Chapter 1 - Introduction

Purpose

The number of natural disasters per year has been rising dramatically worldwide since the 1970’s shown in the table below. The trend is steepest for North America according to a study released in October, 2012 by Munich RE, the world's largest reinsurance firm. Hurricanes, floods, wildfires, searing heat, and drought are battering cities and states throughout the U.S. Climate change seems to be the driving force and experts predict those influences will continue in the future.

![Figure 1 - Natural Disasters Trend](image)

The Federal Emergency Management Agency (FEMA) and the Michigan State Police (MSP) Emergency Management and Homeland Security Division have partnered to encourage communities to plan for disasters and to develop and implement mitigation strategies to reduce the severity of these types of disasters. Grant funding has been provided for the preparation of this plan. Incentives are also provided through FEMA grant programs to communities for hazard mitigation, and to reduce the potential threat to life and property damage caused by natural and manmade disasters.
Recognizing the importance of hazard mitigation, Chippewa County is addressing the issue through the development and subsequent implementation of this plan. The purpose of this plan is to develop a comprehensive strategy to reduce the impacts of natural hazards in Chippewa County. The County has in place policies and programs that enable individuals, groups, and communities to plan for and manage the effects of natural hazards. The rising costs and apparent increase in the rate of occurrence of natural disasters, however, has led to a greater interest in identifying additional ways to reduce the County’s vulnerability to natural hazards—before the next disaster actually occurs.

This plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by natural hazards. The plan focuses on the major hazards that face Chippewa County, fulfills the Federal mitigation planning requirements, and provides the County and its municipalities with a blueprint for reducing the impacts of these natural hazards on people and property.

**Plan Requirements**

The Disaster Mitigation Act (DMA) 2000 (Public Law 106-390) provides the legal basis for FEMA mitigation planning requirements for State, local and Indian Tribal governments as a condition of mitigation grant assistance. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions and replacing them with a new set of requirements that emphasize the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts.

The regulations directing the mitigation planning requirements for local mitigation plans are published under 44CFR 201.6. Under 44 CFR 201.6, local governments must have a FEMA-approved Local Mitigation Plan in order to be eligible to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

Because the Chippewa County planning area is subject to many kinds of hazards, access to these programs is vital.

DMA requirements specify that the following elements must be included in the plan:

- The plan must document how the plan was prepared and who was involved in the planning process. Public involvement is critical.
- A risk assessment section should include:
  - Identification of the hazards likely to affect the area, noting data limitations and providing an explanation for eliminating hazards from further consideration.
  - A discussion of past events and description of their severity and resulting effects.
- A description of the local vulnerability to the described hazards in terms of the types and numbers of buildings, infrastructure, and critical facilities located in the jurisdiction.
- A description of the potential dollar losses to the vulnerable structures identified and a description of the methods used to calculate the estimate.
- A description of the vulnerability in terms of land use and development so that mitigation options can be considered in future land-use decisions.

• The plan must include a hazard mitigation strategy describing:
  - Goals to reduce or avoid long-term vulnerabilities to the identified hazards.
  - A range of specific mitigation actions and projects to be considered, with particular emphasis on new and existing buildings and infrastructure.
  - An action plan identifying how the actions will be prioritized, implemented, and administered by the local jurisdiction. Prioritization must include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
  - For multi-jurisdictional plans, there must be identifiable actions items specific to the jurisdiction requesting FEMA approval of the plan.

• All local units of government included in the plan must participate in the planning process.
• Provisions for reviewing, monitoring and evaluating progress of the plan’s implementation. The plan must also be updated at least every five years and reapproved.
• Adoption by the local governing body. The plan must include documentation that the local governing body has formally adopted the plan. In a multi-jurisdictional plan, all participating local units of government seeking plan approval must individually adopt the plan, with the exception of unincorporated units of government.

In addition to the Federal planning requirements, Michigan statutes requires that the governing body of each county, town, and municipality within the state adopt an effective program of emergency management that is consistent with the state plan. This plan was developed with input and assistance from Michigan Emergency Management and is consistent with programs outlined in the State of Michigan’s Hazard Mitigation Plan.

While this plan was developed to meet the State and Federal planning requirements, it is also designed to meet the needs of the County and participating local units of government within the County. Natural hazards, as they exist in Chippewa County, have been assessed in detail. The recommendations in the plan go beyond what is traditionally referred to as mitigation. In fact, elements of the plan touch all four phases of the “cycle of emergency management.”

**Emergency Management Cycle**

Emergency management is often described as a cycle with five phases: protection preparedness, response, recovery, and mitigation. These phases are a rough, but useful means of organizing the County’s programs and policies regarding hazards management.
Protection is the action taken to avoid an incident or stopping an incident from occurring.

Preparedness involves building an emergency response and management capability before a disaster occurs in order to facilitate an effective response when needed. Preparedness activities also include developing and maintaining warning systems, developing response plans and procedures, maintaining communications networks, establishing procedures for notifying and mobilizing response personnel, establishing mutual aid agreements, and developing an emergency operations center. Also essential to the County’s preparedness efforts are programs for training emergency response personnel, exercising plans, and conducting public outreach.

Response refers to the actions taken immediately before, during, and after an event occurs to save lives, minimize property damage, and aid in the recovery process. The activities carried on during the response phase typically involve public warning, evacuation and sheltering, fire suppression, search and rescue, emergency medical care, scene security and property protection. Other elements of response depend on the type of disaster and may include activities such as sand bagging to minimize flooding, closing roads, removal of debris from roads, shutting down power where there are downed electrical lines, attending to the needs of people with disabilities or other health concerns, and supplying emergency power and water. The effectiveness of a disaster response is very much a function of the quality of the planning, training, and exercising done during the pre-disaster preparedness phase.

Disaster recovery involves short-term activities to immediately restore vital support services and long term activities to restore the community to normal. Typically, the first step in recovery is an assessment of the damages, which helps determine needs and set priorities. Recovery typically involves debris removal, repairing and reconstructing buildings and infrastructure, coordinating volunteers and donated goods, delivering disaster aid to individuals and families, and restoring vital community services. Again, the effectiveness and expedience of the recovery phase depends on the quality of the preparedness efforts and the level of coordination in the response. There is no real, tangible demarcation between the response and recovery phases. Recovery can take from days to years, depending on the magnitude of the disaster and the resources available to address the problems.

Finally, mitigation refers to the policies and activities that will reduce the area’s vulnerability to damage from future disasters. Generally, these measures are ones that can be put in place before a disaster occurs and are long term, sustainable measures. There are a multitude of different types of mitigation programs that can be put in place. In general, mitigation activities can be broken into two categories, structural and non-structural.

Structural mitigation measures try to minimize the effect of hazards on people, buildings, and infrastructure. This can include actions such as building dams and levees, flood-proofing homes, constructing tornado shelters, and instituting building codes that require wind resistant construction.
Non-structural mitigation measures typically concentrate on identifying hazard-prone areas and limiting their use. Examples may include land use zoning, the selection of building sites, tax incentives, insurance programs, relocation of residents to remove them from the path of a hazard, the establishment of warning systems, and planning for at-risk populations.

Planning Approach

The Eastern U.P. Regional Planning and Development along with Chippewa County Office of Emergency Services (CCOES) have undertaken the project of updating the hazard analysis and plan that was developed in 2005 for Chippewa County. The plan includes the past history of disasters in the County with additional incidents added from the last five years. The plan also includes reassessment of the hazard risks and vulnerabilities of the County and reassessing goals and objectives to mitigate these possible disasters.

The planning process began with a review of EMD-PUB 207, Local Hazard Mitigation Planning Workbook and a review of several County Plans. In April, 2011 a start-up meeting of the CCOES Committee was held. The CCOES committee members also serve as the Chippewa County Hazard Mitigation Planning Committee (CCHMPC). Members of the CCHMPC are listed in Appendix A.

During the planning process several methods were used to collect information, inform the public and provide opportunity for involvement in the planning process. A web page was developed on EUP Regional Planning & Development’s website with information on the project, meeting dates, publications and chapter drafts. Stakeholder and public meetings were held around the County during the planning period. Informational sheets were mailed out or presented at meetings to inform planning participants of the process and requirements. Three surveys were used to collect information. One survey was mailed to local units of government and distributed to the CCHMPC, first responders and firefighting personnel. A public survey was made available on-line with and informational news release printed in the local newspaper asking for community input. A third questionnaire was mailed to the local units of government asking for specific information about hazards and to update their critical facilities list. Informational sheets, surveys, new releases and meeting documentation are provided in Appendix B.


The EUP Regional Planning staff contacted each municipality within the County and when possible met directly with township supervisors, clerks, road commission, public work
departments, and emergency departments such as fire and ambulance services. Information about the planning was disseminated at EUP Regional Planning Commission Meetings.

Staff from EUP Regional Planning also reviewed multiple documents where available such as Master Plans, Land Use Plans, Zoning Ordinances, Recreation Plans and other relative community plans. EUPRP&DC staff also worked directly with the Director of Emergency Services to review, re-assess, update, and improve goals and strategies that were developed in the 2005 Plan and develop action items for the 2014 update.

Public Participation

As stated above, every opportunity was pursued to gather public participation. As well as contacting community leaders and citizens who have direct interests in the Plan, the planning process also included an announcement in the area’s newspaper the Evening News with information on who to contact for more information on the Hazard Mitigation Plan, why it is important, and how to be involved in the planning process.

A web page was created for EUPRP&DC’s web site at www.eup-planning.org regarding hazard mitigation planning. The 2005 Chippewa County Hazard Mitigation Plan was also made available for download or viewing. Meeting dates were announced on the web-site. An on-line community survey was made available. Also made available was an on-line map editing tool in which one could enter information directly onto a map by pinpointing a place and adding a description of the hazard incident.

Towards the end of the planning process, a notice that the draft Plan was on-line and available for review was sent to all units of government and municipalities within the County. The Plan was also made available to the public at the Chippewa County Courthouse and Bayliss Public Library in the City of Sault Ste. Marie. The notice was also sent to adjacent counties, Central U.P. Planning and Development in Escanaba, Michigan and Northeast Council of Governments in Gaylord, Michigan, Luce County and Mackinac County as neighboring communities for their review. A public hearing was held December 16, 2013 to review the draft Plan and receive comments. All comments received were recorded. (See Appendix C.)

Background and Scope

Almost every year there are significant weather events that cause major damages for which federal disaster assistance is not granted. In addition, federal disaster assistance programs have strict eligibility requirements. These figures show only a small fraction of the total losses incurred by the private sector—those that are uninsured. Private sector losses, especially those covered by insurance, if tracked and compiled would make a significant contribution to these damage figures.
The following hazards are recognized by the State emergency planners to have the potential to present significant risk and are addressed in the State of Michigan Hazard Analysis:

- Civil Disturbances
- Drought
- Earthquakes
- Energy Emergencies
- Extreme Temperatures
- Fires – Structural & Scrap Tires
- Wildfires
- Dam Failures
- Flooding – Rivers & Great Lakes
- Fog
- Hazardous Material Incidents
- Infrastructure Failures
- Invasive Species
- Petroleum / Gas Pipeline Accidents
- Public Health Emergencies
- Sabotage / Terrorism
- Subsidence
- Hail
- Lightning
- Severe Winds
- Tornadoes
- Transportation Accidents
- Ice / Sleet Storms
- Snowstorms

A review of the past natural disasters and incidents recorded for Chippewa County identify the following hazards that present a significant risk to the communities within the county:

- Drought
- Floods
- Severe Thunderstorms & Lightning
- Severe Weather (Hail, High Wind)
- Severe Winter Weather & Severe Cold
- Wildfire

A history of hazard-related events in Chippewa County show that Severe Winter Weather occurs most frequently with an average of 7 winter storms per year since the year 2000. Severe Thunderstorms are the second most frequent hazard event in Chippewa County with an average of 3 events per year over the last 10 years. In this plan, some hazards have been combined into one category where the potential for multiple events occur because of a single event such as in the case of Thunderstorm/High Wind/Hail/Lightning.

After the initial review of the list of significant hazards that have affected the County and the State of Michigan it was determined that the following hazards did not pose a significant threat or risk to our region and therefore did not get an in-depth description:

- Earthquakes
- Energy Emergencies
- Sabotage/Terrorism
- Fog

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In addition to simply identifying and describing these hazards, the plan also analyzes Chippewa County’s vulnerability to each hazard. The vulnerability assessment describes not only the physical characteristics of each hazard, but also the potential impact of each hazard on people, buildings, and the social and economic infrastructure of the communities of the County. The vulnerability assessment is used as the basis for this multi-jurisdictional natural hazard mitigation plan. The plan identifies goals and measures for hazard mitigation and risk reduction to make communities more disaster resistant and sustainable. In addition, mitigation actions can protect critical community facilities, reduce exposure to liability, and minimize community disruption. Additionally, there are four basic concepts guiding the planning process:

1) *Human beings, not nature, are the cause of disaster losses.* What is referred to as “natural hazards” are an integral part of the function of the natural environment. Efforts to reduce losses should focus on human behavior and expectations of the environment; these are the real causes of natural disaster losses. Natural disasters result from human decisions about how and where citizens choose to live and build.

2) *The County should make every attempt to anticipate and plan for a changing world.* The interaction of human activity and the natural environment is becoming increasingly complex. The consequences of seemingly simple actions can produce highly complex and highly uncertain results. Citizens have a choice to make. They can face that uncertainty by taking little or no action, responding to crisis as it occurs, and deferring the resulting problems to future generations. Or, they can prepare for a changing world, anticipating problems, shortening the response time, and taking action before issues become crises.

3) *The County should embrace the principles of sustainable development.* Society’s present energy and water resource usage patterns are unsustainable in the long-term. This has the potential to lead to ever increasing hazards and threats for future generations. Sustainability becomes more important as the population of the County continues to grow, demands for resources continue to increase, and the climate becomes more variable and long-term trends become less predictable.

4) *This plan recognizes that discussions of natural hazard mitigation should be a public process.* Decisions made in this plan affect the public’s safety and well-being. Every attempt is made to involve the citizens of the County in identifying concerns and issues, generating ideas for addressing them, reaching agreement about how they will be resolved, how priorities will be determined, and ultimately what actions will be taken.

**Multi-Jurisdictional Planning**

This plan was prepared as a multi-jurisdictional plan. All local units of government in the County were invited to participate in the planning process. The decision whether or not to participate in this process was a local decision, based on local community needs.
Communities have the options to not prepare a plan, to prepare a stand-alone plan for their jurisdiction, or to participate in a multi-jurisdiction or county-wide plan. Following is a list of participating local units of government in Chippewa County. All of the local units of government are continuing participants from the 2005 Natural Hazards Mitigation Plan.

List of Government Units

<table>
<thead>
<tr>
<th>Government Unit</th>
<th>Phone Number</th>
<th>Office Location</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chippewa County</td>
<td>(906) 635-6300</td>
<td>319 Court Street</td>
<td>Sault Ste. Marie</td>
</tr>
<tr>
<td>Bay Mills Township</td>
<td>(906) 437-5437</td>
<td>14740 W. Lakeshore Dr.</td>
<td>Brimley</td>
</tr>
<tr>
<td>Bruce Township</td>
<td>(906) 635-3058</td>
<td>3156 E.12 Mile Rd.</td>
<td>Dafter</td>
</tr>
<tr>
<td>Chippewa Township</td>
<td>(906) 274-5319</td>
<td>30014 W. M-28</td>
<td>Eckerman</td>
</tr>
<tr>
<td>Dafter Township</td>
<td>(906) 632-1579</td>
<td>2926 W. 10 Mile Rd.</td>
<td>Dafter</td>
</tr>
<tr>
<td>DeTour Township</td>
<td>(906) 297-5304</td>
<td>260 S. Superior St.</td>
<td>DeTour Village</td>
</tr>
<tr>
<td>DeTour Village</td>
<td>(906) 297-5471</td>
<td>260 S. Superior St.</td>
<td>DeTour Village</td>
</tr>
<tr>
<td>Drummond Is. Twp.</td>
<td>(906) 493-5321</td>
<td>29935 E. Pine St.</td>
<td>Drummond Is.</td>
</tr>
<tr>
<td>Hulbert Twp.</td>
<td>(906) 876-6353</td>
<td>37686 W. Fourth St.</td>
<td>Hulbert</td>
</tr>
<tr>
<td>Kinross Charter Twp.</td>
<td>(906) 495-5381</td>
<td>4884 W. Curtis St.</td>
<td>Kincheloe</td>
</tr>
<tr>
<td>Pickford Township</td>
<td>(906) 647-3361</td>
<td>155 E. Main St.</td>
<td>Pickford</td>
</tr>
<tr>
<td>Raber Township</td>
<td>(906) 297-3805</td>
<td>16315 E. M-48</td>
<td>Goetzville</td>
</tr>
<tr>
<td>Rudyard Township</td>
<td>(906) 478-5041</td>
<td>11403 W. Main St.</td>
<td>Rudyard</td>
</tr>
<tr>
<td>Soo Township</td>
<td>(906) 632-3406</td>
<td>637 W. 3-1/2 Mile Rd.</td>
<td>Sault Ste. Marie</td>
</tr>
<tr>
<td>Sugar Island Twp.</td>
<td>(906) 635-9786</td>
<td>6401 E. 1-1/2 Mile Rd.</td>
<td>Sugar Island</td>
</tr>
<tr>
<td>Superior Twp.</td>
<td>(906) 248-5213</td>
<td>7049 S. M-221</td>
<td>Brimley</td>
</tr>
<tr>
<td>Trout Lake Twp.</td>
<td>(906) 569-3291</td>
<td>21503 S. Beech St.</td>
<td>Trout Lake</td>
</tr>
<tr>
<td>Whitefish Township</td>
<td>(906) 492-3452</td>
<td>7052 N. M-123</td>
<td>Paradise</td>
</tr>
<tr>
<td>Bay Mills Indian Community</td>
<td>(906) 248-3241</td>
<td>12140 W. Lakeshore Dr.</td>
<td>Brimley</td>
</tr>
<tr>
<td>Sault Tribe of Chippewa Indians</td>
<td>(906) 635-6050</td>
<td>523 Ashmun Street</td>
<td>Sault Ste. Marie</td>
</tr>
</tbody>
</table>

Figure 2 - Chippewa County Local Units of Government

Relationship to Other Regional and Community Plans

Most of the jurisdictions in Chippewa County make use of some form of comprehensive land use or master planning, zoning, capital improvements planning, and building codes to guide and control local building and land development. The purpose of hazard mitigation planning is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses community-wide. When conducted in coordination with other community planning, a mitigation plan will yield the most cost-effective and efficient results, optimal use of limited resources, and also serve to protect lives, property and natural resources. As comprehensive plans are reviewed and
updated, and after mitigation strategies are developed, mitigation policies and activities should be incorporated into any of the plan elements.

**Hazard Assessment**

A comprehensive hazard analysis was made by the Chippewa Co. Office of Emergency Services and EUP Regional Planning to determine:

1) what hazards threaten the community
2) how often they are likely to occur
3) how severe the situation is likely to get, and
4) the impact on the community.

Based upon this criteria, the hazards that could affect Chippewa County were ranked as follows:

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Rating Score</th>
<th>Overall Risk Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe Winter Weather</td>
<td>2.84</td>
<td>High</td>
</tr>
<tr>
<td>Wildfire</td>
<td>2.84</td>
<td>High</td>
</tr>
<tr>
<td>Flooding</td>
<td>2.67</td>
<td>High</td>
</tr>
<tr>
<td>Thunderstorm/High Wind/Hail/Lightning</td>
<td>2.67</td>
<td>High</td>
</tr>
<tr>
<td>Drought</td>
<td>2.67</td>
<td>High</td>
</tr>
<tr>
<td>Infrastructure Failure</td>
<td>2.50</td>
<td>Medium</td>
</tr>
<tr>
<td>Public Health Emergencies</td>
<td>2.34</td>
<td>Medium</td>
</tr>
<tr>
<td>Civil Disturbances</td>
<td>2.00</td>
<td>Medium</td>
</tr>
<tr>
<td>Transportation/Hazardous Materials Incidents</td>
<td>1.84</td>
<td>Low</td>
</tr>
<tr>
<td>Pipeline Incidents</td>
<td>1.84</td>
<td>Low</td>
</tr>
<tr>
<td>Tornadoes</td>
<td>1.67</td>
<td>Low</td>
</tr>
<tr>
<td>Fire – Structural/Scrap Tire</td>
<td>1.50</td>
<td>Low</td>
</tr>
<tr>
<td>Subsidence/Ground Movement</td>
<td>1.34</td>
<td>Low</td>
</tr>
<tr>
<td>Fixed Site Hazardous Materials Incident</td>
<td>1.17</td>
<td>Low</td>
</tr>
</tbody>
</table>

Chippewa County is susceptible to numerous potential natural and man-made hazards. The majority of the technological hazards are due to the natural hazards that affect the County, for example, power outages are often due to lines down from wind or ice damage or transportation accidents due to severe winter weather.

**Plan Layout**

In Chapter 1 the purpose and planning process is discussed. In this chapter one will find a general overview of the participating local jurisdictions and hazards that have been identified to be significant to the county.
Chapter 2 details Chippewa County’s profile with a general description and overview of the geography, topography, climate, surface waters and watershed basins, population and demographical information, land use patterns, transportation network, and utilities. Detailed description of each local unit of government within the County is also provided. Additionally in this chapter are profiles of emergency management resources, federal, State, county, local agencies and departments that provide the necessary planning and first response to hazard incidents.

Chapter 3 discusses in detail each of the 14 hazards identified by the CCHMPC, as well as the history and the likelihood of occurrence, the impact of the hazard on human development, potential losses and vulnerabilities to damage. Description of community issues or repetitive problems relating to natural hazards that have been identified during the planning process are also in this chapter.

In Chapter 4 the goals and actions from the 2005 plan are reviewed and re-assessed for completeness. New goals and action strategies that have been developed to address the problems and issues in Chapter 3 are described in detail for implementation.

Chapter 5 discusses how this plan and recommended actions will be implemented over the next 5 years.

Appendices are included at the end of the plan which include specific documentation of the planning process, Hazard Mitigation Planning Committee, local units of government’s community profiles and GIS maps.

Certain information which was considered confidential or too sensitive for widespread public distribution has been kept out of this document, and would only be distributed at the discretion of the Chippewa County Office of Emergency Services.