



Hazard Mitigation Planning and the Role of GIS

Cody Kamrowski, WEM Hazard Mitigation Section



What is Hazard Mitigation Planning???

FEMA's Website:

Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters. It begins with state, tribal and local governments identifying natural disaster risks and vulnerabilities that are common in their area. After identifying these risks, they develop long-term strategies for protecting people and property from similar events. Mitigation plans are key to breaking the cycle of disaster damage and reconstruction.



Mitigation Breaks the Cycle



3



Who Does Mitigation Planning?

- **Counties**
- **Tribes**
- **Larger Municipalities (Cities)**
- **State of Wisconsin**



Hazard Mitigation Grants

Hazard Mitigation
Grant Program
(HMGP)

Building Resilient
Infrastructure and
communities
(BRIC)



Flood Mitigation
Assistance
(FMA)

Pre-Disaster
Mitigation
(PDM)

5



404 vs. 406 Mitigation

- Section 404 – Hazard Mitigation Grant Program (HMGP)
 - **For undamaged elements**
 - Approved by WEM Mitigation Section
 - **NOT** Public Assistance, formal application process
- Section 406 – Public Assistance (PA) Mitigation
 - Applies only to the **damaged element**
 - Must be determined to be “cost-effective”
 - **15% Rule**, 100% Rule, Benefit Cost Analysis

6



Planning



Hazard Matrix/Ranking

Probability

Warning Time

Duration

Preparedness

Response Capability

Human Impact

Overall Risk

Property Impact

Economic Impact

Affected Area

- #1) Flooding
- #2) Tornado
- #3) Wildfire
- #4) Snowfall
- #5) Extreme Temperature



Hazard Strategies

- Action
- Supporting Agency
- Implementation
- Background
- 2011 Update Status
- 2016 Update Status



If you want to apply for Mitigation funding, that project needs to be outlined in the Hazard Mitigation Plan



State Hazard Mitigation Plan Update



State Planning Team

2016 plan had 54 planning team members

State Agencies

NWS

USACE

Volunteer Groups

USDA

USGS

Office of Comm of Insurance

FEMA

US Dept of Housing

UW-Extension



State Hazard Mitigation Plan Update

- Beginning the update process (1,000 pages)
- Normal planning process
- Collectively look at all local plans

2016 State of Wisconsin Hazard Mitigation Plan

Wisconsin Emergency Management (WEM) is the lead agency for the hazard mitigation program in Wisconsin, a key component of which is the State of Wisconsin Hazard Mitigation Plan. The current State Hazard Mitigation Plan was published in December 2016. The current plan builds upon the Risk Assessment and Mitigation Strategy originally developed in 2001 and updated in 2005, 2008, and 2011. In accordance with FEMA requirements, the next update of the State Hazard Mitigation Plan is scheduled for 2021.

Table of Contents

- Cover (pdf)
- Executive Summary (pdf)
- Table of Contents (pdf)
- Section 1: Introduction (pdf)
- Section 2: The Planning Process (pdf)
- Section 3: Mitigation Strategy (pdf)
- Section 4: Local Hazard Mitigation Planning (pdf)
- Section 5: Plan Maintenance Process (pdf)
- Section 6: Comprehensive State Hazard Mitigation Program (pdf)
- Section 7: Conclusion (pdf)
- Appendix A: Threat Hazard Identification and Risk Assessment (pdf)
- Appendix B: Natural Disaster Summary and Federal Declaration History (pdf)
- Appendix C: State Mitigation Grants (pdf)
- Appendix D: 2016 Repetitive Loss Report (pdf)
- Appendix E: Wisconsin State Hazard Mitigation Team (pdf)
- Appendix F: State Administration Plan for the HHMP (pdf)
- Appendix G: Authorities (pdf)
- Appendix H: Acronyms (pdf)
- Appendix I: Agency Concurrences (pdf)
- Appendix J: FEMA Approval and Review Tool (pdf)

Complete File

The complete State of Wisconsin Hazard Mitigation Plan is provided in the following link. The complete plan is a large file (39 MB) and may take time to download depending upon your connection speeds.

- 2016 State of Wisconsin Hazard Mitigation Plan (pdf)
Large file (39 MB)

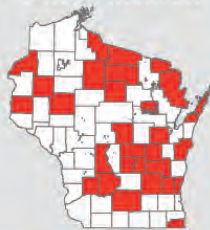


WINTER STORMS AND EXTREME COLD



Oneida, Stockbridge Munsee, Lac Courte Oreilles, Sokaogon Chippewa

SEVERE WEATHER

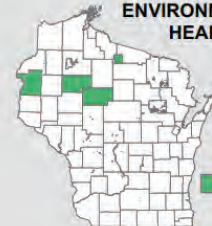


Forest County Potawatomi, Menominee, Stockbridge Munsee

FLOODING



ENVIRONMENTAL HEALTH



Lac du Flambeau

Hazard Mitigation Trends

Top-ranked hazard categories in current county and tribe mitigation plans

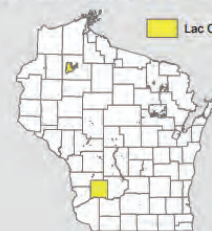
COASTAL EROSION AND BLUFF FAILURE



WILDFIRES



DROUGHT AND EXTREME HEAT



Lac Courte Oreilles

13



Current County Hazard Mitigation Plans Top-Ranked Hazard Categories

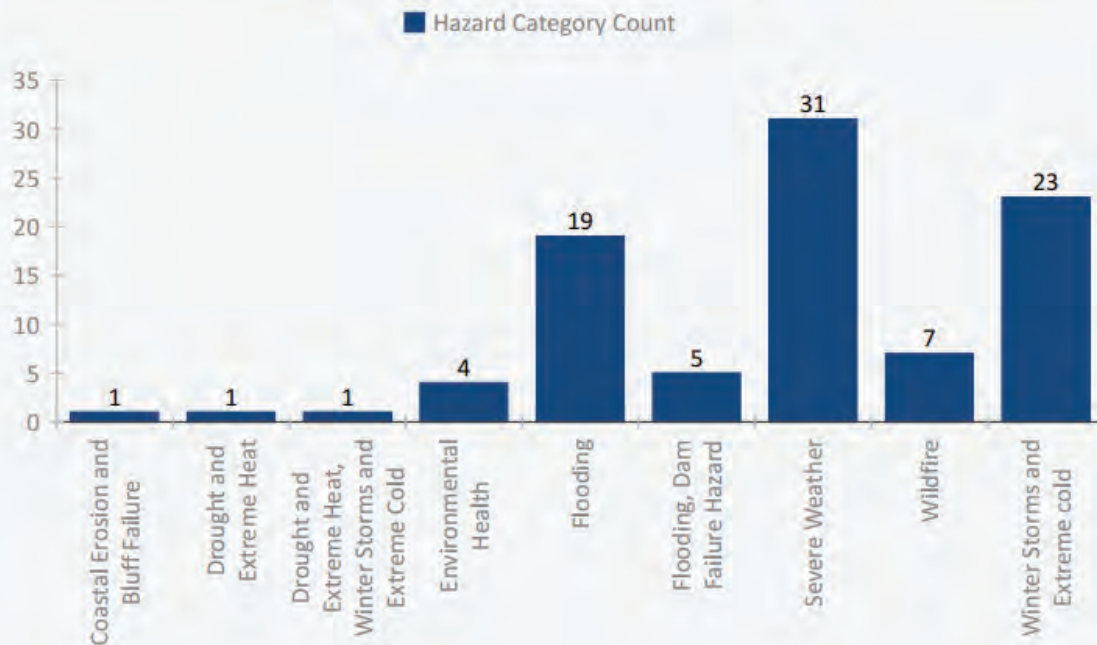
Data Sources: WI DNR, WI Local Hazard Mitigation Plans



14



Current Plan Categories: Rank #1

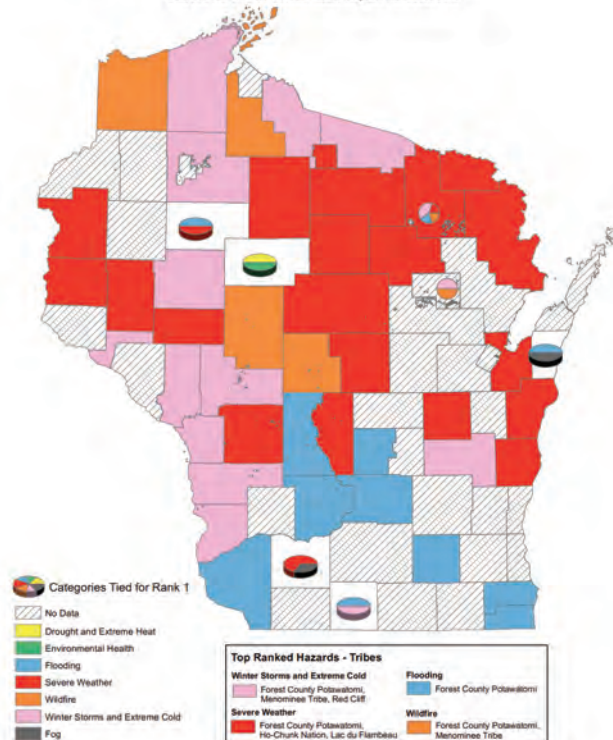


15



Past Hazard Mitigation Plan Top-Ranked Hazard Categories

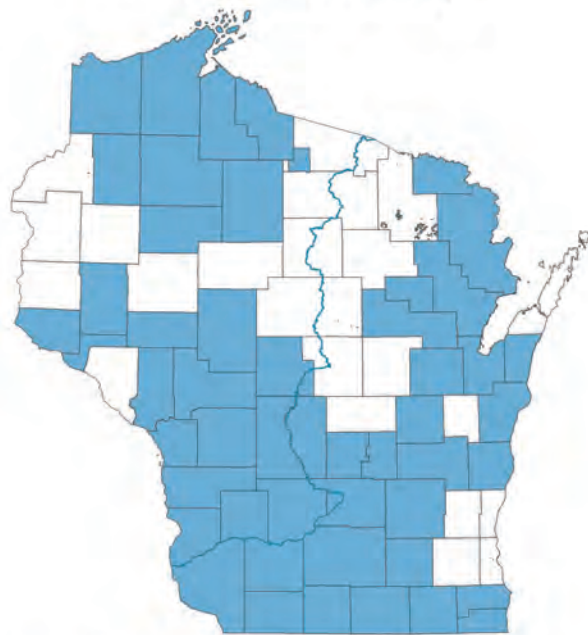
Data Sources: WI DNR, WI Local Hazard Mitigation Plans 2006-2016



16



Current Plans with Flooding in Top 5 Hazard Ranking

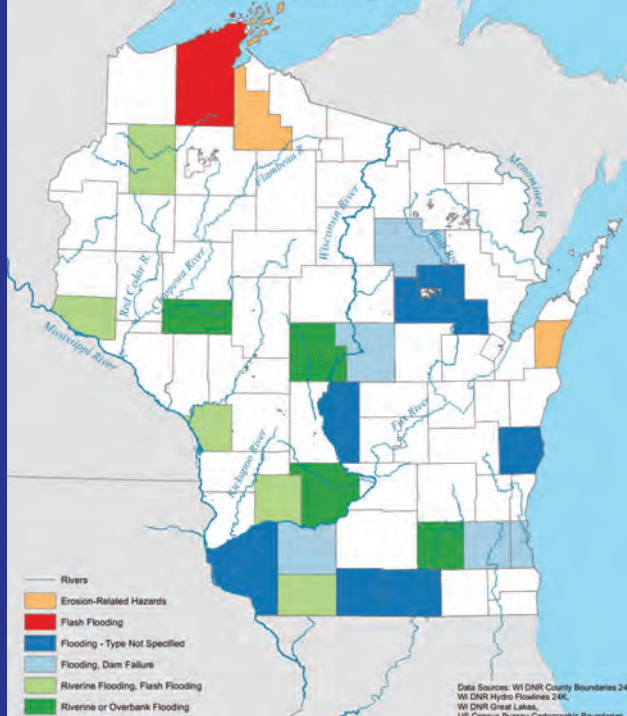


— Wisconsin River
■ Flooding included in top 5 hazard rankings

Data Source: Wisconsin DNR



Types of Flooding Hazards #1 Ranked Natural Hazards in Current Hazard Mitigation Plans





Wisconsin Counties with Coastal Erosion in Top 5 Hazards

Data Sources: Wisconsin Local Hazard Mitigation Plans 2015-2021, WI County Boundaries 24K



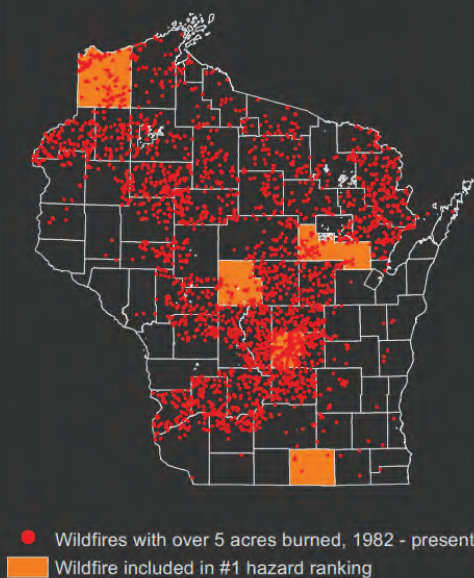
19



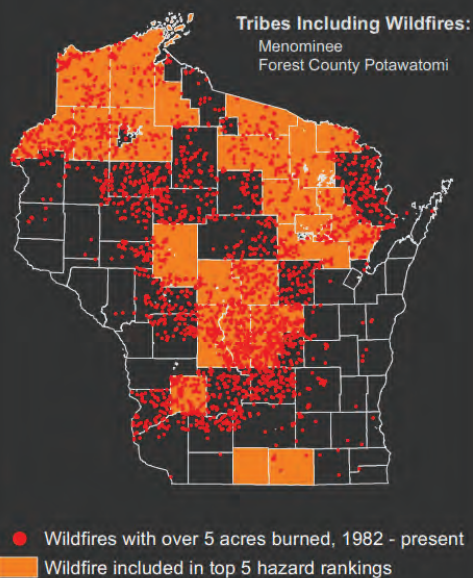
Current Hazard Mitigation Plans: Wildfires

Data Sources: Wisconsin DNR County Boundaries, WI DNR Fire Occurrence Datasets, WI Local Hazard Mitigation Plans

Current Plans with Wildfire Ranked #1



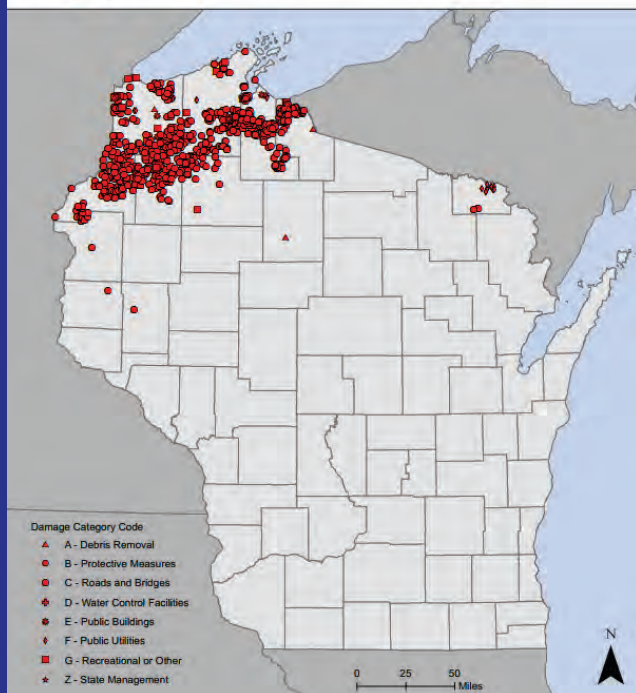
Current Plans with Wildfire in Top 5 Hazard Ranking



20



FEMA-4276-WI-DR
August 16, 2017



FEMA-4276-WI-DR
August 16, 2017



21



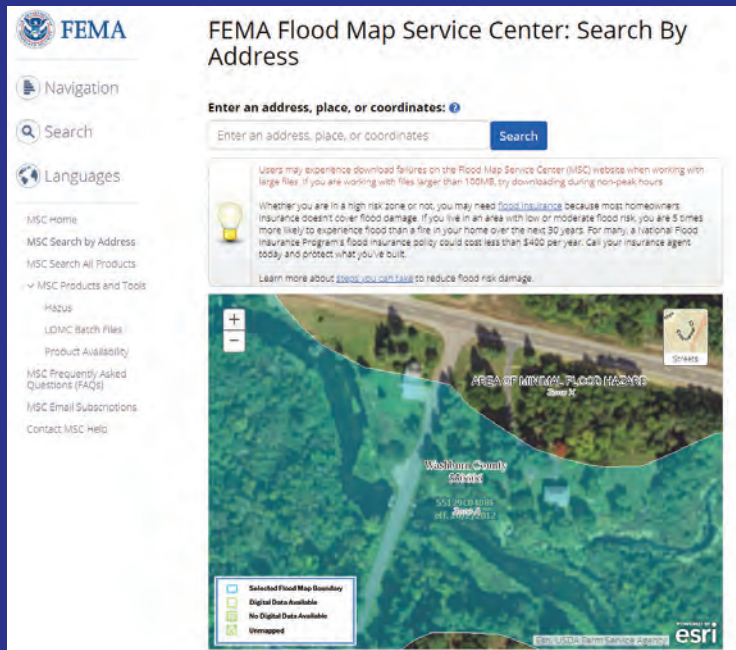
GIS and Hazard Mitigation Planning

During hazard mitigation planning, other types of plans/maps developed can be incorporated or referenced in the plan as supporting documentation and information.

22



Hydrology and Hydraulics Study



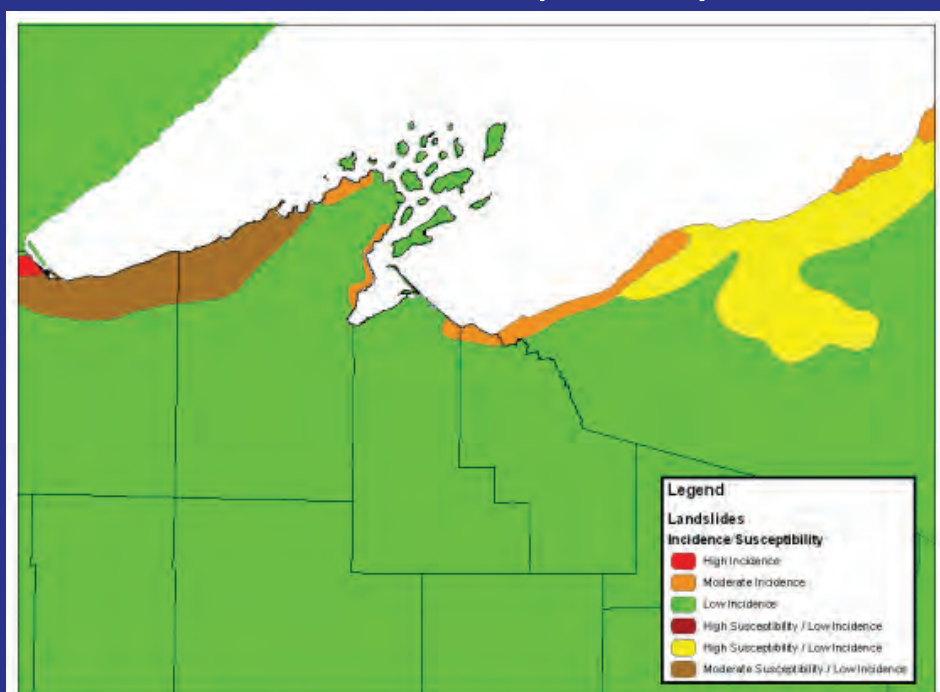
If a culvert upside is taking place. An H&H is only required in a Special Flood Hazard Area (SFHA).

This should first be discussed with DNR Staff

23



Landslide Incidence and Susceptibility



Source: U.S. Geological Survey

24



Bluff Recession

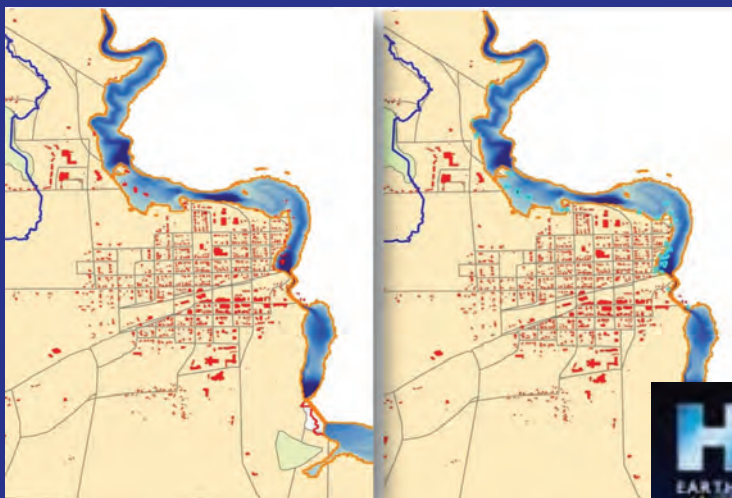


In the strategies section of a plan, you could say “stabilize areas of high erosion susceptibility, reference map or study xyz”

25



HAZUS Modeling



In the strategies section of a plan, you could say “assess inundated structures and explore best possible solution”



26



Debris removal and problem areas on waterways



27



Other Maps or Projects to Incorporate

- Critical Facility Mapping
 - List of facilities is required in the plan
- Current/Future Land Use
- Map of All Hazard Events
- Fuel/Hazardous Materials Map
- Wildfire Risk Maps

28



**GIS paired with effective planning can create a
plan with successful and tangible outcomes
that will benefit a community**



Questions/Concerns? Contact

Contact Information:

Cody Kamrowski (WEM Mitigation Section)

- Disaster Response and Recovery Planner

Email: Cody.Kamrowski@Wisconsin.gov

Cell: 608-733-0475

Office 608-242-3252

