while gastrointestinal anthrax is extremely rare.

Hepatitis A and C

The CDC estimates that annual incidences of new Hepatitis A infections in the United States has been on the decline since 2001, when 93,000 new cases were reported, while the number of new cases has remained fairly stable. This is likely due to the more recent availability of a vaccination for Hepatitis A.

Based on previous hazard occurrences as reported by the Wisconsin Department of Health and Family Services, Sheboygan County experiences approximately 29 Hepatitis A and C incidents each year. Being that the State of Wisconsin makes up only about two percent of the total United States population, these figures are relatively high for a small urban county.

Influenza

Types A and B influenza viruses cause epidemics of disease almost every winter. In the United States, these epidemics cause illness in 10 to 20 percent of the population, and are associated with an average of 20,000 deaths and 114,000 hospitalizations per year. Annual influenza vaccination can prevent illness from A and B influenza.

- **H1N1 Influenza (Swine Flu)**

H1N1 Flu is an influenza virus that causes illness in people. This new virus was first detected in people in the United States in April 2009. The virus spreads from person-to-person in the same way that regular seasonal influenza viruses spread. Flu viruses are spread mainly from person to person through coughing or sneezing by infected persons. Sometimes people may become infected by touching something – such as a surface or object – with flu viruses on it and then touching their mouth or nose.

During the second wave of the 2009 H1N1 epidemic in Wisconsin (August 30, 2009 – January 2, 2010), H1N1 cases and hospitalizations were widespread throughout the state. Cases and hospitalizations peaked in late October and early November 2009. During this time, there were two probable cases of H1N1 in Sheboygan County.

Since late November, influenza activity in Wisconsin has remained low compared to what is normally seen at this time of year. DHS and partners continue to conduct surveillance for a possible third wave of H1N1 influenza or an increase in seasonal influenza activity.

Lyme Disease

In 2009, 29,959 cases of Lyme disease were reported in the United States, yielding a national average of 7.3 cases for every 100,000 persons. Of those, Wisconsin accounts for 1,952 cases – about 6.5 percent of the total cases reported throughout the country in 2009 (or 44 cases for every 100,000 persons). Only five states in the nation, Connecticut, Massachusetts, New Jersey, New York and Pennsylvania, reported more cases.

Based on previous hazard occurrences as reported by the Wisconsin Department of Health and Family Services, Sheboygan County experiences approximately five Lyme Disease incidents each year.

Mumps

In the United States, the reported incidence of mumps declined dramatically after the introduction of the mumps vaccine in 1967 and the recommendation for its routine use in 1977. Between 2001 and 2003, fewer than 300 mumps cases were reported each year, representing a 99.8 percent decline from the 185,691 cases that were reported in 1968.

In 2006, a major outbreak of mumps took place. Overall, between January 1 and May 2, 2006, 11 states reported 2,597 cases of mumps. The first cases were detected on a college campus in Iowa; in that state, a total of 1,487 people was infected. Over the same time span, Wisconsin reported 176 cases. Of these, only one case involved a resident of Sheboygan County.

Plague

In the United States, human plague cases average about 10 to 15 per year. In North America, plague is found from the Pacific Coast eastward to the western Great Plains and from British Columbia and Alberta, Canada, southward to Mexico. Most of the human cases in the U.S. occur in two regions that include portions of northern New Mexico, northern Arizona, southern Colorado, California, southern Oregon, and far western Nevada.

Smallpox

There have been no recorded outbreaks of smallpox since 1980, when the disease was declared eradicated following worldwide vaccination programs.

Tuberculosis (TB)

The number of reported cases of TB in the United States has been on the decline since the early 1990s. Between 1993 and 2003, incidence of TB decreased by 44 percent, and was at a historic low in 2003 when only 14,874 cases were reported nationwide. The same trend has been observed in Wisconsin where, over the same time period, the number of reported cases dropped from 106 to 66; it is of note, however, that a slight peak was observed in 2004 when the state reported 95 incidences. As noted previously in this section, Sheboygan County has reported fewer than five incidences of TB each year since 2000.

Based on previous hazard occurrences as reported by the Wisconsin Department of Health and Family Services, Sheboygan County experiences approximately four TB incidents each year.

West Nile Virus Infection

West Nile Virus first appeared in the United States in 1999 when 62 cases of illness and seven deaths were reported in the New York City area. By 2005, the virus had been identified in all 48 states of the continental U.S. (when considering both human and animal infections), Canada, and Latin America. In 2005, there were 3,000 reported cases of West Nile Virus Infection (including West Nile encephalitis and West Nile meningitis) across the United States, with 119 of those resulting in fatality.

Infected birds were first identified in Wisconsin in 2001. By 2002, the first human infection was documented in Wisconsin. Between 2002 and 2009, 141 total cases were reported in the state. Wisconsin experienced the highest number of infections in 2002, when 52 cases were reported.

Based on previous hazard occurrences as reported by the Wisconsin Department of Health and Family Services and the CDC, Sheboygan County experiences approximately 14 West Nile Virus infection incidents each year.

Probability of Hazard Occurring in the Future

As there have been no natural occurrences of anthrax, plague, or smallpox in the State of Wisconsin since 1990, the probability that an outbreak of any of these diseases will occur is low. However, the CDC has recognized all of these diseases as potential weapons that could be used in a terrorist attack. Although a terrorist attack has not occurred to date in Wisconsin, the nature of these acts make them very unpredictable. However, due to Sheboygan County's relatively low population density and the lack of a regularly used venue which attracts large crowds, it is unlikely that a terrorist attack of this type will take place in the planning area.

The large-scale outbreak of mumps in 2006 must be taken into consideration when determining the probability of another occurrence. As a result of this event, much attention has been brought to this disease and the CDC and local health departments have begun a major campaign to educate people about the opportunity to get vaccinated in order to avoid infection. Therefore, considering the availability of a vaccination, and the effort of healthcare workers to promote it, in addition to the fact that in general, the number of reported mumps cases had been on the decline in the country prior to the incident, it is unlikely that another outbreak will occur in the future.

Because there has been at least one recorded incidence of Hepatitis A and C, Influenza, Lyme disease, food and water related disease, and TB every year in Sheboygan County between 2000 and 2009, it is highly probable that future occurrences will be reported in the county. It is also very likely, due to the fact that there have been occurrences every year in the State of Wisconsin since 2002, that West Nile Virus infection will affect a resident of Sheboygan County in the future.

Based on the hazard frequency, Sheboygan County is considered to have a **high** probability of experiencing a communicable disease occurrence in any given year.

Areas at Greatest Risk

In the case of a terrorist attack involving the release of a biological agent, it is likely that the event would take place in an area that attracts large crowds of people. The other communicable diseases discussed in this section have little geographic affiliation. Locations with dense populations will be at higher risk, as there are more people to spread the disease. Natural features (such as ponds, forests, and wetlands) are likely higher risk areas for insects that transmit

disease, such as West Nile Virus and Lyme disease. Hospitals and other facilities may also be more conducive to the transmission of infection. However, these diseases can occur anywhere and therefore should be planned for accordingly.

Impacts from Hazard

Death and Injury

A number of deaths and injuries/illnesses have occurred due to communicable diseases in Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

Public Health and Safety

The major impacts of a communicable disease outbreak on public health have been discussed throughout this section of the plan. In addition to the information already provided, a number of other public health issues could be related to a communicable disease outbreak, especially in the event of a biological terrorist attack. Primarily, people may experience anxiety or high levels of stress during such an event, especially individuals and family members directly affected and personnel that are needed to respond to such an incident.

Structures at Risk

There would be little impact on buildings in the event of a communicable disease outbreak. The majority of communicable diseases discussed in this section would have little impact on structures in the planning area. However in the event that a Category A agent was released as part of a terrorist attack, some consequences may result. Primarily, transportation services would be heavily impacted. Mass transit vehicles (such as buses and airplanes) may be used to move people away from danger or to transport large quantities of people to healthcare facilities. Additionally, roads, railways, and airlines in the affected area may be closed down for security purposes.

Critical Facilities

Undoubtedly, the primary impact on critical facilities would be on hospitals and other healthcare facilities, including doctor's offices, clinics, and urgent care facilities. However, the impact will vary depending on the number of people affected by the outbreak and the severity of the disease in question. An outbreak of a Category A agent (such as anthrax) would certainly have a greater impact than an increase in the number of people that are already affected by the flu every year, regardless of the number of people that are infected.

In the case of a terrorist attack, in which a category A agent was released, other emergency responders would be impacted. Police and fire personnel would be called upon to provide security and maintain order during an event. Emergency medical personnel would be needed to treat people on site and to transport those who were severely affected to healthcare facilities. Schools may be used as shelters for people who must evacuate an affected area, or as treatment centers.

Economic Impacts

The economic impacts associated with a communicable disease outbreak will vary depending on the severity of the event. In a best case scenario, only a small number of people will be affected. In this situation, costs incurred will be primarily associated with the healthcare costs of the affected individuals. A worst case scenario would be a mass casualty event. An event such as this could result in costs for decontamination, security, transportation (including air and land

transport to and from healthcare facilities), hazardous materials waste, and healthcare. In addition, some businesses may be forced to shut down for security purposes and people may be forced to evacuate an area if their health is in danger.

Estimate of Potential Dollar Losses

This estimate is not needed as no vulnerable structures or geographic areas have been identified.

Water Supply Contamination

Description of Hazard

Both water contamination threats and water contamination incidents can be used to interrupt the delivery of safe water to a population, interrupt fire protection, create public panic, or cause disease or death in a population. A water contamination threat occurs when the introduction of a contaminant into the water system is threatened, claimed, or suggested by evidence. A water contamination incident occurs when a point or non-point source pollutant successfully enters the public groundwater supply and/or surface water supplies. Both threats and incidents of water contamination can have a number of consequences including:

- Creating an adverse impact on public health;
- Disrupting system operations and interrupting the supply of safe drinking water;
- Causing physical damage to system infrastructure;
- Reducing public confidence in the water supply; and
- Long-term denial of water and the cost of remediation and replacement.

Only a few contaminants have the potential to produce widespread death or disease in a population, including pathogens, biotoxins, and a few highly toxic chemicals that may remain stable in water long enough to adversely impact public health. A larger group of contaminants could cause localized death or disease while hundreds of other contaminants could potentially disrupt service or undermine consumer confidence, but would not result in death or disease.

Table 3.10 lists a number of contaminant classes that would potentially have an adverse impact if introduced into the drinking water supply, and also includes specific examples and sources of these contaminants. Please note that this is not a complete list of possible contaminants; rather, it is intended to illustrate relevant contaminant classes. There may be many other substances that could be used to contaminate the water supply. The causes of water contamination are numerous, and range from failing septic systems, leaking underground tanks, intentional terrorist attacks, runoff of harmful pollutants, all the way to the simple improper use of household chemicals. Natural hazards, such as flooding, may lead to contamination of ground and surface waters. Agricultural land uses may also pose a threat to the public water supply, as runoff may contain harmful pesticides, insecticides, fertilizers, and manure.

Previous Significant Hazard Occurrences

Sheboygan County emergency management officials recognize that previous incidents of water contamination have occurred in the planning area; however, due to the sensitive nature of this information, these incidents are to remain confidential.

Hazard Frequency

There is no reportable record of water supply contamination for Sheboygan County in order to develop a hazard frequency.

Table 3.10: Classes of Potential Water Contaminants

Class	Examples	Sources	Limited Access
Microbiological Contaminants			
Bacteria	<i>E. Coli</i> , anthrax, brucellosis, Burkholderia bacteria, Campylobacter bacteria, <i>Salmonella typhi</i> (typhoid fever), <i>Francisella tularensis</i>	Naturally occurring, microbiological laboratories, state-sponsored programs	Yes (for select agents)
Viruses	Caliciviruses, Enterovirususe, Hepatitis A and E, Variola, VEE virus	Naturally occurring, microbiological laboratories, state-sponsored programs	Yes (for select agents)
Parasites	<i>Cryptosporidium parvum</i> , <i>Entamoeba histolytica</i> , <i>Toxoplasma gondii</i> (toxoplasmosis)	Naturally occurring, microbiological laboratories	No
Chemical Contaminants - Inorganic			
Corrosives and caustics	Toilet bowl cleaners, tree-root dissolver, drain cleaners	Retail, industry	No
Cyanide salts of cyanogenics	Sodium cyanide, potassium cyanide, amygdalin, cyanogen chloride, ferricyanide salts	Supplier, industry	Yes
Metals	Mercury (and mercury salts), lead (and lead salts), osmium, and complexes (including those of iron, cobalt, and copper)	Industry, supplier, laboratory	Yes
Nonmetal oxyanions, organo-nonmetals	Aresnate, arenite, selenite salts, organoarsenic, organoselenium compounds	Some retail, industry, supplier, laboratory	Yes
Chemical Contaminants - Organic			
Fluorinate organics	Sodium trifluoroacetate (rat poison), fluoroalcohols, fluorinated surficants	Supplier, industry, laboratory	Yes
Hydrocarbons and ther oxygenated and/or halogenated derivatives	Paint thinners, gasoline, kerosene, alcohols, ethers, halohydrocarbons	Retail, industry, laboratory, supplier	No
Insecticides	Organophosphates, chlorinated organics, carbamates, some alkaloids	Retail, industry, supplier	Yes
Malodorous, noxious, foul-tasting chemicals	Thiols, amines, inorganic esters	Laboratory, supplier, police supply, military depot	Yes
Organics, water-miscible	Acetone, methanol, ethylene glycol (antifreeze), phenols, detergents	Retail, industry, supplier, laboratory	No
Pesticides (other than insecticides)	Herbicides, rodenticides	Retail, industry, agriculture, laboratory	Yes
Pharmaceuticals	Cardiac glycosides, some alkaloids, antineoplastic chemotherapies, anticoagulants, illicit drugs	Laboratory, supplier, pharmacy, natural stores	Yes
Chemical Warfare Agents			
Schedule 1 Chemical Weapons	Organophosphate nerve agents (sarin, tabun, VX), vesicants (nitrogen and sulfur mustards), lewisite	Suppliers, military depots, some laboratories	Yes
Biotoxins			
Biologically produced weapons	Biotoxins from bacteria, plants, fungi, protists, defensive poisons in some marine and terrestrial animals - this category would include ricin, saxitoxin, botulinum toxins, and microcystins	Laboratory, supplier, pharmacy, natural source, state-sponsored programs	Yes
Radiological Contaminants			
Radionuclides	These may come from medical devices and industrial irradiators including both the metals and salts - this category does not include nuclear, thermonuclear, or neutron bombs	Laboratory, state sources, waste facilities	Yes

Source: "Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents," USEPA, 2003; and Bay-Lake Regional Planning Commission, 2006.

Probability of Hazard Occurring in the Future

It is likely that there will be an occurrence of water supply contamination in Sheboygan County the future. However, it is not possible to predict the nature and scale of these incidents. Sheboygan County is considered to have a low probability of experiencing a water supply contamination occurrence in any given year.

Areas at Greatest Risk

Areas at greatest risk for intentional contamination would be those areas served by public water supply systems. These systems provide water for human consumption to the public through piped or other constructed conveyances. Table 3.11 shows all of the municipal community public water supply systems that serve areas in Sheboygan County, as well as the population size they serve.

Ground and surface water supplies and wells that are located near agricultural land uses and construction sites may also be at greater risk of contamination from nonpoint source pollution contained in runoff. Also, water supplies located within floodplains are at greater risk of contamination during a flood event.

Table 3.11: Municipal Public Water Supply Systems (Sheboygan County)

Facility	Location Served	2010 Population ¹
Adell Waterworks	Village of Adell	516
Cascade Waterworks	Village of Cascade	709
Cedar Grove Waterworks	Village of Cedar Grove	2,113
Elkhart Lake Waterworks	Village of Elkhart Lake	967
Glenbeulah Waterworks	Village of Glenbeulah	463
Kettle Moraine Correctional Institution	Facility proper	1,544 ²
Kohler Waterworks ³	Village of Kohler	2,120
Oostburg Waterworks	Village of Oostburg	2,887
Plymouth Utilities	City of Plymouth	8,445
Random Lake Waterworks	Village of Random Lake	1,594
Rocky Knoll Health Care Facility	Facility proper	130 ²
Sheboygan Falls Utilities ³	City of Sheboygan Falls	7,775
Sheboygan Town Waterworks	Town of Sheboygan	7,271
Sheboygan Water Utilities	City of Sheboygan	49,288
Waldo Waterworks	Village of Waldo	503

1. 2010 US Census Population data.

Note: The entire population may not be served by municipal water.

2. 2006 Population from WDNR database

3. Source water is from Sheboygan Water Utilities, City of Sheboygan

Source: Wisconsin Department of Natural Resources, 2006; US Census, 2010.

Impacts from Hazard

Death and Injury

No data on deaths or injuries is available for water supply contamination occurrences for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

Structures at Risk

There would be little impact on buildings in the event of a water supply contamination occurrence. The primary impact of a water supply contamination would be on the public water supply systems. If the public water supply were to become contaminated, the amount of water available to the public would become very limited.

Critical Facilities

The primary impact critical facility would be the public water supply systems. The impact of a water contamination occurrence on the county's critical facilities would be dependent upon the geographic extent of the event, the time required to eliminate any risk, and the type and concentration of the contaminant involved. At best, the contamination could be dealt with quickly without shutting off the water supply and therefore, the impact of the event would not be felt. However, if the contamination were severe enough, these facilities may be forced to operate without water. This would have the most impact on hospitals and other medical facilities, schools, and other emergency operations centers. In addition to the loss of water supply, hospitals, medical facilities, and other emergency response centers will likely experience increased work loads if contaminated water reaches the public.

Economic Impacts

In any water supply contamination occurrence, the largest economic costs would be associated with alleviating the threat posed to the public and the environment.

Estimate of Potential Dollar Losses

Costs to make affected water supplies safe for drinking after a contamination would very greatly depending on how many facilities are affected, how much of the supply infrastructure is affected, and the type of contaminate.

Violence

Description of Hazard

Violence includes Civil Disturbances, Workplace and School Violence, and Jail Disturbances. Civil disorder in general can be described as incidents intended to disrupt a community to the degree that law enforcement intervention is required to maintain public safety. Most of these incidents are associated with controversial political, judicial, or economic issues.

Previous Significant Hazard Occurrences

According to the Sheboygan County Hazard Analysis, the county has not experienced any major incidents of violence up to this point. Labor strikes have occurred in the past, but have been generally peaceful and lacking in hostile actions. There have also been several prank bomb threats that have been called in to a number of schools and several businesses. In each incident no bombs were found, but a number of objects that were explosive in nature had been discovered. Additionally, threats against management officials and others in high ranking positions have been made but never carried out.

Sheboygan County has a medium security prison located within its boundaries. Over the years, overcrowding of inmates and a shortage of trained, experienced guards has increased the potential for disturbances, riots, and escapes.

Hazard Frequency

There have been no major incidents of violence, including civil disturbances, workplace and school violence, and jail disturbances, reported in Sheboygan County in the past 20 years. Several generally peaceful labor strikes have occurred in the past at locations that include Kohler Company, Die Cast, Lawn Boy, and Hayssen.

Probability of Hazard Occurring in the Future

Sheboygan County is a low probability area for violence, including civil disturbances, workplace and school violence, and jail disturbances. Therefore, the probability of a significant violence event occurring is **low** for the planning area.

Areas at Greatest Risk

Civil disturbances, such as those resulting from labor strikes or protests, are more likely to occur in areas with larger populations or where large employers are located. School violence could potentially occur at any of the educational facilities located within the county. Jail disturbances could occur at the Sheboygan County Jail or the Kettle Moraine Correctional Institution.

Impacts from Hazard

Death and Injury

No data on deaths or injuries is available for significant violence occurrences for Sheboygan County over the last 17 years from January 1, 1995 to September 30, 2011.

Structures at Risk

In most cases, there would be little impact on buildings in the event of an outbreak of violence in the county. However, it is possible that a riot could result in fires being set, which could impact buildings located in the vicinity of the unrest. Furthermore, during periods of large-scale disorder, crime generally increases. One ramification of this could be break-ins and robberies at businesses and homes, causing structural damage such as damaged windows and doors.

The *Sheboygan County Hazard Analysis* does note that several fake bomb threats have been called in at various times in the past. If an actual bomb were to be used in an attack, the building in which it was located, as well as surrounding buildings, would be impacted upon detonation.

Critical Facilities

In most cases, there would be little impact to critical facilities in the event of an outbreak of violence, unless the act took place directly in or around the facility itself. Many critical facilities are places of business or provide services to the public, and therefore employ a number of people. As a result, it is possible that acts of workplace violence could impact the facility, causing disturbances in function, injuries to employees, and even structural damage, particularly if explosives or fires are involved. Other acts of violence, including riots and protests, could have similar impacts on other critical facilities such as schools, prisons, and jails.

Economic Impacts

Businesses could potentially be impacted by acts of violence if they were forced to shut down for any period of time.

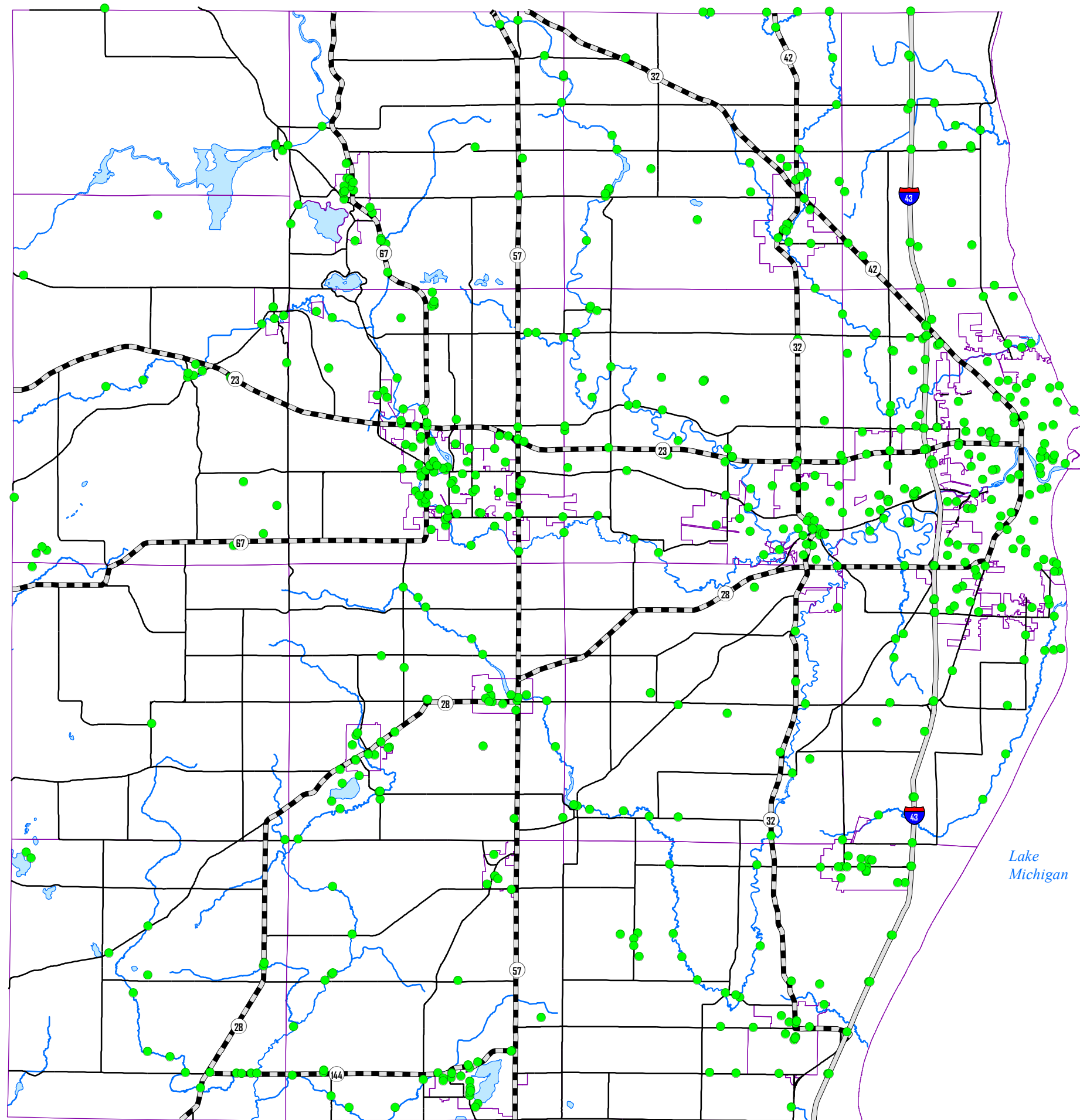
Estimate of Potential Dollar Losses

This estimate is not needed as no specific vulnerable structures or geographic areas have been identified.

Critical Facilities

Sheboygan County Hazard Mitigation Planning Area

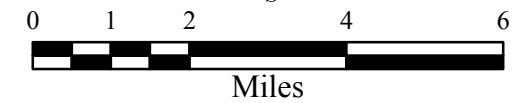
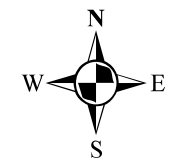
Sheboygan County, Wisconsin



● Critical Facility

Base Map Features

- MCD Boundaries
- Interstate Highway
- State Highway
- County Highway
- Surface Water Features



This map is neither a legally recorded map nor a survey, and is not intended to be used as either. It is a compilation of records, information and data to be used for reference purposes only. The Bay-Lake RPC are not responsible for any inaccuracies herein contained.

Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
Source: FEMA, 2009; WDNR, 2009; Sheboygan
County; Bay-Lake Regional Planning Commission, 2013.



100-Year Floodplains
Sheboygan County Hazard
Mitigation Planning Area
Sheboygan County, Wisconsin

100-Year Floodplain

Base Map Features

- MCD Boundaries
- Interstate Highway
- State Highway
- County Highway
- Surface Water Features



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Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
Source: FEMA, 2009; WDNR, 2009; Sheboygan
County; Bay-Lake Regional Planning Commission, 2013.



Bridges Potentially within the 100-Year Floodplain

Sheboygan County Hazard
Mitigation Planning Area
Sheboygan County, Wisconsin

- Bridge
- 100-Year Floodplain

Base Map Features

- MCD Boundaries
- ≡ Interstate Highway
- ≡ State Highway
- ≡ County Highway
- ☁ Surface Water Features



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Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
Source: FEMA, 2009; WDNR, 2009; Sheboygan
County; Bay-Lake Regional Planning Commission, 2013.



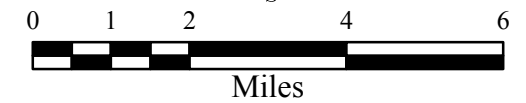
Properties Potentially within the 100-Year Floodplain

Sheboygan County Hazard
Mitigation Planning Area
Sheboygan County, Wisconsin

- Parcels Affected by
100-Year Floodplain
- 100-Year Floodplain

Base Map Features

- MCD Boundaries
- Interstate Highway
- State Highway
- County Highway
- Surface Water Features



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Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
Source: FEMA, 2009; WDNR, 2009; Sheboygan
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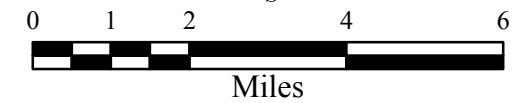
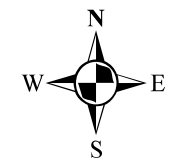
Critical Facilities Potentially within the 100-Year Floodplain

Sheboygan County Hazard Mitigation Planning Area
Sheboygan County, Wisconsin

- Critical Facility
- 100-Year Floodplain

Base Map Features

- MCD Boundaries
- ≡ Interstate Highway
- ≡ State Highway
- ≡ County Highway
- ☁ Surface Water Features



This map is neither a legally recorded map nor a survey, and is not intended to be used as either. It is a compilation of records, information and data to be used for reference purposes only. The Bay-Lake RPC are not responsible for any inaccuracies herein contained.

Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
Source: FEMA, 2009; WDNR, 2009; Sheboygan County; Bay-Lake Regional Planning Commission, 2013.



Location of Dams
Sheboygan County Hazard
Mitigation Planning Area
Sheboygan County, Wisconsin

● Dam Location

Base Map Features

- MCD Boundaries
- Interstate Highway
- State Highway
- County Highway
- Surface Water Features



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Q:\Myfiles\Sheboyga\County\Hazard_Plan_2012
Source: WDNR, 2009; Sheboygan County;
Bay-Lake Regional Planning Commission, 2013.



CHAPTER 4 - MITIGATION STRATEGY

INTRODUCTION

As defined by the Disaster Mitigation Act of 2000, mitigation is a "sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects."

Mitigation planning is the systematic process of learning about the hazards that can affect the planning area, setting clear goals, identifying appropriate actions, and following through with an effective mitigation strategy. Mitigation encourages long-term reduction of hazard vulnerability and can reduce the enormous cost of disasters to the government and property owners.

Mitigation can also protect critical community facilities and infrastructure; reduce exposure to liability; and minimize community disruption.

The mitigation strategy outlines the general goals to be achieved through the implementation of the Sheboygan County 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 response personnel as general guidelines to mitigate the hazards identified in Chapter 3. These goals are broad in order to apply to all of the hazards addressed in the plan.

- Goal #1: Implement policies and programs 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: Enhance enforcement measures to reduce the impacts of hazards on people and property.
- Goal #5: Enhance 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 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 TECHNIQUES

To establish a framework for the development of mitigation strategies, the following mitigation techniques were considered. The six mitigation categories described below served as the basis in formulating mitigation strategies for each of the hazards addressed in Chapter 3 of this plan.

Prevention

Prevention activities are intended to keep hazard-related problems from getting worse. They are particularly effective in limiting the county's and each community's, future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of prevention activities include:

- Planning and zoning;
- Hazard mapping;
- Building codes;
- Studies/data collection and analysis;
- Open space preservation;
- Floodplain regulations;
- Stormwater management;
- Drainage system maintenance;
- Capital improvements programming; and
- Riverine setbacks.

Property Protection

Property protection measures are intended to enable structures to better withstand hazard events, remove structures from hazardous locations, or provide insurance to cover potential losses.

Examples include:

- Acquisition;
- Relocation;
- Building elevation;
- Critical facilities protection or "hardening;"
- Retrofitting (i.e., wind proofing, flood proofing, seismic design standards, etc.);
- Insurance; and
- Safe room construction.

Natural Resource Protection

Natural resource protection activities reduce the impact of hazards by preserving or restoring the function of environmental systems. In some cases, natural systems may include high hazard areas such as floodplains, steep sloped areas or barrier islands. Thus, natural resource protection measures can serve the dual purpose of protecting lives and property while enhancing environmental goals such as improved water quality or recreational opportunities. Examples include:

- Floodplain protection;
- Riparian buffers;

- Fire resistant landscaping;
- Best management practices;
- Fuel breaks;
- Erosion and sediment control;
- Wetland preservation and restoration;
- Habitat preservation; and
- Slope stabilization.

Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by physically modifying the environment. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs;
- Levees/dikes/floodwalls;
- Diversions/Detention/Retention;
- Channel modification; and
- Storm sewer construction.

Emergency Services

Although not typically considered a “mitigation technique,” emergency services can significantly reduce injuries and loss of life associated with hazards. These actions are typically taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems;
- Search and rescue;
- Evacuation planning and management; and
- Flood “fighting” techniques.

Public Information and Awareness

Public information and awareness activities are used to advise residents, business owners, potential property buyers, visitors, and government officials about hazards, hazardous areas and mitigation techniques they can use to protect themselves and their property. Measures used to educate and inform the public include:

- Outreach and education;
- Speaker series and demonstration events;
- Real estate disclosure; and
- Training.

MITIGATION ACTION PLAN

Mitigation actions form the core of the mitigation plan. Table 4.1 lists the mitigation strategies developed for Sheboygan County and Table 4.2 lists the mitigation strategies developed for the municipalities in the county. The table lists the hazard type, associated mitigation actions, the estimated costs of each project (where known), responsible agencies, and the project timetable.

Potential funding sources available for mitigation actions are listed in a separate section following the table. The identified actions and projects aim to reduce the effects of hazards on the population, services, and existing and new buildings and infrastructure.

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

Prioritization Process

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

Cost-Benefit Review

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

COMPLETED MITIGATION ACTIONS

Since the preparation of the 2008 hazard mitigation plan for Sheboygan County, some of mitigation actions identified in the action plan have been completed. The following lists those actions that have been completed in Sheboygan County.

- Mutual Aid Agreements have been established for utility and communications systems including 9-1-1 that are similar to the Mutual Aid Box Alarm System (MABAS).
- Land use policies that guide development away from hazardous areas; reduce density in hazardous areas; and/or encourage greater development restrictions in hazardous areas were developed with the adoption of a Countywide Comprehensive Plan on December 15, 2009 and included land use policies that guide development away from floodplains, steep slopes, and coastal bluffs.
- Land use planning was completed with the adoption of comprehensive plans for the county and local jurisdictions.
- A fog warning sign was installed along State Highway 43 in the Cedar Grove area.

Table 4.1: Mitigation Action Plan - County

NATURAL HAZARDS				
All Natural Hazards				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Acquire and 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	2013-2018	\$30,000 (for purchase of approximately 1,000 radios)	County Emergency Management and County Local Emergency Planning Committee
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 Management, American Red Cross, and County Health Department
Collect “building footprints” for all structures in the County to allow for analysis of where facilities/structures are located	Medium	2013-2018	Costs to be determined	County Planning and Conservation Department
Collect building height data for all structures in the County	Low	2013-2018	Costs to be determined	County Planning and Conservation Department
Work with County, State, and Federal agencies to maintain a consistent critical facility database	Low	Ongoing	Costs to be determined	County Emergency Management
Harden utility infrastructure to make more resistant to hail (i.e., burying of telephone lines)	Low	As requested within local communities	Costs to be determined based on specific needs of project area	County Emergency Management Department and local utility companies
Create a hardened emergency communication facility.	High	2013-2018	Cost to be determined	Sheboygan County Board
Tornadoes/High Winds				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Disseminate severe weather safety information to the public	High	As needed	Covered by existing budgets	National Weather Service, County Sheriff's Department, and Sheboygan City Police Department
Extensive media coverage during Tornado Awareness Week	Medium	Ongoing	Covered by existing budgets	County Emergency Management

Table 4.1: Mitigation Action Plan - County (cont'd)

Tornadoes/High Winds (cont'd)				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Assist National Weather Service in conducting tornado spotter training programs and organizing local tornado spotter networks	Medium	Ongoing	Covered by existing budgets	County Emergency Management and National Weather Service
Use of early warning system through pagers, NOAA weather radios, and sirens to first responders	Medium	Ongoing	Covered by existing budgets	County Emergency Management, County Sheriff's Department, and Sheboygan City Police Department
Consider construction of safe shelters for mobile home parks and other vulnerable public areas	Medium	Ongoing	Costs to be determined based on specific needs of project area	County Emergency Management and local emergency management directors
Assist personnel in schools and businesses, public facility managers, and citizens in determining "best available" tornado safety areas	Medium	As needed	Covered by existing budgets	County Emergency Management and American Red Cross
Review and update Comprehensive Safety Plan for all county buildings	Medium	As needed	Covered by existing budgets	County Emergency Management
Continue to hold tornado safety drill	High	Ongoing	Covered by existing budgets	County Emergency Management
Continue to test and oversee outdoor warning system	High	Ongoing	Covered by existing budgets	County Emergency Management, County Sheriff's Department, and local jurisdictions
Anchor mobile homes and exterior attachments (such as carports and porches)	Medium	Ongoing	\$35.00-\$50.00/mobile home for tie down and then additional costs for leveling and installation	All participating jurisdictions
Educate public to secure loose items (such as yard and patio furniture) during tornado or high wind events	Low	Ongoing	Covered by existing budgets	National Weather Service

Table 4.1: Mitigation Action Plan - County (cont'd)

Winter Storms				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Ensure that plow and sanding equipment is operational and available	High	Ongoing	Covered by existing budgets	Local public works department with jurisdiction in the area
Utilization of the media to disseminate emergency information	High	As needed	Covered by existing budgets	National Weather Service
Provide educational materials to the public regarding safety during winter storm events	Medium	Ongoing	Covered by existing budgets	Local highway departments and local law enforcement departments
Lightning Storms and Thunderstorms				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Protection of structures through use of fire resistant materials	Low	Ongoing	Costs to be determined based on project and jurisdiction	Local Building Inspectors
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 Management and American Red Cross
Disseminate severe weather safety information to the public	High	As needed	Covered by existing budgets	National Weather Service
Use of early warning system through pagers and NOAA weather radios to first responders	Medium	As needed	Covered by existing budgets	County Emergency Management, County Sheriff's Department, and Sheboygan City Police Department
Flooding				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Continue to issue early warnings through flood advisory bulletins	High	Ongoing	Covered by existing budgets	National Weather Service
Dissemination of instructions to the public through the media	High	As needed	Covered by existing budgets	National Weather Service
Maintain information regarding, and coordination of, congregate care facilities	High	Ongoing	Covered by existing budgets	American Red Cross

Table 4.1: Mitigation Action Plan - County (cont'd)

Flooding (cont'd)				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
National Flood Insurance Program*	High	Ongoing	Covered by Existing Annual Budgets	County Planning and Resources Department
Incorporation of Floodplain Management in Comprehensive Plan Updates*	Medium	Ongoing	Covered by Comprehensive Planning Grants (WDOA)	County Planning and Resources Department
Complete Hydrology Study of Sheboygan County (Currently only have parts of county at this time.)*	Low	2010 - 2015	Costs to be Determined	County Planning and Resources Department
Handle the evacuation of people and property in the case of a severe flood event	High	As needed	Covered by existing budgets	Local law enforcement and Fire Departments
Provide sand and bags for volunteers to sandbag	Low	As needed	Covered by existing budgets	County Highway Department
Protection of existing buildings and other structures	Low	As needed	Costs to be determined based on specific project	County Emergency Management
Review and update floodplain zoning ordinances as necessary	Medium	As needed	Covered by existing budgets	County Planning and Conservation Department
Land use/comprehensive planning review and updates	Medium	Ongoing	Covered by existing budgets	County Planning and Resources Department
Promotion of the sale of flood insurance	Low	Ongoing	Covered by existing budgets	County Planning and Conservation Department and Lenders
Study effects of current and future development in the approximate floodplain and any other areas that have not yet been studied	High	As funding is available	\$4,000 - \$5,000	County Planning and Conservation Department and County Emergency Management
Review and update evacuation procedures for persons located in the Hydraulic Shadow of a Dam	Medium	As needed	Covered by existing budgets	County Emergency Management
Extreme Temperature (Cold and Heat)				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Organize outreach to vulnerable populations during periods of extreme temperature, including the establishment and promotion of accessible heating or cooling centers in the community	Medium	As needed	Covered by existing budgets	County Health Department and American Red Cross
Continue to provide safety information to the public during periods of extreme temperature	Medium	Ongoing	Covered by existing budgets	County Health Department

Table 4.1: Mitigation Action Plan - County (cont'd)

Fog					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
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 and/or highway safety grants	Traffic Safety Commission	
Drought					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
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	
Wildland Fires					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
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	Medium	As needed	Covered by existing budgets	Local fire departments	
Develop local ordinances to require burn permits and restriction of campfires and outdoor burning	Medium	Ongoing	Costs to be determined based on needs of jurisdiction	All participating jurisdictions	
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 departments, all participating jurisdictions, and local building inspectors	
Schedule regular training and exercise sessions for response personnel	High	Ongoing	Covered by existing budgets	All participating jurisdictions and Wisconsin Department of Natural Resources	
Coastal Hazards					
Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
Map high hazard areas for coastal erosion/landslides.	High	2012-2013	\$5,000	Land Information Committee	

Table 4.1: Mitigation Action Plan - County (cont'd)

Landslides				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Map high hazard areas for coastal erosion/landslides.	High	2012-2013	\$5,000	Land Information Committee
Subsidence				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Provide management information to residents as needed.	Low	Ongoing	Covered by existing budgets	
MAN-MADE HAZARDS				
Hazardous Materials Incidents				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Support Local Emergency Planning Committee	Medium	Ongoing	Covered by existing budgets	County Emergency Management and County Local Emergency Planning Committee (LEPC)
Continue to review and update Countywide Hazardous Materials Response Plan	Medium	As needed	Covered by existing budgets	County Emergency Management
Support Countywide Hazardous Materials Response Team, including additional training and acquisition of necessary equipment	Medium	Ongoing	Covered by grants and state contract (\$25,000 per year)	County Emergency Management
Develop facility off-site plans for known/identified planning facilities	High	Ongoing/4 year update	Covered by funds currently being received by EPCRA and EMPG grants	County Emergency Management
Improve road design, routing, and traffic control at problem roadways to reduce risk of transportation-related accidents	High	Ongoing	Costs to be determined based on specific needs of project area	Local jurisdictions and County Traffic Safety Commission
Water Supply Contamination				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Identify pathways of contamination to groundwater (e.g.: by soil type, fractures in bedrock, etc.) to ensure protection and increase public awareness	High	Ongoing	Costs to be determined based on pending studies	County Planning and Conservation Department and Wisconsin Department of Natural Resources

Table 4.1: Mitigation Action Plan - County (cont'd)

Water Supply Contamination (cont'd)				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Replace or repair equipment or accessories at municipal water supply systems if in poor condition or if inadequate, and monitor components periodically if they are in average condition (e.g., electrical pumps, auxiliary generators, and valves)	High	Ongoing	Costs to be determined based on specific needs of project area	Local public water utilities
Increase public awareness on water contamination and safety issues	Medium	Ongoing	Costs to be determined based on specific needs of project area	County UW-Extension, Local Water Utilities, and Wisconsin Department of Natural Resources
Communicable Diseases				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Continue to review and update the Sheboygan County medical and mass casualty plan	Medium	As needed	Covered by existing budgets	County Emergency Management, and Emergency Medical Services Council
Continue to review and update the Sheboygan County Emergency Medical Services Plan	Medium	Annually	Covered by existing budgets	Emergency Medical Services Council
Continue to plan and coordinate periodic disaster exercises	Medium	Ongoing	Covered by existing budgets	County Emergency Management
Encourage immunization against communicable diseases	High	Ongoing	Covered by existing budgets	County Health Department
Maintain public health systems with sufficient disease monitoring and surveillance as well as public awareness campaigns that emphasize the causes, symptoms, and protective actions for disease outbreaks or other potential public health emergencies	High	Ongoing	Covered by existing budgets	County Health Department
Maintain livestock health systems with sufficient disease monitoring and surveillance as well as public awareness campaigns that emphasize the causes, symptoms, and protective actions for disease outbreaks or other potential public health emergencies	High	Ongoing	Covered by existing budgets	Wisconsin Department of Agriculture, Trade, and Consumer Protection

Table 4.1: Mitigation Action Plan - County (cont'd)

Violence				
Project	Priority	Project Timetable	Estimated Cost	Responsible Party
Assist in the development of bomb threat policies and procedures by each school, hospital, business, and management building located in Sheboygan County	High	Ongoing	Covered by existing budgets	Local law enforcement departments, County Emergency Management, local fire departments, and all school districts within the County
Provide law enforcement agencies with training, staffing, and resources	High	Ongoing	Covered by existing budgets	Local law enforcement and fire departments

Note: The actions items that address NIFP compliance are indicated with an asterisks (*).

Table 4.2: Mitigation Action Plan – Municipalities

NATURAL HAZARDS						
All Natural Hazards						
Municipality	Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
Village of Elkhart Lake	Establish, implement, and communicate a schedule for conducting and evaluating emergency management exercises	Medium	2013-2014	\$1,000	Emergency Management Director	
City of Sheboygan	Emergency Power Generators at Critical Facilities	High	Ongoing	Costs to be Determined	City of Sheboygan	
City of Sheboygan	Reinstate Local Emergency Planning Committee (LEPC)	High	2010	Minimal, Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Disaster Preparedness	High	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Joint City/County Emergency Dispatch Facility (hardened)	High	2010-2015	\$3-5 million	City of Sheboygan	
City of Sheboygan	Geo-Notifier ("Reverse 911") Public Notification System	Medium	2010-2015	\$1 per capita annually	City of Sheboygan	
Village of Cascade	Maintain updated list of critical facilities	Low	2013-2018	Covered under County Plan Update	Sheboygan County, Village of Cascade	
Tornadoes/High Winds						
Municipality	Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
City of Sheboygan	Identification of Emergency Shelter Locations	High	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Identification of Emergency Shelter Deficit Locations	Medium	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Encourage Use of Tie-Downs with Ground Anchors for Manufactured Homes and Mobile Homes	Medium	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Enhanced Construction Standards and Techniques	Low	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	

Table 4.2: Mitigation Action Plan – Municipalities (cont'd)

Tornadoes/High Winds (cont'd)					
<i>Municipality</i>	<i>Project</i>	<i>Priority</i>	<i>Project Timetable</i>	<i>Estimated Cost</i>	<i>Responsible Party</i>
Village of Elkhart Lake	Ensure tornado sirens can be heard throughout the village	High	Ongoing	\$10,000	Village of Elkhart Lake
Village of Random Lake	Add an emergency siren on the east side of the village	High	As funds become available	\$17,000	Village of Random Lake
Village of Waldo	Upgrade existing tornado siren systems	High	As funds become available	Costs to be Determined	Village of Waldo
Village of Howards Grove	Replace emergency siren on the north side of the village	Medium	As funds become available	\$15,000	Village of Howards Grove
Winter Storms					
<i>Municipality</i>	<i>Project</i>	<i>Priority</i>	<i>Project Timetable</i>	<i>Estimated Cost</i>	<i>Responsible Party</i>
City of Sheboygan	Priority Policy for Salting and Plowing Roadways	High	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan
City of Sheboygan	Add a Salt Storage Facility	High	2012-13	~\$500,000	City of Sheboygan
City of Sheboygan	Promote Winter Storm Hazard Awareness	Medium	Ongoing	Covered by Existing Annual Budgets	Sheboygan County
Lightning Storms and Thunderstorms					
<i>Municipality</i>	<i>Project</i>	<i>Priority</i>	<i>Project Timetable</i>	<i>Estimated Cost</i>	<i>Responsible Party</i>
Village of Adell	Add Fire Hydrant at Water Tower Site	High	2012-13	\$56,000	Village of Adell
City of Sheboygan	Review Critical Facilities for Lightning Improvements Needs	Medium	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan
City of Sheboygan	Lightning Safety Guidelines	Low	Ongoing	Costs to be Determined	City of Sheboygan
Flooding					
<i>Municipality</i>	<i>Project</i>	<i>Priority</i>	<i>Project Timetable</i>	<i>Estimated Cost</i>	<i>Responsible Party</i>
Cities of Sheboygan, Sheboygan Falls, and Plymouth; and Villages of Cedar Grove, Glenbeulah, Howards Grove, Oostburg, Waldo, Cascade, Kohler, and Random Lake	Maintain Participation in National Flood Insurance Program	High	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan

Table 4.2: Mitigation Action Plan – Municipalities (cont'd)

Flooding (cont'd)						
<i>Municipality</i>	<i>Project</i>	<i>Priority</i>	<i>Project Timetable</i>	<i>Estimated Cost</i>	<i>Responsible Party</i>	
City of Sheboygan	Preservation of Natural Resources in Floodplains	High	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Flood Forecasting, Warning Systems, Emergency Plans	Medium	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Floodproofing Techniques	Medium	Ongoing	Costs to be Determined	City of Sheboygan	
City of Sheboygan	Stormwater Detention (see City of Sheboygan Stormwater Management Plan)	Medium	2010-2015	Costs detailed in Stormwater Management Plan	City of Sheboygan	
City of Sheboygan	Incorporation of Floodplain Management in Comprehensive Plan Updates	Medium	Ongoing	Covered by Comprehensive Planning Grants (WDOA)	City of Sheboygan	
City of Sheboygan	Inform Property Owners in cases where property is located in the 100-Year Floodplain	Medium	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Reevaluation of Floodplain Zoning Ordinances	Medium	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Acquisition and Relocation	Medium	Ongoing	Costs to be Determined	City of Sheboygan	
City of Sheboygan	Annual Review of Flood Mitigation Plan	Medium	Ongoing	Covered by Existing Annual Budgets	City of Sheboygan	
City of Sheboygan	Complete Hydrology Study of Sheboygan County (Currently only have parts of county at this time.)	Low	2010 - 2015	Costs to be Determined	Sheboygan County	
City of Sheboygan Falls	Oak Street Storm Sewer Project	Medium	2013-2015	\$310,000	City of Sheboygan Falls	
City of Plymouth	Complete a dam break analysis of the Plymouth Dam	Medium	2013-2014	Covered by Existing Budgets	City of Plymouth	
Village of Glenbeulah	Conduct dam failure analysis	Medium	2013-2015	\$5,000	Village of	

Table 4.2: Mitigation Action Plan – Municipalities (cont'd)

Flooding (cont'd)						
Municipality	Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
Village of Howards Grove	Design and construct an elevated roadway for North River Parkway	Medium	As funds become available	\$1,000,000	Village of Howards Grove	
Village of Kohler	Flood mitigation/Retention Pond along Woodland Road	Medium	As funds become available	\$226,000	Village of Kohler	
Extreme Temperature (Cold and Heat)						
Municipality	Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
City of Sheboygan	Publicity of Extreme Heat Events	Medium	Ongoing	Covered by Existing Annual Budgets	Sheboygan County	
City of Sheboygan	Supplies for Vulnerable Populations	Low	Ongoing	Costs to be Determined	City of Sheboygan	
City of Sheboygan	Publicity of Extreme Cold Events	Medium	Ongoing	Covered by Existing Annual Budgets	Sheboygan County	
Fog						
Municipality	Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
City of Sheboygan	Publicity of Fog Events	Medium	Ongoing	Covered by Existing Annual Budgets	Sheboygan County	
Drought						
Municipality	Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
Village of Elkhart Lake	Discuss adopting village water conservation ordinance to be put in effect in times of drought	Medium	2013-2014	Attorney and staff time	Village of Elkhart Lake and Water Utility	
MAN-MADE HAZARDS						
Hazardous Materials Incidents						
Municipality	Project	Priority	Project Timetable	Estimated Cost	Responsible Party	
Village of Elkhart Lake	Invest in reverse call, text, or email system to contact village residents when a hazardous situation may occur or has occurred	Low	2014-2018	Phone = \$35,000 + \$10,000 annually; Text and Email = \$2,000 annually	Village of Elkhart Lake	
Village of Oostburg	Handle fuel spills from motor vehicles	Medium	As Needed	Covered by Existing Budgets	Local Fire Department	

Table 4.2: Mitigation Action Plan – Municipalities (cont'd)

Water Supply Contamination						
<i>Municipality</i>	<i>Project</i>	<i>Priority</i>	<i>Project Timetable</i>	<i>Estimated Cost</i>	<i>Responsible Party</i>	
Village of Elkhart Lake	Prevent contamination of new sources of surface and groundwater, especially for new development	Medium	Ongoing	Included in Village Budget	Village of Elkhart Lake	
Village of Howards Grove	Identify and implement an alternate public water source in the event of contamination	Medium	As needed	\$8,000,000	Village of Howards Grove	
Village of Cedar Grove	Install a water system control and monitoring system	Medium	2013	\$68,000	Village of Cedar Grove	

Policies, Programs, and Resources for Mitigation

Sheboygan County has a number of authorities that enforce policies, execute programs, and provide resources that support the mitigation action plan for reducing potential losses identified in the risk assessment. These authorities have been identified under the responsible parties (where applicable) in the mitigation action plan for Sheboygan County (Table 4.1) and its municipalities (Table 4.2), and include the following;

- Sheboygan County Emergency Management
 - Relevant policies and programs include coordinating effective disaster response and recovery efforts in the county through response, recovery, planning, training, and exercises, and mitigation.
- Sheboygan County Highway Department
 - Relevant policies and programs include road maintenance, stormwater management, and management of salt storage for winter storms.
- Sheboygan County Health Department
 - Relevant 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).
- Sheboygan County Sheriff's Department and Local Law Enforcement
 - Relevant policies and programs focus on protecting the lives, safety, and property of the people in the county.
- Sheboygan County Planning and Conservation Department
 - Relevant policies and programs focus on improving and promoting the quality of community living and natural resources in the county.
- Sheboygan County Traffic Safety Commission
 - Relevant policies and programs focus on enhancing safe traffic patterns and vehicle-pedestrian interactions in the county.
- Sheboygan County Local Emergency Planning Committee (LEPC)
 - Relevant policies and programs focus on preparing the county to cope with emergencies involving the accidental release of hazardous substances.
- Sheboygan County Land Information Committee
 - Relevant policies and programs focus on maintain accurate and current land information in the county.
- Sheboygan County Emergency Medical Services (EMS) Council
 - Relevant policies and programs include overseeing the county's EMS system and keeping the county informed on present and future EMS needs.
- Local Fire Departments
 - Relevant policies and programs include coordinating emergency preparedness, mitigation, response, and recovery efforts.

- Local Utilities Companies
 - Relevant policies and programs include maintaining electrical power and transmission facilities.
- Wisconsin Emergency Management
 - Relevant 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.
- Wisconsin Department of Agriculture, Trade, and Consumer Protection
 - Relevant policies and programs focus on monitoring for animal diseases and responding when outbreaks occur.
- American Red Cross
 - Relevant policies and programs include disaster relief and educational programs that promote health and safety.
- National Weather Service
 - Relevant 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. Sheboygan County has taxing authority through property taxes to raise funds for the purpose hazard mitigation. Additional funding sources for hazard mitigation actions are available from a number of federal and state grant programs.

Potential Funding Sources for Mitigation

Funding for hazard mitigation programs and projects can come from a number of sources both public and private. Non-local funding can come from a number of sources, either in the form of a grant or a loan. The following text provides a description of a number of potential grant programs available to Sheboygan County (or other entities seeking to carry out hazard mitigation actions) in 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 Grants (AFG) is to meet the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical services

organizations. The AFG program has helps firefighters and other first responders to obtain critically needed equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. The National Preparedness Directorate in the Federal Emergency Management Agency administers the grants in cooperation with the U.S. Fire Administration.

The Fire Prevention and Safety Grants (FP&S) are part of the Assistance to Firefighters Grants (AFG) and are under the purview of the National Preparedness Directorate in the Federal Emergency Management Agency. FP&S grants support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and mitigate high incidences of death and injury.

FEMA Flood Mitigation Assistance Program

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

FEMA Hazard Mitigation Grant Program

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

FEMA Pre-Disaster Mitigation Program

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

Pipeline and Hazardous Materials Safety Administration, Hazardous Materials Emergency Preparedness

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

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

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

State of Wisconsin Programs

WDNR Lake Planning Grant Program

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

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

WDNR Municipal Flood Control Grant Program

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

construction or other development costs and with Local Assistance Grants for providing administrative support activities.

WDNR River Planning Grant Program

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

WDNR Volunteer Fire Assistance Grant

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

WDOA Comprehensive Planning Grant Program

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

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

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

CHAPTER 5 - PLAN MAINTENANCE AND ADOPTION PROCESS

PLAN ADOPTION PROCESS

The Sheboygan County Hazard Mitigation Plan development process was guided by the County Hazard Mitigation Plan Steering Committee over an 18-month timeframe, with professional planning support from the Bay-Lake Regional Planning Commission. A list of Steering Committee members is located in Table 1.1 of this document.

Both WEM and FEMA reviewed a final draft of the County's hazard mitigation plan prior to adoption by the Sheboygan County Board. Comments received from WEM and FEMA were reviewed by the Steering Committee and necessary revisions were made. The plan was then adopted by resolution by the Sheboygan County Board on January 21, 2014. The resolution adopting the plan can be found on page vii, just after the Table of Contents. After the plan was adopted by the Sheboygan County Board, it was approved by WEM and FEMA. Approval letters from WEM and FEMA can be found on page ix.

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 Sheboygan County Hazard Mitigation Plan is an update to the initial 2008 plan, and will continue to be monitored, evaluated, and updated by Sheboygan County Emergency Management. Every five years, the Sheboygan County Hazards Mitigation Plan will be comprehensively reviewed, and fully updated. This update shall involve the collection of the most current data to support the plan and the development of new mitigation strategies and an implementation plan. This planning effort will be comprehensive, and will incorporate opportunities for public involvement to meet all requirements of 44 CFR Part 201.6 and/or any applicable requirements or regulations developed over the next five years.

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

This plan update is the first update to the County's Hazard Mitigation Plan since it was adopted in 2008. This update results in a more comprehensive county plan that includes the City of Sheboygan, the county's most populous city, which previously was not included as the city maintained their own plan. Additionally, the mitigation action plan includes a number of new additions that resulted in a more comprehensive strategy. This plan update also addresses additional hazards not covered in the 2008 plan that have the potential to impact the County, including Coastal Hazards, Landslides, and Subsidence.

Additional Plan Review

Within three to six months following a significant natural hazard event (as determined by the Steering Committee), a special post-disaster review will occur. Information concerning the disaster shall be collected by the Sheboygan County Emergency Management Coordinator 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 Committees for the plan will analyze factors that contributed to any impacts of the hazard event, the likelihood of the event recurring, and any strategies that should be implemented to mitigate the impacts in the event of a recurrence. 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 Sheboygan County Board for its action and consideration.

PLAN INCORPORATION

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

- Issues and Opportunities Element – A summary of major hazards that local governments are vulnerable to, and what is proposed to be done to mitigate future losses from the hazards.
- Housing Element – An inventory of the properties that are in the floodplain boundaries, the location of mobile homes, recommendations concerning building codes, shelter opportunities, and a survey of homeowners that may be interested in a voluntary buyout and relocation program.
- Transportation Element – Identify any transportation routes or facilities that are more at risk during flooding or winter storms.
- Agricultural, and Natural and Cultural Resources Element – Identify the floodplains and agricultural areas that are at risk during hazardous events. Incorporate recommendations on how to mitigate future losses to these areas.
- Economic Development Element – Describe the impacts that past hazards have had on area businesses.
- Intergovernmental Cooperation Element – Identify intergovernmental police, fire and rescue service sharing agreements that are in effect or which may merit further investigation, and consider cost sharing and resource pooling of government services and facilities.

- Land Use Element – Describe how flooding has impacted land uses and what is being done to mitigate negative land use impacts from flooding; map and identify natural hazard areas, such as floodplains and soils with limitations.
- Implementation Element – Have recommended actions from this plan included in the implementation element of comprehensive plans of all jurisdictions in the planning area.

Elements of the Sheboygan County Hazard Mitigation Plan have been incorporated into the *Sheboygan County Comprehensive Plan* and the *2030 Sheboygan Urbanized Area Sewer Service Plan*.

The Sheboygan County Comprehensive Plan adopted in 2009 provides information on flooding and discourages development in the floodplain, and encourages parks and open space in floodplain areas. The plan also calls for shoreline regulation and erosion control projects to mitigation bluff erosion on Lake Michigan (addressed under Coastal Hazards).

The Sheboygan Urbanized Area Sewer Service Area Plan adopted in 2011 identifies floodplain areas as environmental sensitive areas where development cannot occur for those areas within the Sheboygan Urbanized Area Sewer Service Area.

PLAN COORDINATION

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

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

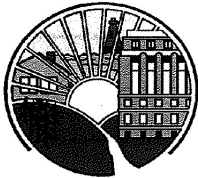
- Population, housing, and employment data from the Bureau of the Census (2000 and 2010);
- Bay-Lake Regional Planning Commission land use inventory dataset (2002 and 2009);
- Risk Assessment Matrix Worksheet adapted from the *Resource Guide to All Hazards Mitigation Planning in Wisconsin* (AWRPC, 2003);
- Local Hazard Mitigation Plan Review Crosswalk, Completed for Sheboygan County in 2008 was used to complete the updated Crosswalk;
- *State of Wisconsin Hazard Mitigation Plan* (2008) was used to develop hazard descriptions for the risk assessment;
- FEMA *Local Mitigation Plan Review Guide* (2011) was used to ensure the plan contained all required information;
- FEMA *Mitigation Ideas: Possible Mitigation Measures by Hazard Type* (2002) contributed to the development of the mitigation action plan.
- Past hazard occurrences were obtained from National Oceanic and Atmospheric Administration (NOAA) – National Climatic Data Center – severe weather event data (1995 - July 2011);

- U.S. Geological Survey maps on landslides, land subsidence and earthquakes were used to describe those hazards;
- FEMA Flood Insurance Studies and FEMA Flood Insurance Rate Maps (FIRMs) were used to map floodplain areas;
- Parcel data from Sheboygan County was used to determine impacts of hazards with defined areas;
- Assessed valuation data from Sheboygan County was used to derive estimates of potential dollar losses;
- *Sheboygan County Emergency Operations Plan* contributed to the development of the mitigation action plan;
- *Sheboygan County Hazard Analysis* contributed to the development of the mitigation action plan;
- *Sheboygan County Hazardous Materials Response Plan* contributed to the development of the mitigation action plan;
- *Sheboygan County Comprehensive Plan* was used to develop the community profile and contributed to the development of the mitigation action plan; and
- Comprehensive plans for local jurisdictions within the planning area 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

In order to assist in plan development, Sheboygan County established a Hazard Mitigation Plan Steering Committee. A table listing all members of the Committee can be found in Chapter 1 - Introduction. The plan steering committee met on five occasions: March 21, 2012; April 18, 2012; May 23, 2012; September 12, 2012, and November 29, 2012. This Appendix contains the sign-in sheets from each of these meetings to verify attendance and participation by Committee members.



**Sheboygan County Hazard Mitigation Plan
Steering Committee Sign-In
March 21, 2012**



Name	Affiliation
DAVID SENKBEIL	TOWN WILSON
Teel Mullis	WISCONSIN Public Service
MARK LEIBKAM	SHEBOYGAN COUNTY HIGHWAY
RON NICOLAUS	PLYMOUTH FIRE DEPT
CHUCK BUTLER	SHEBOYGAN FIRE DEPARTMENT
BRETT ZEMPA	SHEB CO PLANNING
BILL RUTTEN	KOTLER PA
Steve Jankowski	Sheboygan County
Roxanne L. Kahan	Emergency Management Professional
Angela Pierce	Bay-Lake Regional Planning Commission



Sheboygan County Hazard Mitigation Plan
Steering Committee Sign-In
April 18, 2012



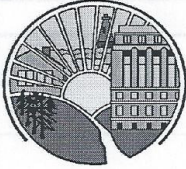
Name	Affiliation
Brett Zember	SHEBO CO PLANNING
Shawn Wesner	shebo Co Planning & Conservation
DAVE Albright	Sheboygan Area School District
Jim Schwinn	Town of Sheboygan
CHUCK BUTLER	SHEBOYGAN FIRE DEPARTMENT
DAVE SENTBEIL	TOWN WILSON
Steve Reinhardt	Sheboygan County
Bill Rutten	KOHLER P.D.
Ron Nicolaus	PLYMOUTH F.D.
John T. Mackinnon	PLYMOUTH UTILITIES
Teel Willis	WISCONSIN Public Service Corp
Dale Hippensteel	Sheboygan Co. Public Health
Angela Pierce	Bay-Lake Regional Planning Commission



Sheboygan County Hazard Mitigation Plan
Steering Committee Sign-In
May 23, 2012



Name	Affiliation
Angela Pierce	Bay-Lake RPC
RONALD NICOLAUS	PLYMOUTH FIRE DEPT
BILL RUTTEN	KOHLER PD
Steve Reinhardt	Sheboygan Co. EM
Roxanne Kahan	Emergency Management
DAVE SENTBEIL	TOWN Wilson
Jim Schwinn	Town of Sheboygan



Sheboygan County Hazard Mitigation Plan
Steering Committee Sign-In
September 12, 2012



Name	Affiliation
RONALD NICOLAUS	PLYMOUTH F.D.
DAVE ALBRIGHT	SASD
WILLIAM RUTTEN	KOTLER PH
Steve Steinhilber	Sheboygan Co.
Jim Schwinn	Town of Sheboygan - Supervisor
DAVE SENKBEIL	TOWN WILSON SUPERVISOR
Dale Hippensterl	Sheboygan Co. Public Health

/	
Sheboygan Hazard Plan Steering Committee Meeting 11/29/12	
<u>NAME</u>	<u>AFFILIATION</u>
BILL RUTTEN	KOTLER PH
Steve Steinhilber	Sub County
Jessica Reilly	Village Elk Lake
Teel Willis	WPSC
Jim Schwinn	Town of Sheboygan
Laura Gumm	Alliant Energy
RONALD NICOLAUS	PLYMOUTH F.D.
JOHN MACKINNON	PLYMOUTH UTILITIES
Steve Cobb	Sheboygan PD

APPENDIX B – HAZARD RISK ASSESSMENT MATRIX

Members of the plan steering committee completed an update to the Risk Assessment Matrix worksheet in April 2012. The following table is the worksheet with the averaged scores from the steering committee members.

Each plan steering committee member was asked to assign a risk rating (1 = low, 2 = moderate, and 3 = high) to the various risk assessment criteria for each natural hazard. The total number of points for each of the identified natural hazards was then calculated.

Column 1 lists the natural hazards that pose a risk in Florence County. Columns 2-11 provide a set of criteria that are designed to assist you in determining which hazards pose the highest risks to the county.

A low, medium, or high numerical rating of 1, 2, or 3 respectively is assigned to each criterion, and then each hazard row is totaled. The hazards with the highest rating in column 12 should be the hazards posing the highest risk to a planning area.

This matrix should not be construed as a precise method for determining hazard risks; rather it is used to assist in reaching a consensus on which hazards pose a higher risk.

SHEBOYGAN COUNTY HAZARD RISK ASSESSMENT MATRIX

1	2	3	4	5	6	7	8	9	10	11	12
Hazard Identification	Hazard Frequency	Hazard Probability	Health & Public Safety	Home Damage	Business Disruption	Public Expenditures	Magnitude of Population at Risk	Magnitude of Homes at Risk	Magnitude of Businesses at Risk	Adjustment	Risk Assessment Rating Total
Hazard Type	Frequency of past hazard occurrences	Probability of hazard occurring in the future	Degree of past hazard events causing injuries, sickness and/or deaths	Degree of past hazard events causing damage to homes	Degree of past hazard events causing damage to business and/or interruption of business trade	Amount of local, state, and federal funds expended on past hazard recovery activities	Amount of population still vulnerable to injury, sickness, and/or death from hazard	Amount of homes still vulnerable to damage from hazard	Amount of businesses still vulnerable to damage or interruption of business trade		
Flooding (including flash, riverine, lake, stormwater, and dam failure flooding)	2	3	1	3	2	3	2	2	2	0	19
Lightning Storms and Thunderstorms (including hail storms)	3	3	2	2	2	2	2	2	2	0	19
Tornadoes/High Winds	3	3	2	3	2	3	2	3	3	0	23
Winter Storms (includes heavy snow storms, ice storms and blizzards)	3	3	2	2	3	3	2	2	2	0	21
Wildland Fires	2	2	1	1	1	1	1	1	1	0	11
Drought	1	2	1	2	1	1	1	1	1	0	11
Extreme Heat	2	2	2	1	1	1	2	1	1	0	14
Extreme Cold	2	2	2	2	1	1	2	1	1	0	13
Fog	3	3	2	1	1	1	1	1	1	0	14
Coastal Hazards	1	1	1	1	1	1	1	1	1	0	10
Landslide	1	1	1	1	1	1	1	1	1	0	9
Subsidence	1	1	1	1	1	1	1	1	1	0	10
Hazardous Materials	1	2	2	1	1	1	2	2	2	0	13
Water Supply Contamination	1	1	1	1	1	1	2	1	2	0	11
Communicable Diseases	1	2	1	1	1	1	2	1	1	0	11
Violence	1	2	1	1	1	1	1	1	1	0	11

APPENDIX C – PUBLIC NOTICE OF OPEN HOUSE AND NEWSPAPER ARTICLE

NOTICE OF PUBLIC INFORMATIONAL MEETING *Sheboygan County Hazard Mitigation Plan Update*

PLEASE TAKE NOTICE THAT a *Public Informational Meeting* has been scheduled in **Sheboygan** for Wednesday, **January 30, 2013** to provide information about the county's hazard mitigation plan update. This informational meeting will be held from **6:00 p.m. to 7:00 p.m.** at the **Mead Public Library** in the Rocca Room located at **710 N. 8th Street in Sheboygan**.

Hazard mitigation planning involves developing a set of actions designed to reduce or eliminate long-term risk to people and property from natural hazards and their effects. This informational meeting will provide interested individuals with an overview of the plan, a draft plan for review, display maps from the plan, and an opportunity to comment. A copy of the draft plan can be downloaded for review in advance of the meeting at <http://tinyurl.com/ShebCoHazPlan>.

For additional information, you can contact Angela Pierce with the Bay-Lake Regional Planning Commission at apierce@baylakerpc.org or 920-448-2820.

Any person wishing to attend this meeting who, because of a disability, requires special accommodations, please contact the Mead Public Library at (920) 459-3400 at least two working days prior to the meeting so that arrangements can be made.

the Review

Neighborhood News Since 1895 • Plymouth, Wis.
2 sections, 36 pages • Tuesday, January 22, 2013 •

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News Digest

Hazard plan meeting scheduled

Sheboygan County Emergency management, response, and planning personnel from the private and public sectors have been working together as a steering committee to update the county's hazard mitigation plan. The plan was developed in 2008 under funding from the Federal Emergency Management Agency (FEMA).

A public informational meeting to present the draft plan, maps, and materials will be held Jan. 30, from 6-7 p.m. at Mead Public Library in the Rocca Room at 710 N. Eighth St., Sheboygan.

Plan development 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 relevant county and municipal departments and representatives from local business, utilities, and school districts.

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.

With this plan, the county is able to identify the actions steps needed in order to minimize risk and damage to people and property from hazards. Additionally, the County remains qualified to apply for FEMA funding to undertake identified projects that will minimize future risks.

The draft plan can be downloaded from <http://tinyurl.com/ShebCo-HazPlan>. If you have any questions, please contact Steve Steinhardt with Sheboygan County Emergency Management at (920) 459-3360 or Angela Pierce with the Bay-Lake Regional Planning Commission at 920-448-2820.

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

Communities were provided a listing of their critical facilities, goals identified in the plan, and hazards mitigation actions, and were asked to review and comment on the materials.

Additionally, they were asked to identify mitigation actions specific to their community. The following is the letter that was sent to the municipalities in Sheboygan County and Table D.5.1 below displays the communities that returned the reviewed materials and the community representative that provided community-specific information and signed off on the review materials.

SHEBOYGAN COUNTY SHERIFF'S DEPARTMENT
OFFICE OF THE SHERIFF

Todd W. Priebe, Sheriff
William J. Bruckbauer, Inspector

Phone: (920) 459-3112 FAX: (920) 459-4305

June 7, 2012

<NAME>
<COMMUNITY><TITLE>
<ADDRESS>
<CITY>, <STATE> <ZIP>

RE: Request for Review of Hazard Mitigation Materials

(Please forward to your Plan Commission if you have one, or review with your Common Council or Village Board)

Sheboygan County Emergency Management and the Bay-Lake Regional Planning Commission have been working with the Sheboygan County Hazards Mitigation Plan Steering Committee to update the Hazard Mitigation Plan for the County and all its municipalities.

The 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.

Hazard mitigation planning is being conducted at the county level, with local municipalities participating in the plan by providing valuable input. Once completed, the plan must be adopted locally and by the county before receiving plan approval from FEMA. **Your community's participation in the development of this plan is necessary in order for your community to eventually adopt this plan and to be eligible for future funding from FEMA.**

The following materials have been enclosed to facilitate your participation in development of this plan update:

- A listing of the critical facilities located in your community. **Please review this information for accuracy and sign-off on your approval** (with or without edits). It is very likely that some critical facilities have been omitted and others need to be removed.
- Goals of the plan, and hazards to be addressed in the plan listed in prioritized order based on impact and frequency (from the steering committee). **Please review, comment, and sign-off on your approval** (with or without comments).
- The mitigation actions identified by the steering committee. **Please review, comment, and sign-off on your approval** (with or without comments) and **ADD AT LEAST ONE MITIGATION ACTION SPECIFIC TO YOUR COMMUNITY** that you plan to implement or would like to implement if grant funding were available.

525 North 6th Street, Sheboygan, Wisconsin 53081

If you have any questions or need any additional information please contact Angela Pierce with the Bay-Lake Regional Planning Commission at (920) 448-2820. Please return your information **no later than August 31, 2012** to Bay-Lake Regional Planning Commission, 441 S. Jackson Street, Green Bay, WI 54301. **PLEASE NOTE THAT THIS IS THE ONLY REQUEST THAT WILL BE MADE FOR THIS INFORMATION. IF YOUR MATERIALS ARE NOT RECEIVED, YOU WILL NOT BE A PART OF THE PLAN.** Not participating in this plan will require your community to develop its own plan if you wish to be eligible for future FEMA funding – including disaster assistance. Thank you for your participation in reviewing the enclosed materials.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve Steinhardt". The signature is stylized with a large, looped "S" and a cursive "Steinhardt".

Steve Steinhardt
Emergency Management Director

Enclosures (4):

1) Listing of Critical Facilities; 2) Plan Goals; 3) Hazards Addressed; and 3) Mitigation Actions

Table D.5.1: Incorporated Community Plan Participation via Materials Review

Municipality	Community Representative		
	Name	Title	Date Signed
City of Plymouth	Brian Yerges	City Administrator	9/18/2012
City of Sheboygan	Chuck Butler	Deputy Fire Chief	3/19/2012
City of Sheboygan Falls	Kenneth Sonntag	Plan Commission Secretary	9/7/2012
Village of Adell	Andy Schmitt	Village President	12/5/2012
Village of Cascade	James Larson	Village Trustee	8/18/2012
Village of Cedar Grove	Mark Post	Village President	8/13/2012
Village of Elkhart Lake	Jeanette Moioffer	Administrator/Clerk-Treasurer	8/17/2012
Village of Glenbeulah	Paul Farron	Village Trustee	8/17/2012
Village of Howards Grove	James Scheiber	Village President	8/21/2012
Village of Kohler	Laurie Lindow	Clerk-Treasurer	9/10/2012
Village of Oostburg	Allen Wrubbel	Village President	8/14/2012
Village of Random Lake	Robert McDermott	Village President	12/18/2012
Village of Waldo	Jason Parrish	Fire Chief	11/28/2012

Source: Bay-Lake Regional Planning Commission, 2012.

APPENDIX E– CRITICAL FACILITIES BY COMMUNITY

The Sheboygan County Hazard Mitigation Plan Steering Committee and community representatives identified critical infrastructure assets for all the communities in the county. Table E.1.2 below summarizes the critical facilities by municipality for Sheboygan County.

Table E.1.2: Critical Facilities by Community, Sheboygan County

City of Sheboygan Critical Facilities (2012)

Type	Name
Bridge	Bridge
Bridge	Bridge
Sewage Treatment	Sheboygan Wastewater Treatment
Water	Sheboygan Water Utility
Hospital/Clinic	Sheboygan Memorial Hospital
Hospital/Clinic	St Nicholas Hospital
Fire/Rescue	Sheboygan City Fire/Rescue Station #1
Electric	Edgewater Generator Plant
Public Works	Department of Public Works
Fire/Rescue	Sheboygan City Fire/Rescue Station #2
Fire/Rescue	Sheboygan City Fire/Rescue Station #4
Fire/Rescue	Orange Cross
Military Installation	US Coast Guard
Natural Gas	WPS Gas
Communications	SBC Station
Law Enforcement	County Sheriff Department/Jail
Law Enforcement	Sheboygan County Detention Center
Communications	Tower
Government	City Hall
Law Enforcement	Courthouse
Public Works	County Highway Department
Disaster Response	Red Cross
Communications	Tower
Communications	Tower
Communications	Tower
Communications	Tower
Communications	Tower
Communications	Tower
Communications	Tower
Water	Critical Water Storage Tank
Water	Critical Water Storage Tank
Water	Critical Water Storage Tank
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station

Type	Total
Bridge	2
Communications	10
Disaster Response	2
Electric	10
Fire/Rescue	6
Government	3
Hospital/Clinic	2
Law Enforcement	5
LP Tanks	2
Military Installation	2
Mobile Home Park	2
Natural Gas	1
Public Works	2
School	30
Sewage Treatment	5
Water	6
Grand Total	90

School	Early Learning Center
School	North High
School	Cooper Elementary
School	Grant Elementary
School	Jackson Elementary
School	Jefferson Elementary
School	LongfElementarylow Elementary
School	Madison Elementary
School	Pigeon River Elementary
School	Sheridan Elementary
School	Washington Elementary
School	Christ Child Academy Elementary
School	South High
School	Farnsworth Middle
School	Horace Mann Middle
School	Urban Middle
School	Christ Child Academy Middle
School	Cornerstone Christian Academy
School	Ebenezer Christian
School	Holy Family
School	Immanuel Lurtheran
School	Landmark Christian Academy
School	St. Paul Lutheran
School	Sheboygan Area Lurtheran High
School	Sheboygan Christian School
School	Sheboygan County Christian High
School	Trinity Lutheran
School	Bethlehem Lutheran
School	UW Sheboygan
Water	Critical Water Storage Tank
Communications	Tower
Fire/Rescue	Sheboygan City Fire/Rescue Station #3
Disaster Response	County Emergency Operations Center
Law Enforcement	City Police Department
Law Enforcement	Police Impound Garage
Electric	Electric Power Substations
Electric	Alliant Energy Facility
Electric	Electric Power Substations
Electric	Electric Power Substations
Electric	Electric Power Substations
Electric	Electric Power Substations
Electric	Electric Power Substations
Electric	Electric Power Substations
Electric	Electric Power Substations
Fire/Rescue	Sheboygan City Fire/Rescue Station #5
School	Central High School
Government	County Administration
Mobile Home Park	Sommer's Woodhaven Mobile Home Park

Mobile Home Park	Indian Meadows
Military Installation	Army Reserve Center
Government	County Public Health Department
Water	Water Tower
LP Tanks	J.L. French Corp
LP Tanks	J.L. French Corp

City of Plymouth Critical Facilities (2012)

Type	Name
Sewage Treatment	Plymouth Wastewater Treatment Facilities
Communications	Phone
Electric	Plymouth Utilities Substation No.1
Electric	Plymouth Utilities Substation No.2
Water	Plymouth Utilities Water Reservoir No. 1/2
Water	Plymouth Utilities Water Supply Well No. 15
Military Installation	Armory
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Water	Plymouth Utilities Water Supply Well No. 12
Water	Plymouth Utilities Water Supply Well No. 11
Government	City Hall
Water	Plymouth Utilities Water Supply Well No. 13
Hospital/Clinic	Aurora
Law Enforcement	Plymouth Police Dept
Fire/Rescue	Plymouth Fire Dept
Hospital/Clinic	Aurora Valley View Surgical Center
School	Plymouth High
School	Horizon Elementary
School	Parkview Elementary
School	Riverview Middle
School	Fairview Elementary
School	Faith Christain Academy
School	St. John Lurtheran
School	St. John the Baptist
Mobile Home Park	Cedar View Mobile Home Park
Mobile Home Park	Plymouth Country View Estates
Hospital/Clinic	Marsho Clinic
Hospital/Clinic	Prevea Clinic
Hospital/Clinic	Plymouth Care Center
Hospital/Clinic	Kindred Hearts
Communications	Commonwealth Telephone

Type	Total
Bridge	9
Communications	2
Dam	1
Electric	2
Fire/Rescue	1
Government	1
Hospital/Clinic	10
Law Enforcement	1
Military Installation	1
Mobile Home Park	2
Public Works	1
School	8
Sewage Treatment	3
Water	7
Grand Total	49

Public Works	Municipal Garage
Bridge	Bridge
Hospital/Clinic	Libby House Assisted Living
Hospital/Clinic	Arbor View Assisted Living
Hospital/Clinic	Quit Qu Oc Manor
Hospital/Clinic	Generations
Water	Plymouth Utilities Water Supply Well No. 8
Water	Plymouth Utilities Water Supply Well No. 10
Sewage Treatment	Plymouth Utilities CTH PP Sewage Lift Station
Sewage Treatment	Plymouth Utilities Willow Sewage Lift Station

City of Sheboygan Falls Critical Facilities (2012)

Type	Name
Electric	Electric Power Substations
Water	Water Tower
Water	Water Tower
Water	Water Storage and Booster
Water	Water Supply Well
Communications	Phone
Public Works	DPW
Government	City Hall
Hospital/Clinic	Woodland Manor
Hospital/Clinic	Pine Haven
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Dam	Dam
Electric	Electric Power Substations
Electric	Electric Power Substations
Law Enforcement	Sheboygan Falls Police Dept
Fire/Rescue	Sheboygan Falls Fire Dept
Communications	WCLB 950 Radio Towers
School	Sheboygan Falls High
School	Sheboygan Falls Middle
School	Sheboygan Falls Elementary
School	St. Mary's
Mobile Home Park	Acacia Falls
Electric	Electric Power Substation
Electric	Electric Power Substation
Hospital/Clinic	Aurora
LP Tanks	Bemis Manufacturing

Type	Total
Bridge	3
Communications	2
Dam	2
Electric	5
Fire/Rescue	1
Government	1
Hospital/Clinic	3
Law Enforcement	1
LP Tanks	1
Mobile Home Park	1
Public Works	1
School	4
Water	4
Grand Total	29

Village of Adell Critical Facilities (2012)

Type	Name
Water	Water Tower
Natural Gas	
Fire/Rescue	Adell Fire Department
Government	Village Hall
Water	Water Supply Well
Sewage Treatment	Adell Ingredients

Type	Total
Fire/Rescue	1
Government	1
Natural Gas	1
Sewage Treatment	1
Water	2
Grand Total	6

Village of Cascade Critical Facilities (2012)

Type	Name
Water	Water Tower
Natural Gas	
Water	Water Supply Well
Government	Village Hall
Dam	Dam
Fire/Rescue	Cascade Fire Dept
Sewage Treatment	Cascade
Communications	Tower
Water	Water Supply Well

Type	Total
Communications	1
Dam	1
Fire/Rescue	1
Government	1
Natural Gas	1
Sewage Treatment	1
Water	3
Grand Total	9

Village of Cedar Grove Critical Facilities (2012)

Type	Name
Water	Water Tower
Water	Water Supply Well
Water	Water Supply Well
Communications	Phone
Hospital/Clinic	Aurora
Bridge	Bridge
Fire/Rescue	Cedar Grove Fire Dept
Sewage Treatment	Cedar Grove Sewage Treatment
School	Cedar Grove High
School	Cedar Grove Elementary/Middle
Government	Village Hall

Type	Total
Bridge	1
Communications	1
Fire/Rescue	1
Government	1
Hospital/Clinic	1
School	2
Sewage Treatment	1
Water	3
Grand Total	11

Village of Elkhart Lake Critical Facilities (2012)

Type	Name
Communications	Phone
Water	Water Tower
Water	Water Tower/Well
Natural Gas	
Government	Village Hall
Dam	Dam
Law Enforcement	Elkhart Lake Police Dept
Fire/Rescue	Elkhart Lake Fire Station
School	Elkhart Lake High
School	Elementarykhart Lake Elementary/Middle
Public Works	County Highway Department
Public Works	Department of Public Works
Water	Water Supply Well
Electric	WI Electric Power Repair

Type	Total
Communications	1
Dam	1
Electric	1
Fire/Rescue	1
Government	1
Law Enforcement	1
Natural Gas	1
Public Works	2
School	2
Water	3
Grand Total	14

Village of Glenbeulah Critical Facilities (2012)

Type	Name
Sewage Treatment	Northern Moraine Utility
Bridge	Bridge
Dam	Dam
Fire/Rescue	Glenbeulah Fire Dept
Government	Village Hall

Type	Total
Bridge	1
Dam	1
Fire/Rescue	1
Government	1
Sewage Treatment	1
Grand Total	5

Village of Howards Grove Critical Facilities (2012)

Type	Name
Communications	Phone
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Government	Village Hall
Fire/Rescue	Howards Grove Fire Dept
Sewage Treatment	Howards Grove Sanitary District
School	Northview Elementary
School	Howards Grove High
School	Howards Grove Middle
School	St. Paul'sLutheran

Type	Total
Bridge	5
Communications	1
Fire/Rescue	1
Government	1
School	4
Sewage Treatment	1
Grand Total	13

Village of Kohler Critical Facilities (2012)

Type	Name
Water	Water Tower
Water	Water Tower
Water	Water Tower
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Dam	Dam
Electric	Electric Power Substations
Law Enforcement	Kohler Police Dept
Fire/Rescue	Kohler Fire Dept
School	Kohler Elementary/Middle/High
Government	Village Hall
Bridge	Bridge
Public Works	Public Works Garage
Water	Sports Core Wastewater Pump Station
Water	Sunset Wastewater Pump Station
Government	Kohler Memorial Building
LP Tanks	Kohler Company LP Tanks
Water	Water Tower Booster Pump Station
Water	Fenwood Main Wastewater Pump Station
Public Works	Fenwood Storage Building/Salt Shed
Public Works	Fenwood Water Department Building
Public Works	Fenwood Salt Sheds
Bridge	Bridge

Type	Total
Bridge	6
Dam	2
Electric	1
Fire/Rescue	1
Government	2
Law Enforcement	1
LP Tanks	1
Public Works	4
School	1
Water	7
Grand Total	26

Village of Oostburg Critical Facilities (2012)

Type	Name
Electric	Electric Power Substations
Water	Water Tower
LP Tanks	Ferrellgas Co
Communications	Tower
Water	Water Supply Well
Communications	Phone
Government	Village Offices
Bridge	Bridge
Communications	Communication Facility on Water Tower
Water	Water Supply Well
Fire/Rescue	Oostburg Fire Dept
Sewage Treatment	Oostburg
School	Oostburg Elementary
School	Oostburg High
School	Oostburg Christian
School	Oostburg Middle

Type	Total
Bridge	1
Communications	3
Electric	1
Fire/Rescue	1
Government	1
LP Tanks	1
School	4
Sewage Treatment	1
Water	3
Grand Total	16

Village of Random Lake Critical Facilities (2012)

Type	Name
Water	Water Tower
Natural Gas	
Communications	Tower
Fire/Rescue	Random Lake Fire Department
Hospital/Clinic	Aurora
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Sewage Treatment	Random Lake
School	Random Lake High
School	Our Lady of the Lakes
School	Random Lake Elementary/Middle
Government	Village Hall
Water	Well
Water	Well

Type	Total
Bridge	2
Communications	1
Dam	1
Fire/Rescue	1
Government	1
Hospital/Clinic	1
Natural Gas	1
School	3
Sewage Treatment	1
Water	3
Grand Total	15

Village of Waldo Critical Facilities (2012)

Type	Name
Electric	Electric Power Substations
Water	Water Tower
Natural Gas	
Fire/Rescue	Waldo Fire Department
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Sewage Treatment	Waldo Wastewater Utility
Government	Village Hall
Bridge	Bridge
LP Tanks	Waldo Oil
Bridge	Bridge

Type	Total
Bridge	5
Dam	1
Electric	1
Fire/Rescue	1
Government	1
LP Tanks	1
Natural Gas	1
Sewage Treatment	1
Water	1
Grand Total	13

Town of Greenbush Critical Facilities (2012)

Type	Name
Water	KMCI Water Tower
Natural Gas	
Communications	Tower
Communications	Tower
Communications	Tower
Communications	Tower
Communications	Tower
Communications	Phone
Government	Town Hall
Law Enforcement	Kettle Moraine Correctional Institution

Type	Total
Bridge	6
Communications	8
Dam	1
Government	1
Law Enforcement	1
Mobile Home Park	1
Natural Gas	1
Water	1
Grand Total	20

Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Communications	WXER 104.5/96.1 Radio Tower
Mobile Home Park	
Communications	Tower - KMCI

Town of Herman Critical Facilities (2012)

Type	Name
Natural Gas	
Communications	Tower
Communications	Tower
Government	Town Hall
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
School	Lakeland College
Electric	Electric Power Substation
Fire/Rescue	Franklin Fire Dept
Fire/Rescue	Ada Fire Dept
Bridge	Bridge
Bridge	Bridge

Type	Total
Bridge	19
Communications	2
Electric	1
Fire/Rescue	2
Government	1
Natural Gas	1
School	1
Grand Total	27

Town of Holland Critical Facilities (2012)

Type	Name
Natural Gas	
Natural Gas	
Communications	Tower
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Electric	Electric Power Substation
Government	Town Hall
LP Tanks	Kettle-Lakes Cooperative
Communications	Tower

Type	Total
Bridge	23
Communications	2
Electric	1
Government	1
LP Tanks	1
Natural Gas	2
Grand Total	30

Town of Lima Critical Facilities (2012)

Type	Name
Sewage Treatment	Onion River Wastewater
Electric	Electric Power Substations
Electric	Electric Power Substations
Water	Water Tower
Communications	Tower
Communications	Tower
Government	Town Hall
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge

Type	Total
Bridge	9
Communications	3
Dam	1
Electric	2
Government	1
Sewage Treatment	2
Water	1
Grand Total	19

Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Sewage Treatment	Gibbsville Sanitary District
Communications	Tower

Town of Lyndon Critical Facilities (2012)

Type	Name
Electric	Electric Power Substations
Natural Gas	
Natural Gas	
Natural Gas	
LP Tanks	Co-Energy Alliance
Communications	Tower
Communications	Phone
Government	Town Hall
Public Works	County Highway Department
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Dam	Dam
Mobile Home Park	
Mobile Home Park	Hager's Hilly Haven Campground
Bridge	Bridge
Bridge	Bridge

Type	Total
Bridge	13
Communications	2
Dam	2
Electric	1
Government	1
LP Tanks	1
Mobile Home Park	2
Natural Gas	3
Public Works	1
Grand Total	26

Town of Mitchell Critical Facilities (2012)

Type	Name
Bridge	Bridge
Sewage Treatment	KMCI Sewage Treatment
Government	Town Hall

Type	Total
Bridge	1
Government	1
Sewage Treatment	1
Grand Total	3

Town of Mosel Critical Facilities (2012)

Type	Name
Communications	Tower
Communications	Tower
Fire/Rescue	Haven Fire Department
Public Works	County Highway Department
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
School	Willowglen Academy-North
Communications	Tower
Communications	Tower
Government	Town Hall
LP Tanks	Kohler Company
LP Tanks	Motor Propane SVS
Chemical	Fed Ex

Type	Total
Bridge	10
Chemical	1
Communications	4
Fire/Rescue	1
Government	1
LP Tanks	2
Public Works	1
School	1
Grand Total	21

Town of Plymouth Critical Facilities (2012)

Type	Name
Water	Water Tower
Communications	Tower
Communications	Tower
Fire/Rescue	Plymouth Fire Dept
Hospital/Clinic	Rocky Knoll HCC
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge

Type	Total
Bridge	19
Communications	7
Dam	2
Electric	2
Fire/Rescue	1
Government	1
Hospital/Clinic	1
LP Tanks	1
Mobile Home Park	1
Public Works	2
Water	2
Grand Total	39

Dam	Dam
Dam	Dam
Electric	Electric Power Substations
Electric	Electric Power Substations
Public Works	Plymouth Utilities Operations Center
Communications	WJUB 1420
Communications	Tower
Communications	Tower - Road America
Communications	Tower - Fairgrounds
Mobile Home Park	Plymouth Rock Campground
Bridge	Bridge
Government	Town Hall
Communications	Tower
Public Works	County Highway Department
LP Tanks	Ferrellgas Co
Bridge	Bridge
Bridge	Bridge
Water	Plymouth Utilities Water RPV Station No. 1

Town of Rhine Critical Facilities (2012)

Type	Name
Electric	Electric Power Substations
Natural Gas	
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Communications	Tower
Communications	Tower
Bridge	Bridge
Government	Town Hall
Bridge	Bridge
Bridge	Bridge

Type	Total
Bridge	10
Communications	2
Electric	1
Government	1
Natural Gas	1
Grand Total	15

Town of Russell Critical Facilities (2012)

Type	Name
Natural Gas	
Bridge	Bridge
Dam	Dam
Government	Town Hall
Mobile Home Park	Sheboygan Marsh Park

Type	Total
Bridge	1
Dam	1
Government	1
Mobile Home Park	1
Natural Gas	1
Grand Total	5

Town of Scott Critical Facilities (2012)

Type	Name
Electric	Electric Power Substations
Fire/Rescue	Beechwood Fire Department
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
Fire/Rescue	Batavia Fire Department
Mobile Home Park	Hoefts Mobile Home Park & Campground
Mobile Home Park	4 Seasons Mobile Home Park
Government	Town Hall
LP Tanks	Boehlke Bottled Gas Corp

Type	Total
Bridge	9
Dam	1
Electric	1
Fire/Rescue	2
Government	1
LP Tanks	1
Mobile Home Park	2
Grand Total	17

Town of Sheboygan Critical Facilities (2012)

Type	Name
Electric	Electric Power Substations
Water	Water Tower
Water	Water Tower
Natural Gas	
Communications	Tower
Water	Water Supply Well
Water	Water Supply Well
Water	Water Supply Well
Government	Town Hall
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge

Type	Total
Bridge	18
Communications	1
Electric	1
Fire/Rescue	1
Government	2
Natural Gas	1
Public Works	1
School	2
Sewage Treatment	9
Water	6
Grand Total	42

Bridge	Bridge
Bridge	Bridge
Fire/Rescue	Sheboygan Fire Dept
School	Lincoln-Erdman Elementary
Sewage Treatment	Lift Station
School	Lake Country Academy
Public Works	Town Highway Department
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Sewage Treatment	Lift Station
Water	Water Supply Well
Government	Park Shelter
Sewage Treatment	Lift Station

Town of Sheboygan Falls Critical Facilities (2012)

Type	Name
Electric	Plymouth Utilities Substation No.3
Natural Gas	
Communications	Tower
Communications	Tower
Natural Gas	
Natural Gas	
Communications	Phone
Government	Town Hall
Fire/Rescue	Johnsonville Fire Department
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge

Type	Total
Airport	1
Bridge	21
Communications	5
Dam	1
Electric	4
Fire/Rescue	2
Government	1
LP Tanks	2
Mobile Home Park	1
Natural Gas	4
Grand Total	42

Bridge	Bridge
Electric	Electric Power Substations
Fire/Rescue	Sheboygan Falls Fire Dept
Airport	Sheboygan Co Memorial Airport
Mobile Home Park	Bains
Dam	Johnsonville Dam
Bridge	Bridge
Communications	Tower
Electric	Sheboygan Power
Natural Gas	
LP Tanks	Boehlke Bottled Gas Corp
LP Tanks	Kettle-Lakes Cooperative
Communications	Radio?
Electric	Plymouth Utilities Substation No.4

Town of Sherman Critical Facilities (2012)

Type	Name
Natural Gas	
Communications	Tower
Fire/Rescue	Silver Creek Fire Department
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Dam	Dam
School	St. John Lutheran
Government	Town Hall
LP Tanks	Kettle-Lakes Cooperative

Type	Total
Bridge	11
Communications	1
Dam	1
Fire/Rescue	1
Government	1
LP Tanks	1
Natural Gas	1
School	1
Grand Total	18

Town of Wilson Critical Facilities (2012)

Type	Name
Communications	Tower
Government	Town Hall
Public Works	County Highway Department
Fire/Rescue	Wilson-Black River Fire Department
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge

Type	Total
Bridge	18
Communications	1
Electric	1
Fire/Rescue	1
Government	1
LP Tanks	1
Public Works	1
Water	5
Grand Total	29

Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Bridge	Bridge
Electric	Electric Power Substations
Water	Lakeshore Station
Water	KK Station
Water	Curtis Station
Water	Schinker Creek Station
Water	Aldrich Station
LP Tanks	Aldrich Chemical Co

Source: Bay-Lake Regional Planning Commission, 2012.

APPENDIX F– COMMUNITY RESOLUTIONS OF ADOPTION

The following are copies of resolutions of adoption by participating incorporated jurisdictions within Sheboygan County.

VILLAGE OF CEDAR GROVE

Resolution No. 1 OF 2014

A Resolution Adopting the *Sheboygan County, Wisconsin Hazard Mitigation Plan Update*.

WHEREAS, the Village of Cedar Grove recognizes the threat that natural hazards pose to people and property; and

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

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

WHEREAS, the Village of Cedar Grove participated jointly in the planning process with other local units of government within the County to prepare the Hazard Mitigation Plan Update;

NOW, THEREFORE BE IT RESOLVED THAT The Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

PASSED: February 10, 2014.

VILLAGE OF CEDAR GROVE

By: _____

Mark Post, President

Attest: _____

Julie M. Brey, Clerk

VOTE:

For: 6

Against: 0

OFFICE OF THE CITY CLERK
Sheboygan, Wisconsin
CITY HALL

I hereby certify that this is a true copy of a
document from the Common Council
proceedings of the City of Sheboygan.

Susan Richards
City Clerk

Res. No. 113 - 13 - 14. By Alderperson Carlson. December 16, 2013.

A RESOLUTION adopting the *Sheboygan County, Wisconsin Hazard Mitigation Plan Update*.

WHEREAS, the City of Sheboygan recognizes the threat that natural hazards pose to people and property; and

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

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

WHEREAS, the City of Sheboygan participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan Update.

NOW, THEREFORE, BE IT RESOLVED: That the City of Sheboygan Common Council hereby adopts the *Sheboygan County, Wisconsin Hazard Mitigation Plan Update* as an official plan.

BE IT FURTHER RESOLVED: That the Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Daryl D. Wilson

I HEREBY CERTIFY that the foregoing Resolution was duly passed by the Common Council of the City of Sheboygan, Wisconsin, on the 20th day of

January, 2013.

Dated January 23 2013. Susan Richards, City Clerk

Approved January 23 2013. Michael J. Anderson Mayor

Proceedings Published January 30, 2014.

Resolutions Published January 30, 2014.

Certified January 28, 2014 to Atty.; Fin. Dir./Treas.; Dep. Fin. Dir./Treas.; Police Dept.; Sheriff's Dept.

**CITY OF PLYMOUTH, WISCONSIN
RESOLUTION NO. 2 OF 2014**

**A RESOLUTION ADOPTING THE SHEBOYGAN COUNTY,
WISCONSIN HAZARD MITIGATION PLAN UPDATE**

WHEREAS, the City of Plymouth recognizes the threat that natural hazards pose to people and property; and

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

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

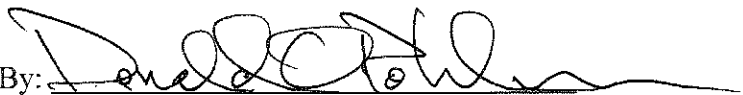
WHEREAS, the City of Plymouth participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan Update;

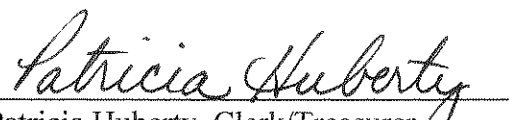
NOW, THEREFORE BE IT RESOLVED, that the City of Plymouth Common Council hereby adopts the Sheboygan County, Wisconsin Hazard Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED that the Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Adopted: January 14, 2014.

CITY OF PLYMOUTH

By: 
Donald O. Pohlman, Mayor

By: 
Patricia Huberty, Clerk/Treasurer

VILLAGE OF KOHLER

RESOLUTION NO. 2014-1

**A RESOLUTION ADOPTING THE
SHEBOYGAN COUNTY ALL HAZARDS PLAN**

WHEREAS, the Village of Kohler recognizes the threat that natural hazards pose to people and property; and

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

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

WHEREAS, the Village of Kohler participated jointly in the planning process with the other local units of government within the County to prepare an All Hazards Mitigation Plan;

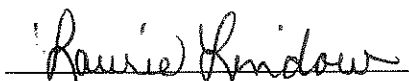
NOW, THEREFORE, BE IT RESOLVED that the Village Board of the Village of Kohler hereby adopts the SHEBOYGAN COUNTY ALL HAZARDS PLAN as an official plan; and

BE IT FURTHER RESOLVED: that the Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted All Hazards Mitigation Plan to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Adopted this 13th day of January, 2014.

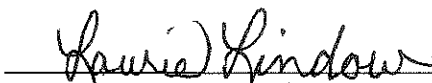

THOMAS R. SCHNETTLER, President
Village of Kohler

Witness:


LAURIE LINDOW, Clerk – Treasurer
Village of Kohler, Wisconsin

CERTIFICATION OF ADOPTION

This is to certify that the foregoing Resolution was duly adopted by the Village Board of the Village of Kohler on the 13th day of January, 2014.


LAURIE LINDOW, Clerk – Treasurer
Village of Kohler, Wisconsin

**RESOLUTION ADOPTING THE SHEBOYGAN COUNTY, WISCONSIN
HAZARD MITIGATION PLAN UPDATE**

WHEREAS, the Village of Oostburg recognizes the threat that natural hazards pose to people and property; and

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

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

WHEREAS, the Village of Oostburg participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan Update;

NOW, THEREFORE, BE IT RESOLVED that the Governing Body of the Village of Oostburg hereby adopts the Sheboygan County, Wisconsin Hazard Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED that the Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Adopted, recorded and approved this 13th day of January, 2014.

VILLAGE OF OOSTBURG

By: Allen Wrubbel
Allen Wrubbel, President

ATTEST:

By: Jill E. Ludens
Jill E. Ludens, Clerk/Treasurer

Resolution No. 2014-1

A RESOLUTION adopting the *Sheboygan County, Wisconsin Hazard Mitigation Plan Update*

WHEREAS, the V. of Glenbeulah recognizes the threat that natural hazards pose to people and property; and

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

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

WHEREAS, V of Glenbeulah) participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan Update;

NOW, THEREFORE BE IT RESOLVED, that the V of Glenbeulah Board hereby adopts the *Sheboygan County, Wisconsin Hazard Mitigation Plan Update* as an official plan; and

BE IT FURTHER RESOLVED that the Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Passed:

A handwritten signature in cursive script, appearing to read "Douglas J. Davis", is written over a horizontal line.

COPY

CITY OF SHEBOYGAN FALLS, WISCONSIN
RESOLUTION NO. 5, 2013/2014

RESOLUTION ADOPTING THE SHEBOYGAN COUNTY, WISCONSIN HAZARD MITIGATION
PLAN UPDATE

WHEREAS, the City of Sheboygan Falls recognizes the threat that natural hazards pose to people and property; and

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

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

WHEREAS, the City of Sheboygan Falls participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan Update; and

NOW, THEREFORE BE IT RESOLVED, that the Common Council of the City of Sheboygan Falls hereby adopts the Sheboygan County, Wisconsin Hazard Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED that the Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Respectfully signed and submitted this 17th day of December, 2013.

City of Sheboygan Falls


Randy J. Meyer, Mayor


Joel J. Tauschek, City Clerk

I HEREBY CERTIFY that the foregoing resolution was duly passed by the Common Council on the 17th day of December, 2013.

Dated December 17, 2013.

Attest:


Joel J. Tauschek, City Clerk

RESOLUTION # 3-2013

A RESOLUTION adopting the *Sheboygan County, Wisconsin Hazard Mitigation Plan Update*

WHEREAS, the Village of Random Lake recognizes the threat that natural hazards pose to people and property; and

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

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

WHEREAS, the Village of Random Lake participated jointly in the planning process with the other local units of government within the County to prepare the Hazard Mitigation Plan Update;

NOW, THEREFORE, BE IT RESOLVED that the Village Board of the Village of Random Lake hereby adopts the *Sheboygan County, Wisconsin Hazard Mitigation Plan Update* as an official plan; and

BE IT FURTHER RESOLVED that the Sheboygan County Emergency Management Department will submit on behalf of the participating municipalities the adopted Hazard Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

Adopted this 16th day of December, 2013.

VILLAGE OF RANDOM LAKE

 12/16/13
Robert J. McDermott, Village President

 12/16/13.
Nancy Brunner, Village Clerk/Treasurer

Bay-Lake Regional Planning Commission

Commission Members

Brown County

Tom Sieber

Door County

Ken Fisher

Florence County

Edwin A. Kelley

Larry Neuens

Yvonne Van Pembroke

Kewaunee County

Eric Corroy

Bruce Heidmann

Robert Weidner

Manitowoc County

Chuck Hoffman

Dan Koski

Donald C. Markwardt, Vice-Chairperson

Marinette County

Alice Baumgarten

Cheryl R. Maxwell, Chairperson

Mary G. Meyer

Oconto County

Terry Brazeau

Dennis Kroll

Thomas D. Kussow

Sheboygan County

Mike Hotz

Ed Procek

Appointment Pending

Wisconsin Economic Development Corporation

Reed Hall, CEO

Staff

Richard L. Heath

Executive Director

Jeffrey C. Agee-Aguayo

Transportation Planner

Richard J. Malone

Office Accounts Coordinator

Angela M. Pierce

Natural Resources Planner

Brandon G. Robinson

Community Assistance Planner

Joshua W. Schedler

GIS Coordinator

