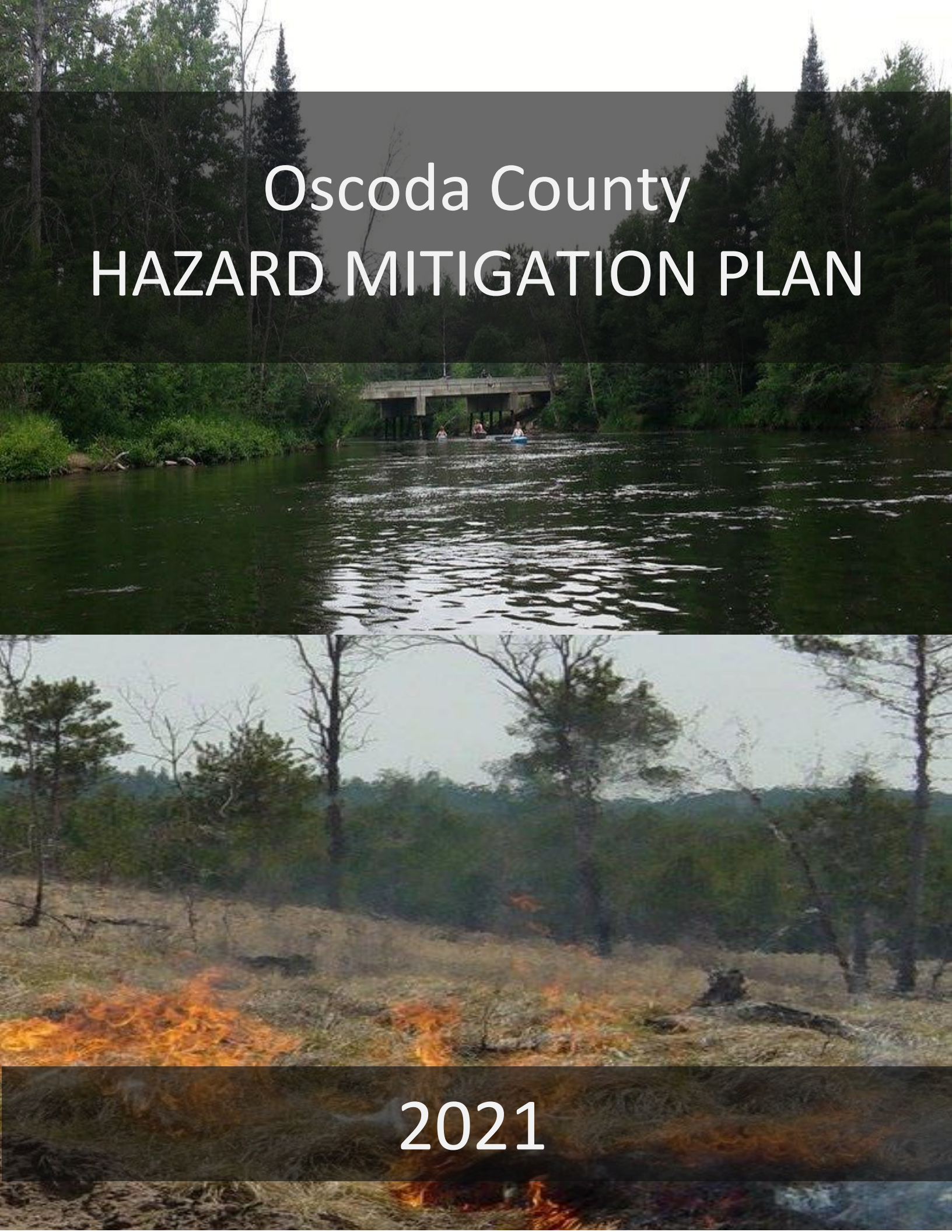


Oscoda County
HAZARD MITIGATION PLAN

2021

This page intentionally left blank.

OSCODA COUNTY
HAZARD MITIGATION PLAN
2021

Oscoda County, Michigan

Prepared for:

Oscoda County
and the
Jurisdictions in Oscoda County

Prepared by:

Oscoda County Emergency Management

and

Northeast Michigan Council of Governments
80 Livingston Boulevard, Suite U-108
P.O. Box 457
Gaylord, Michigan 49734

Adopted Insert Date

This page intentionally left blank.

Table of Contents

Figures

Tables

This page intentionally left blank.

Chapter 1 Introduction

Introduction

Throughout the world communities are impacted by natural, technological, and human-related hazards. Natural hazards occur when the natural processes of the environment interact with the resources and assets in the communities. These hazards include storms, floods, and wildfires. In 2018, the National Weather Service reported the United States experienced 530 fatalities, 1,378 injuries, $35,849,320,000 in property damage, and $5,102,540,000 in crop damage due to natural hazards. Technological hazards take place when the existing technology fails. These types of hazards include hazardous material spills, structural fires, infrastructure failures, and transportation accidents. The final hazard category, human-related, occurs as a product of human activities, such as chemical or biological attacks and cyber-attacks. Depending on many characteristics, such as geographical location, and land use practices, these hazards have the potential to cause death, injuries, damage to property, infrastructure and the environment, and disruption to economic and social activities. These hazards also have the potential to become disasters. However, governments, organizations, businesses, and the public can reduce the impacts from hazards through hazard mitigation efforts.

Hazard mitigation planning allows communities to create long-term plans to reduce or eliminate the impacts that hazards have on the community's population, economy, and natural environment. These plans identify and inventory potential hazards, assess the risks from and vulnerabilities to these hazards, and develop hazard mitigation strategies. Through plan preparation and mitigation efforts, communities are able to better protect public safety and facilities, remove structures from hazard prone areas, accelerate recovery time after disasters, increase hazard education and awareness, and create partnerships.

The Stafford Act, as amended by the Disaster Mitigation Act of 2000, requires state, tribal, and local governments to develop and adopt FEMA-approved hazard mitigation plans to receive certain types of non-emergency disaster assistance. Every five years, jurisdictions must update their plans and re-submit them for FEMA approval to maintain eligibility. The Northeast Michigan Council of Governments (NEMCOG) assisted seven counties in the Northeastern Lower Peninsula of Michigan to update their 2014 hazard mitigation plans.

In Oscoda County, NEMCOG worked with the Emergency Management Coordinators to review and update Oscoda County's 2014 Hazard Mitigation Plan. The plan update focused on natural, technological, and human-related hazards to increase public awareness about hazards and hazard mitigation, maintain the county's grant eligibility, maintain the county's compliance with state and federal legislative requirements for hazard mitigation plans, and to develop projects and policies that can be implemented to reduce or prevent future disasters and improve public safety.

Summary of Plan Contents

The 2021 Oscoda County Hazard Mitigation Plan Update identifies the county's hazards, analyzes the hazards based on the county's current conditions, assesses its risk and vulnerability, identifies the communities' goals and objectives, identifies, evaluates, and prioritizes the alternatives for hazard mitigation strategies, selection and recommendation of feasible mitigation strategies, and documents the plan's progress towards mitigating its hazards. The hazard mitigation strategies within the plan are intended to be integrated into other planning documents.

Specific Plan Updates

Chapter 1: Introduction

- Reviewed and updated the summary of plan contents, specific plan updates, and planning process sections.

Chapter 2: Environment

- Reviewed and updated information in the climate, endangered, threatened, and special concern species, discharge permits, and sites of environmental contamination sections.

Chapter 3: Population and Economic Characteristics

- Reviewed and updated population and housing demographics, and economic indicators.

Chapter 4: Land Use Characteristics

- Reviewed and made minor changes to the chapter.

Chapter 5: Community Services and Facilities

- Reviewed and updated the county government, township government, agencies in Oscoda County, public safety (law enforcement, emergency medical services, fire services), medical facilities, utility services, schools, special populations, public transportation and rail service, and early warning systems.

Chapter 6: Hazard Identification and Assessments

- Combined the Hazard Identification and Hazard Risk and Vulnerability Assessment Chapters.
- Reviewed and updated all of the natural, technological, and human-related hazards.
- Reviewed and updated the hazard rankings.

Chapter 7: Community Goals and Objectives

- Reviewed and updated the goals and objectives. A goal and objectives regarding geographic information system (GIS) data sets was added.

Chapter 8: Mitigation Strategies and Priorities

- Reviewed and updated the mitigation actions and implementation strategies.
- Re-categorized the mitigation actions and implementation strategies to focus on purpose instead of hazards it addresses.

Chapter 9: Plan Maintenance

- Reviewed and made minor changes to the chapter.

Hazard Mitigation Planning Process in Oscoda County

In 2005, Oscoda County prepared its first Hazard Mitigation Plan and updated it in 2014. In 2019, NEMCOG worked with the Emergency Management Coordinators and the local planning team (LPT) to review and update Oscoda County's 2014 Hazard Mitigation Plan. The LPT is made up of representatives from local governments, law enforcement, fire departments, community organizations, and local, state and federal agencies (Table 1-1).

Table 1-1 Oscoda County LEPC Membership	
Name	**Title**
Michael Bowers	Emergency Management Coordinator, Oscoda County
Elizabeth Carr	Emergency Management Coordinator (resigned), Oscoda County
Duane Roddy	Fires Services
Kyle Yoder	Oscoda County Board of Commissioners
Al Bickford	American Red Cross
Jill Roark	American Red Cross
Jack Roark	American Red Cross
Kevin Grace	Oscoda County Sheriff's Office
Rodd Layman	Local Government Representative
Cori Upper	District Health Department #2
Steve Dufour	Oscoda County Road Commission
John Eurich	Human Services
Don Hosmer	ARES/RACES
Robert Hunter	Oscoda County EMS
Frank Wyrembelski	Luzerne Fire Department
Jessica Leski	Parole/Probation MDOC

Meetings

During the preparation of the draft plan, LPT meetings were held for participants to provide input and feedback through facilitated discussions that gained a consensus (Appendix B). Notices for all of the meetings were sent to LPT members and local community officials. All LPT meetings are open to the public. In addition to the LPT meetings and discussions, additional meetings were held.

Kick off Meeting

On April 17, 2019, NEMCOG met with Oscoda County's LPT to provide an overview of the hazard mitigation planning process and information about the grant match. Attendees included Duane Roddy, Kyle Yoder, Jill Roark, Jack Roark, Al Bickford, Frank Wyrembelski, Jessica Leski, Don Hosmer, Cori Upper, Kevin Grace, Elizabeth Carr, and NEMCOG staff, Nico Tucker and Christina McEmber.

NEMCOG Board of Directors' Meeting

On April 18, 2019, NEMCOG staff gave a brief status update about the hazard mitigation process to the NEMCOG Board of Directors. Attendees included Dan Gauthier (Alcona County Board of Commissioner), Dave Karschnick (Alpena County Board of Commissioner), John Wallace (Cheboygan County Board of Commissioner), James Kargol (Emmet County Board of Commissioner), Kyle Yoder (Oscoda County Board of Commissioner, Chair), Robert Pallarito (Otsego County Board of Commissioner), Carl Altman (Presque Isle County Board of Commissioner, Vice Chair), Adam Poll (City of Alpena Planning and Development Director), Marisue Moreau (Northeast Michigan Consortium/Michigan Works!), Robert Heilman (NEMCOG Board of Directors' Chair), Doug Baum (City of Grayling, Crawford County, Manager), Dave Post (Village of Hillman, Montmorency County, Manager), Bill Wishart (City of Gaylord, Otsego

County, Mayor), Norman Brecheisen (Livingston Township, Otsego County, Supervisor), and NEMCOG staff, Diane Rekowski, Theresa Huff, Karen Cole, and Christina McEmber.

Plan Review and Update Meetings

On July 17, 2019, NEMCOG met with Oscoda County's LPT to review and update the 2014 Oscoda County Hazard Mitigation Plan. A brief overview of the current plan status was discussed. Additionally, the LPT selected evaluation criteria to evaluate the hazards by determining which aspects were of most concern to the county. Additionally, the committee reviewed and updated the county's hazard rankings based on their social impact, likelihood of occurrence, and administrative potential.

The committee elevated the county's risk for riverine flooding, dam failure, transportation (air, land, and water) accidents, scrap tire fire, and transportation hazardous material accidents, while reducing the risk for infrastructure failure, tornadoes, extreme temperature (extreme heat and extreme cold),lightning, hail, and drought. The committee determined terrorism/sabotage and nuclear attack should be combined during the hazard identification process since a nuclear attack in the county would occur from terrorism/sabotage. The committee determined the county had a low risk for civil disturbance and terrorism/sabotage/nuclear attack hazards and did not further analyze the hazards at this time. Additionally, the committee determined oil and gas well accidents and oil and gas well pipeline accidents should be combined during the hazard identification process since they are interconnected hazards. After combining oil and gas well accidents and oil and gas well pipeline accidents, the risk for pipeline accidents remained the same while the risk for oil and gas well accidents increased. The committee determined the county does not have a risk for Great Lakes shoreline flooding since it is not located on the Great Lakes, earthquakes since it is not located near a fault line, and subsidence since there are no subsidence features in the county. Therefore, the committee removed Great Lakes shoreline flooding, earthquakes, and subsidence from the hazard mitigation plan.

It was determined no additional strategies needed to be added to the plan at this time. The committee also reviewed and updated the plan's goals and objectives. Finally, the committee reviewed the hazard mitigation actions and updated them where it was deemed necessary. The committee determined whether or not the mitigation action was still relevant, and reviewed and updated each action's priority ranking, responsible agencies, funding sources, current progress, and future status. Several action items were moved to the all-hazard mitigation action table, one hazard action was completed (and will be removed from future plans), and multiple action items were deemed to be ongoing projects that the communities are working on. Attendees included Jackie Roark, Jill Roark, Al Bickford, Bob Hunter, Kyle Yoder, Cori Upper, Duane Roddy, Elizabeth Carr, Michael Bowers, Donald Hosmer, and NEMCOG staff, Christina McEmber.

On April 22, 2020, NEMCOG met with Oscoda County's LPT to discuss further updates and enhancements to the hazard mitigation draft plan that were requested from the State of Michigan's review process. Attendees included Mike Bowers, Sean Bowers, Duane Roddy, Kyle Yoder, John Norton Jensen, Don Hosmer, and NEMCOG staff, Christina McEmber.

NEMCOG Board of Directors' Meeting

On December 19, 2019, NEMCOG staff provided a status of county hazard mitigation plan updates and explained the approval process. Attendees included Dan Gauthier (Alcona County Board of Commissioner), Dave Karschnick (Alpena County Board of Commissioner), Daryl Peterson (Montmorency County Board of Commissioner), Kyle Yoder (Oscoda County Board of Commissioner, Chair), Robert

Pallarito (Otsego County Board of Commissioner), Carl Altman (Presque Isle County Board of Commissioner, Vice Chair), Adam Poll (City of Alpena Planning and Development Director), Marisue Moreau (Northeast Michigan Consortium/Michigan Works!), Robert Heilman (NEMCOG Board of Directors' Chair), Bruno Wojcik (Briley Township, Montmorency County, Supervisor), Scott McLennan (City of Rogers City, Presque Isle County, Mayor), Doug Baum (City of Grayling, Crawford County, Manager), Dave Post (Village of Hillman, Montmorency County, Manager), Norman Brecheisen (Livingston Township, Otsego County, Supervisor), and NEMCOG staff, Diane Rekowski, Theresa Huff, Karen Cole, Steve Schnell, Nico Tucker, Denise Cline and Christina McEmber.

Community Involvement

The local jurisdictions, stakeholders, and public were involved during the drafting phase of the hazard mitigation plan and during the completion of the draft plan before it was adopted. Information was disseminated to the communities and public through the use of public meetings, press releases, and websites. Representatives from Oscoda County, and Big Creek, Clinton, Comins, Elmer, Greenwood, and Mentor Townships participated in updating the hazard mitigation tables and reviewing the draft plan (Table 1-2).

The planning process educated community leaders and residents about hazard awareness, which assisted communities in making informed decisions. Additionally, the process strengthened partnerships between local governments, planning commissions, emergency services, public agencies and private entities. These partnerships allowed for the pooling of resources and facilitating communication.

Table 1-2 Jurisdiction Participation Status

Jurisdiction	Representative	Participation Status
Big Creek Township	Randy Booth, Supervisor	Continuing Participant
Clinton Township	Christopher Neff, Supervisor	Continuing Participant
Comins Township	Robert Murphy, Supervisor/Zoning Administrator	Continuing Participant
Elmer Township	Martin Galbraith, Supervisor	Continuing Participant
Greenwood Township	Fred Lindsey Jr., Supervisor	Continuing Participant
Mentor Township	Gary Wyckoff, Supervisor	Continuing Participant

Public Participation Survey

The Emergency Manager and LPT commissioned a regionwide survey to gain input and feedback regarding the perceptions and opinions about natural, technological, and human-related hazards, and the preferred methods and techniques to reduce risk and losses from hazards. The region includes Alpena, Alcona, Montmorency, Oscoda, Otsego, and Presque Isle Counties. The regionwide survey was available online and hard copies were available to download from the county's website for the public, neighboring jurisdictions, and stakeholders from August 12, 2019 through November 19, 2019. Press releases were issued to inform the communities about the availability of the survey. On August 12, 2019, a link to the survey and a request to forward the link to other individuals was sent to the LPT, Oscoda County Board of Commissioners, and the local jurisdictions' president, supervisors, and clerks as well as the surrounding counties and local governments.

Fifty-five completed surveys were received for Alpena, Alcona, Montmorency, Oscoda, Otsego, and Presque Isle Counties (see results below). See Appendix A for the survey results specific to individuals residing in Oscoda County and a link to the regionwide survey. Participants were asked a number of different questions, including their concern levels for natural, technological, and human-related hazards, their perception of the county's preparedness level for each hazard, identification of community assets, and their approval/disapproval of various mitigation approaches. Lastly, participants were asked to provide suggestions to improve hazard mitigation. The county evaluated and incorporated both the regional survey results and the county specific survey results during the plan update.

Approximately 65.5% of respondents have not received information about how to make their household safer from natural, technological, or human-related hazards. The respondents who had received information indicated it came from the American Red Cross, FEMA, the Alpena County Emergency Management Office, Otsego County Emergency Management Office, USDA/Forest Service, DTE Energy, the Firewise program, insurance companies and CERT. The majority of respondents indicated the internet, mail, and television were the most effective ways to distribute information, followed by radio, newspaper, and public workshops/meetings. About 60.0% of respondents indicated they have not experienced a hazard event in the last five years. The respondents who had experienced a hazard indicated they had experienced flooding, snowstorms/winter storms, a hurricane, and straight-line winds/windstorms.

Natural Hazards

Respondents are very concerned or somewhat concerned about the following hazards:

- Snow/ice storms: 78.2%
- Windstorm/high winds: 72.7%
- Extreme cold: 65.5%
- Wildfires: 56.4%
- Tornadoes: 43.6%

Respondents are not very concerned or not concerned about the following hazards:

- Drought: 50.9%
- Floods: 49.1%
- Extreme heat: 41.8%

Approximately 38.2% of respondents were neutral regarding their concern for thunderstorms. Additionally, respondents indicated they were concerned about milfoil in the lakes, earthquakes, mass shootings and disease outbreaks.

Respondents feel the region is best prepared to handle snow/ice storms (74.6%), extreme cold (69.1%), thunderstorms (65.5%), and windstorms/high winds (40.0%). Respondents are unsure if the region is prepared to handle drought (49.1%), extreme heat (40.7%), tornadoes (40.0%), and wildfires (36.4%). About 40.7% of respondents were evenly split (least prepared or unsure) in how prepared the region is to handle flooding.

Technological Hazards
Respondents are very concerned or somewhat concerned about the following hazards:

- Communications failures: 81.8%
- Power failures: 80.0%
- Structural fires: 78.2%
- Oil and gas accidents: 74.5%
- Hazardous material spills: 69.1%
- Road accidents: 67.3%
- Water or wastewater treatment system failures: 44.4%
- Air transportation accidents: 43.6%

Respondents are not very concerned or not concerned about the following hazards:

- Railroad accidents: 66.0%
- Dam failures: 61.1%
- Water transportation accidents: 52.7%
- Terrorism/sabotage: 43.6%

Respondents feel the region is best prepared to handle road accidents (81.8%), structural fires (70.4%), power failures (54.6%), hazardous material spills (48.2%), and oil and gas accidents (48.2%). Respondents feel the region is least prepared to handle terrorism/sabotage (65.5%), water transportation accidents (45.5%), communications failures (38.9%), and air transportation accidents (36.4%). Respondents were unsure how prepared the region is to handle dam failures (53.7%), railroad accidents (51.9%), and water or wastewater treatment system failures (47.3%).

Human-Related Hazards
Respondents are very concerned or somewhat concerned about the following hazard:

- Cyber-attacks: 59.3%

Respondents are not very concerned or not concerned about the following hazard:

- Chemical or biological attacks: 47.3%

Respondents feel the region is least prepared to handle cyber-attacks (58.2%) and chemical or biological attacks (55.6%).

Community Assets
Respondents ranked the following community assets from the most vulnerable to the least vulnerable to the hazard impacts:

1. Human (death/injuries)
2. Infrastructure (damage or loss of bridges, utilities, schools, etc.)
3. Economic (business closures, job losses, etc.)
4. Environmental (damage or loss of forests, waterways, etc.)
5. Governance (ability to maintain order and/or provide public amenities and services)
6. Cultural/Historic (damage or loss of libraries, museums, fairgrounds, etc.)

Regulatory Approaches

Respondents supported the following approaches to reduce risk and loss associated with disasters:

- Improving the disaster preparedness of local schools (98.2%)
- Taking steps to safeguard the local economy following a disaster (96.4%)
- Creating an inventory of at-risk buildings and infrastructure (94.4%)
- Making their home more disaster-resilient (89.1%)
- Disclosing natural hazard risks on real estate transactions (87.3%)
- Policies to prohibit development in areas subject to natural hazards (83.3%)
- Protecting historical or cultural structures (71.7%)
- The use of tax dollars to reduce risk and losses from natural disasters (70.4%)
- Regulatory approaches (68.5%)
- Non-regulatory approaches (57.4%)

Respondents recommended increasing public outreach and education efforts, improving wildfire protection, bringing specialists into the communities to assist in mitigating hazards, enforcing reasonable and consistent fire codes, increasing funding to enhance essential public safety services, developing a rapid marine response to boaters in danger on Lake Huron, increasing milfoil awareness at local lakes, providing training opportunities, increasing security for cyber communications, installing broadband throughout the entire counties, limiting oil transport under/through/on the Great Lakes, being proactive with trimming and removing trees, strengthening local government partnerships, and increasing support for emergency services.

Draft Plan

The 2021 draft Oscoda County Hazard Mitigation Plan was made available to local governments, agencies, and the public for review and comment. A public notice was sent to the local newspaper to inform residents about the draft plan and where it could be reviewed. The draft plan was posted on Oscoda County's website and NEMCOG's website. On November 13, 2019, the draft plan was emailed to the Board of Commissioners and local jurisdictions' supervisors for review and comment.

On November 26, 2019, a public hearing was held to receive comments and suggestions on the draft plan. No public was present at the meeting. Those present are part of the LPT and had attended previous plan update meetings. No comments or suggestions were received via email, mail, or in-person (outside of the meeting). Attendees included Michael Bowers, Kyle Yoder, Annette Chalmers, Charlie Senske, and NEMCOG staff, Christina McEmber.

The draft plan was submitted to the Michigan State Police and Federal Emergency Management Agency (FEMA) for preliminary review and comment before adoption by the Oscoda County Board of Commissioners and local municipalities.

INSERT Date, the Oscoda County LPT approved a motion to recommend adoption of the 2021 Oscoda County Hazard Mitigation Plan by the Oscoda County Board of Commissioners and all local municipalities within Oscoda County.

Plan Adoption

On February 17, 2021, the 2021 Oscoda County Hazard Mitigation Plan received "approvable pending adoption" status from the State and FEMA. A public notice was sent to the local newspaper to inform residents when the County Board of Commissioners would be considering adoption of the draft plan. On INSERT DATE, NEMCOG presented the 2021 Oscoda County Hazard Mitigation Plan to the County Board of Commissioners for approval and adoption. After the Board of Commissioners adopted the plan, the local jurisdictions were notified and requested to also adopt the plan (Appendix C).

Incorporation of Plans, Studies, and Technical Information

NEMCOG staff reviewed relevant plans, maps, studies, and reports. Federal, state, regional, and local government sources were reviewed to update the county's community profile. These sources included the U.S. Census Bureau, Comins, Mentor, and Greenwood Townships Zoning Ordinances, Oscoda County Master Plan 2014-2018, Clinton Township Community Park and Recreation Plan, 1991 Mentor-Big Creek Townships Strategic Plan, capital improvement plans, parcel maps, aerial photography, Michigan Department of Natural Resources' Michigan Resource Information System land use/land cover information, U.S.G.S. topographic maps, the National Oceanic and Atmospheric Administration's National Centers for Environmental Information Data Center, the USDA's Soil Surveys, NRCS soils maps, Michigan Department of Transportation, Michigan Hazard Analysis for 2012 and 2019, the 2019 Michigan Hazard Mitigation Plan, local hazard analysis, flood insurance rate maps, emergency management plans, Michigan Department of Environment, Great Lakes, and Energy, U.S. Forest Service, Michigan State Police Emergency Management and Homeland Security Division, and Bureau of Fire Services.

GIS was used as a public education and decision tool throughout the planning process. Data sets were used to analyze existing conditions and potential future scenarios. Specialized maps, such as community hazards, land cover/use, and infrastructure, were used during the drafting phase of the plan. The maps assisted in identifying community characteristics, vulnerable populations, and hazard areas.

This page intentionally left blank.

Chapter 2 Environment

Overview

Oscoda County covers an area of 568 square miles and its pre-dominate land cover is upland forest, with the majority of it being pine and oak. These drought tolerant species prefer and thrive on the sandy soils. Farming is limited within Oscoda County and tends to be concentrated in southeastern Elmer Township and western Comins Township. The County has an abundant source of high quality surface water features with an interconnected network of streams and creeks within the Au Sable and Thunder Bay River Systems.

Northern Michigan's greatest attraction is the natural environment and rural character, which provides a major economic base and income generator for the region. Recreational opportunities, such as hunting, fishing, golfing, snowmobiling, boating, and other activities attract people from around Michigan and other states. Many long-time visitors decide to move to the area upon retirement.

At the same time, the environment places constraints on human activities. Certain critical and sensitive parts of the natural landscape cannot be altered without creating problems that are not easily corrected. For example, the filling of wetlands and the clearing of land have increased flooding and soil erosion in areas. Therefore, any future development should take into account the different characteristics of the natural environment to preserve the area's attractiveness, prevent potential hazards due to land alteration, and maximize the economic benefits of the tourism industry.

Oscoda County is composed of six townships in Michigan's northeastern Lower Peninsula (Figure 2-1):

- Big Creek Township
- Clinton Township
- Comins Township
- Elmer Township
- Greenwood Township
- Mentor Township

Big Creek Township is located in the southwestern portion of Oscoda County and contains the unincorporated communities of Luzerne and the southwest portion of Mio. This township covers a quarter of the county and is made up of four congressionally surveyed townships. The portion of Mio includes residential, commercial, and public facilities (Mio Community Schools). Luzerne is located on Big Creek in the Huron National Forest and is adjacent to the Kirtland Warbler management area. Luzerne has restaurants, stores, and nearby resorts. Clinton Township is located in the northeast section of Oscoda County and is bisected by M-33, which runs through the unincorporated community of Comins. Comins Township is located in the northeast corner of Oscoda County. Fairview is located at the intersection of M-33 and M-72 within the township and has government offices, stores, and restaurants. Elmer Township is located in the northcentral portion of Oscoda County and is 72 square miles. It consists of two congressionally surveyed townships and houses the northwest portion of Mio. Greenwood Township is located in the northwest corner of Oscoda County and includes the small community of Red Oak. Mentor Township is located in the southeast portion of Oscoda County and is 144 square miles. It houses the unincorporated communities of McKinley and the east side of Mio.

McKinley is located on the Au Sable River along County Road F-32. Mio is the county seat, and the township houses its associated facilities (courthouse, courthouse annex, and sheriff department, etc.).

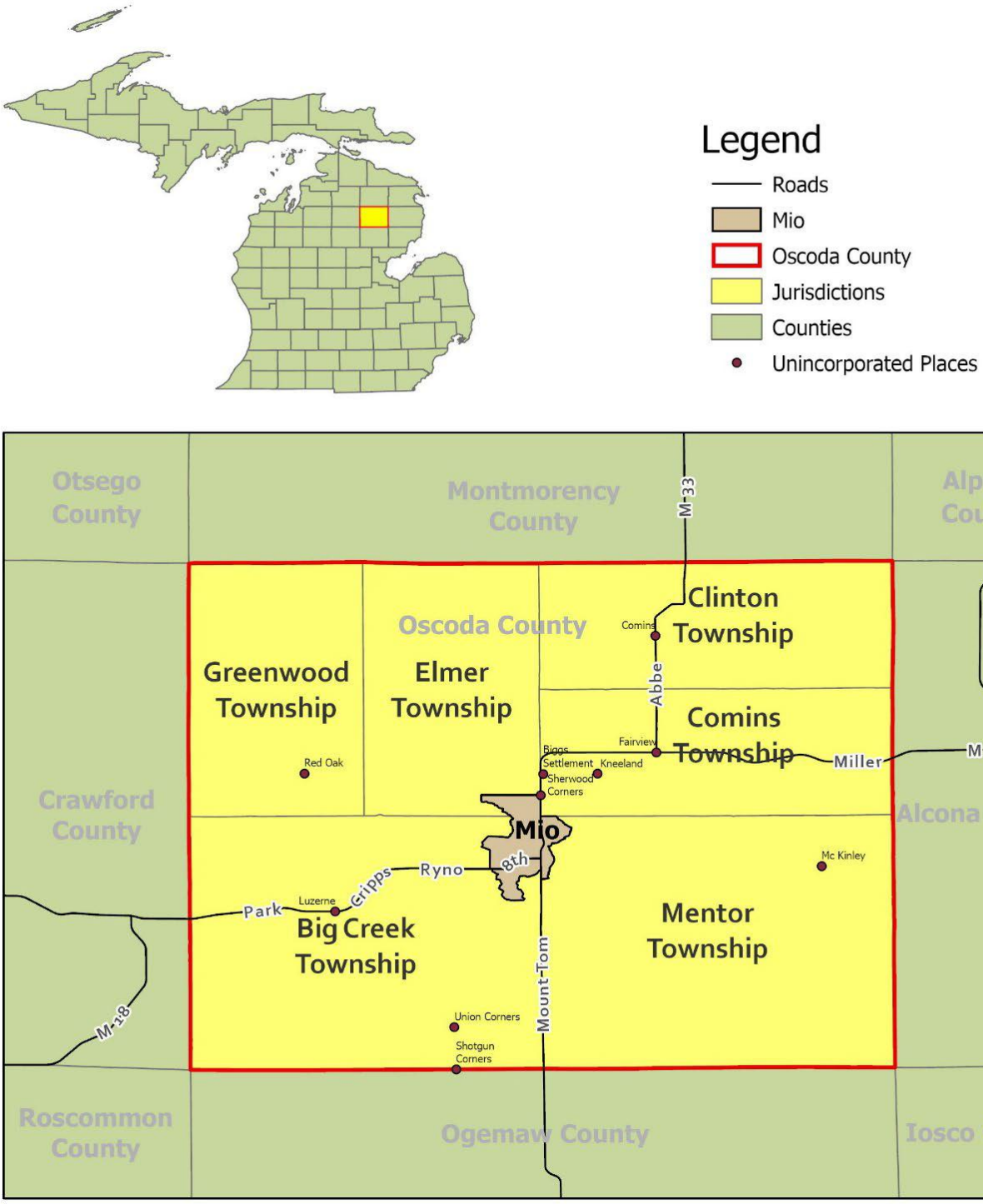


Figure 2-1 Location of Oscoda County's townships and unincorporated places

Climate

Typical of northern Michigan, the distinct four seasons offer an ever-changing landscape for recreational pursuits. Winter snowfall allows for popular winter sports, such as snowmobiling, skiing, and ice fishing. Summer warmth provides a backdrop for swimming, boating, hiking, and biking. Spring weather brings out mushroom hunters and bird watchers, while fall weather allows for hunting activities and fall color tours. According to the USDA's *Soil Survey of Oscoda County, Michigan*, the average relative humidity in the afternoon is approximately 77% in December and 48% in May, and between 85 and 90% in the morning year round.

The average annual precipitation is 29.84 inches with approximately 60% of the precipitation falling between April and September. The average annual temperature is 43.3 degrees Fahrenheit. The temperature ranges between 17 degrees Fahrenheit and 67 degrees Fahrenheit in the spring and between 50 degrees Fahrenheit and 82 degrees Fahrenheit in the summer. The average annual snowfall is 78.34 inches (Figure 2-2). On average, 106 days of the year have at least one inch of snow on the ground according to the *Soil Survey of Oscoda County, Michigan.* However, the number of days varies each year. The temperature ranges between 26 degrees Fahrenheit and 70 degrees Fahrenheit in the fall, and between 7 degrees Fahrenheit to 32 degrees Fahrenheit in the winter. For information on severe weather, see Chapter 6: Hazard Identification.

The average frost-free season, as shown by the average dates of the last killing frost (June 5) to the first (September 14) is 101 days. Killing frosts have been recorded in every month of the year, especially in the lower lying areas along the Au Sable River.

According to the National Aeronautics and Space Administration, Earth's climate has been warming over the past century at an unprecedented rate due to human activities. Carbon dioxide and other gases are trapping heat, which is causing the earth to warm. According to the *Planning for Community Resilience in Michigan: A Comprehensive Handbook*, Michigan is predicted to experience more frequent and severe storms, increases in winter and spring precipitation, less precipitation as snow and more as rain, reduced ice cover on the Great Lakes, an extended growing season, more flooding events with risks of erosion, an increase in the frequency and length of severe heat events, and an increase in drought and wildfires. Since Oscoda County's 2006 Hazard Mitigation Plan, Oscoda County has seen an increase of 1.1 degrees Fahrenheit in the average annual temperature, and an increase of 21.5 inches of snowfall.

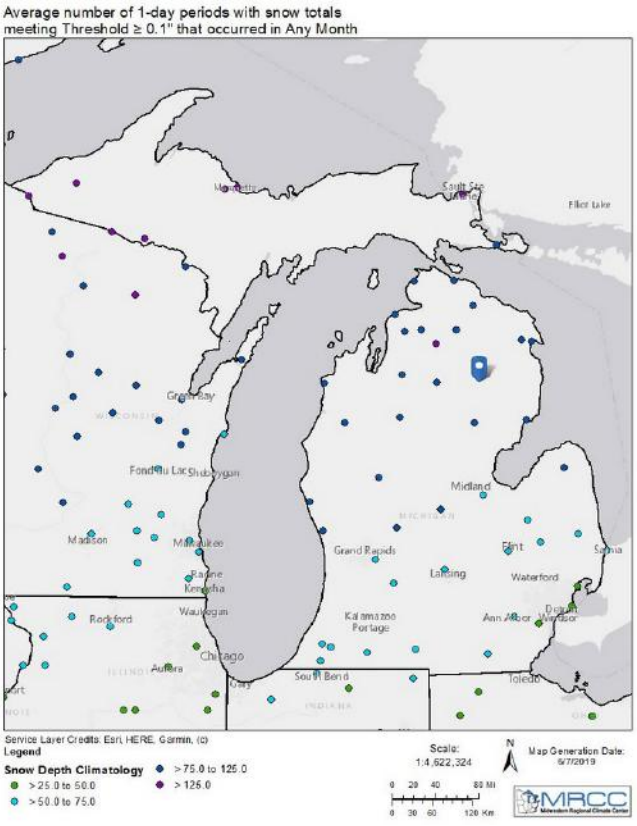


Figure 2-2 Average Snow Depth (inches)

Topography

Elevations range from 1,000 to 1,200 feet above sea level in the county. Small areas in the central and northern parts of the county have elevations between 1,300 and 1,400 feet, while the lowest elevation is 900 feet near the county's eastern boundary on the Au Sable River. In Clinton Township at the intersection of Tom and Hill Roads, the elevation is relatively high and provides a view of the surrounding area.

Oscoda County is part of a highland plain that is bisected east and west by the Au Sable River. The northern and southern plateaus consist of smooth sand and gravel plains, broad swells and hills of sandy land, and level or undulated wet and dry clay plains. The high, dry, sandy and gravel plains are level and lack any conspicuous surface features or local differences in elevation; however, they are broken by pits and long dry valleys or swales in some areas. The hilly plateau lands rise gradually or abruptly from the sandy plains, and consist of broad swells with long, smooth slopes. However, they are rough in aspect since the land is characterized by domes, knobs, ridges and deep potholes, lake basins and valleys. The clay plains are smooth or undulating and include shallow swales and hummocky swells of sandy land with some stream dissection and small irregular spots of wetlands.

The Au Sable River flows through a terraced valley about three miles wide and lies 200 to 400 feet below the surface. It is bordered by three narrow sandy and gravel terrace plains. The first lies 10 to 15 feet above the river; the second lies 35 to 40 feet above the river; and the third lies 70 to 80 feet above the river. The terrace plains are composed of loose stratified sand and gravel that is resting on clay.

Geology

The county consists of moraines, till plains, outwash plains and lacustrine plains that were created by the continental glaciers. Moraines (linear hilly ridges) were formed by the deposition of unconsolidated sand, gravel, rock and clay at the margins of a glacier. Moraines are scattered throughout the county. Till plains were created by the deposition of unsorted sand, gravel and clay by melting ice, and are located north of Mio. There are level areas between moraines consisting of the same material. Outwash and lacustrine plains are water laid deposits from the melting glacier. Outwash plains are stratified deposits consisting of silt, clay and fine sediments in glacial and post-glacial lakes. Outwash and lacustrine plains are interspersed throughout the county.

Oscoda County has sedimentary bedrock consisting of shale, limestone, and dolomite. The youngest bedrock is found in the southern part of the county that includes Michigan and Marshall Formations. Coldwater shale, Berea sandstone, Bedford shale and Antrim shale are found in the northern half of the County. Intensive exploration for oil and gas deposits has resulted in numerous producing wells throughout the County.

Soils

Much of Oscoda County's soils are poor due to a low amount of organic matter, low or medium nutrients, and a deficiency in moisture. The soils are fairly well drained since the water table is not high and the slope provides run-off.

The soil types and slopes should be considered when planning for land use types and intensities. Hydric soils are located adjacent to streams and creeks and are classified as poorly drained and very poorly drained. During part of the growing season, these soils are saturated, flooded or ponded, which makes them poor soils for building site development and sanitary facilities. The high-water table limits the construction of basements and may classify the soils as wetlands, which would require a wetland permit for development. The cost to develop areas with hydric soils and steep slopes is greater than the cost of developing in less constrained areas since hydric soils and steep slopes require severe building constraints and special design considerations, such as erosion control measures, slope stabilization, and on-site water retention. If developed improperly, the environmental impacts would be considerable. Information about steep slopes are on file with the Oscoda County Planning and Zoning Commission.

Oscoda County Soil Types

- Grayling-Rubicon-Croswell Association: Nearly level to undulating areas dominated by well-drained and moderately well-drained sandy soils.
- Grayling-Graycalm-Montcalm Association: Rolling to hilly areas dominated by well-drained and moderately well-drained sandy soils.
- Leelanau-Emmet-Kalkaska Association: Rolling to steep areas dominated by well-drained sandy and loamy soils.
- Emmet-Leelanau-Menominee Association: Undulating to rolling areas dominated by well-drained and moderately well-drained sandy and loamy soils.
- Nester-Kawkawlin-Iosco Association: Nearly level to undulating areas dominated by well-drained to poorly drained loamy and clayey soils.
- Carbondale-Lupton-Tawas Association: Nearly level areas dominated by somewhat poorly drained to very poorly drained sandy soils to sloping well-drained sandy soils, and nearly level, poorly drained organic soils.

Forest and Wetland Resources

Over 80% of Oscoda County is forested with various tree species due to the soils, moisture, and past activities, such as logging, fires, and land clearing (Figure 2-4). Jack pine, aspen-birch and oak are the most common forest types. The majority of the land cover in Big Creek and Mentor Townships are jack pine forests. The majority of the land cover in Clinton and Comins Townships is upland forests, which include oak, aspen, and northern hardwood forests. Greenwood Township primarily consists of upland forests, which include pine, oak, and aspen forests.

Lowland forests/riparian forests are adjacent to water features. These forests function as water quality buffers and wildlife corridors, and are prone to flooding. These areas support northern white cedar, tamarack, balsam fir, black spruce, eastern hemlock, white pine, balsam poplar, quaking aspen, paper birch, black ash, speckled alder and shrub willows. Northern white cedar dominates the wetland areas where there is lateral water movement and organic soils. Non-forested wetland types include lowland brush, marshes and bogs. Forested and non-forested wetlands are a finite resource in the County and land use planning should focus on preserving them. Elmer Township has marshy areas in the north where the Rush Creek Fisheries Research Area is located.

The Michigan Resource Information System's (MIRIS) 1978 Land Cover/Use Inventory, the Michigan Department of Natural Resources' pre-settlement vegetation maps, and the Great Lakes Ecological Assessment project map were used to analyze the forest types in the County to assist in defining the vulnerable areas and populations (Figure 2-4). According to the MIRIS Land Cover/Use Inventory, the most prevalent forest type is jack pine, covering over 34% of the county. A review of the pre-settlement vegetation map of Oscoda County shows extensive areas covered with pine and oak forests, which mean the area has a history of wildfires (Figure 2-5). 71% of the county was jack pine-red pine forest, white pine-red pine forest, pine barrens, pine-oak barrens, and pine-oak forests. Jack pine forests were estimated to cover 63% of the county. However, in the late 1800's, extensive logging and subsequent wildfires resulted in the conversion of pine forests to oak and aspen forests. Today, jack pine covers 34% of the county, and aspen and oak forests cover 38%. Unfortunately, residential developments are located within wildfire prone areas today. The Great Lakes Ecological Assessment project shows historical vegetation and interpolated fire observations (in yellow) for northern Michigan with approximate county boundaries, which shows Oscoda County was covered with forests prone to wildfires (Figure 2-3).

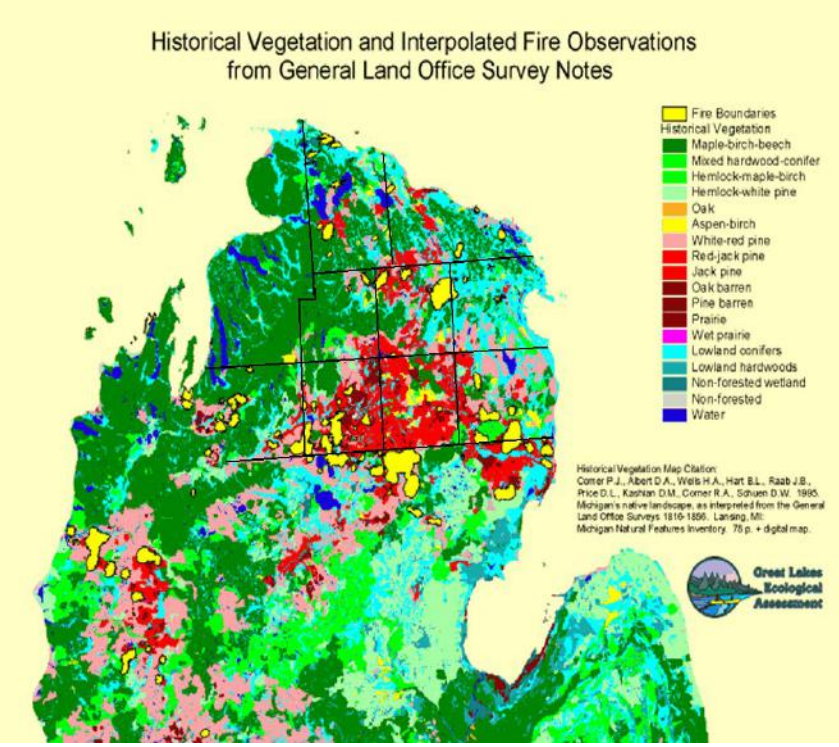


Figure 2-3 Historical Vegetation and Fire Observations

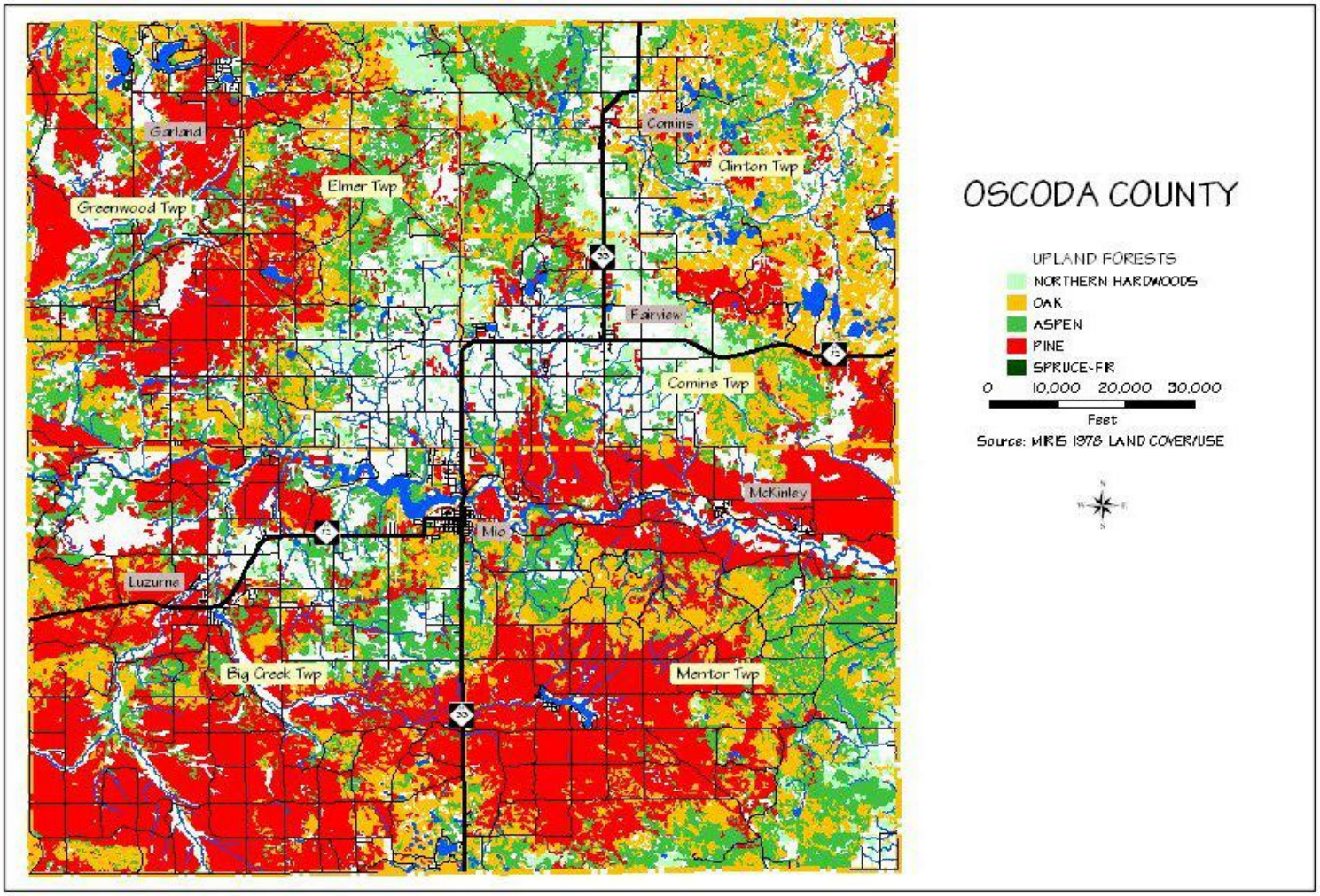


Figure 2-4 Oscoda County Forest Types

Red and white pine forest types are included in the pine forest category. Bigtooth aspen, quaking aspen, white birch, red maple and red oak are included in the aspen-birch type. Red oak, white oak, black oak and northern pin oak are included in the oak forests. Northern hardwoods include sugar maple, red maple, American beech, basswood and yellow birch.

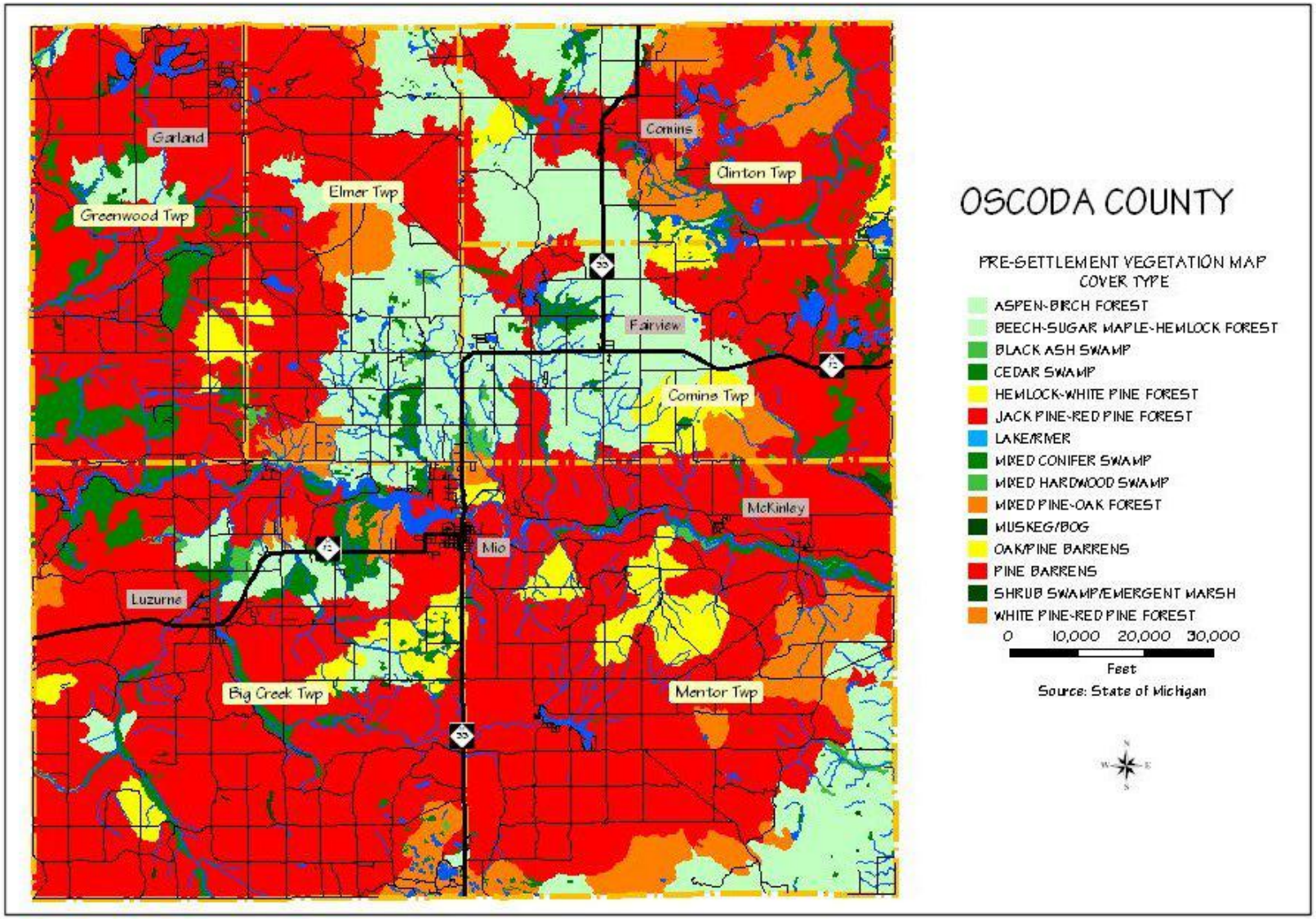


Figure 2-5 Oscoda County Pre-Settlement Vegetation Cover

Water Resources

Approximately 23,000 acres or 6.5% of Oscoda County's land area is classified as floodplains or wetlands according to digital image processing completed by NEMCOG. There are natural or artificial bodies of water in the county, which makes up 3,937 acres of surface water, and 219 miles of streams and river frontage (Table 2-1, Figure 2-6). Clinton Township has many small lakes on large tracts of private land, and a small park located on Bass Lake. Comins Township also has many small lakes on large tracts of private land and a small park on Smith Lake. At Muskrat Lake (Elmer Township), there are several ATV/snowmobile trails and a public campground. In the southern portion of Greenwood Township, there are fishing streams and freshwater marshes.

There are 136 manmade water impoundments in the county, including Mio Dam Pond. In 1916, the Mio Dam (Big Creek Township) was constructed on the Au Sable River to generate renewable energy. It was the first dam to utilize an under-sluice spillway. Currently, Consumers Energy owns the dam. The back waters extend six miles upstream and cover 860 surface acres. The majority of the land around the dam is owned by Consumers Energy and the U.S. Forest Service. The Au Sable River flows west to east through the central part of the county and is undeveloped since the property along the river is owned by the State and federal government. The river has been designated as a natural river and flows 31 miles through Oscoda County. The Au Sable River flows across the northern portion of Big Creek and Mentor Townships, where there is a mixture of public and private ownership along the shoreline and many public access points.

Oscoda County's lakes and rivers play an important role in the county's tourism industry. The Au Sable River and Big Creek River (over 15 miles) systems have excellent trout fishing. Other lakes and streams provide over 219 miles of trout fishing areas. The warmer lakes normally have bluegill, bass, perch and pike. Tiger musky have also been stocked in several lakes.

The groundwater aquifers are recharged by precipitation, which is readily absorbed by the county's permeable soils. Individual wells near lakes and streams are usually quite shallow due to the high water table. The county drains into the AuSable River and the Thunder Bay River watershed systems.

Table 2-1 Major Lakes in Oscoda County

Lake Name and Surface Area	Description of Lake
Loon Lake, 90.4 acres	Public access. Pan fishing. 98% mineral shoreline; 2% organic, maximum depth 50 ft.
Mio Pond, 944 acres	Panfish, pike, trout; public access. 100% mineral shoreline.
Mack Lake, 175 acres	Maximum depth 5 feet. 95% mineral shoreline, 5% organic.
Muskrat Lake, 86 acres	Residential development; shoreline is 50% mineral, 50% organic
McCollum Lake, 143 acres	Panfish, pike; shoreline is 50% mineral, 50% organic. Residential development
North Lake, 75 acres	Undeveloped, natural lake
Indian Lake, 55 acres	Undeveloped, natural lake. 80% mineral shoreline, 20% organic

Table 2-1 Major Lakes in Oscoda County	
Lake Name and Surface Area	**Description of Lake**
Shamrock Lake, 220 acres	Panfish, pike; maximum depth 12 feet. Residential development around eastern half
Island Lake, 105 acres	Undeveloped natural lake with 50% mineral shoreline, 50% organic
Tea Lake, 216 acres	Trout fishing, panfish, public access; residential development; 99% mineral, 20% organic shoreline
Snyder Lake, 135 acres	Some residential development around lake. 80% mineral, 20% organic shoreline
(Little) Bear Lake, 52 acres	Residential development; 50% mineral, 50% organic shoreline
Woodbury Lake, 55 acres	Residential development
Island Lake, 125 acres	Residential development around south and west sides
Source: Oscoda County Recreation Plan	

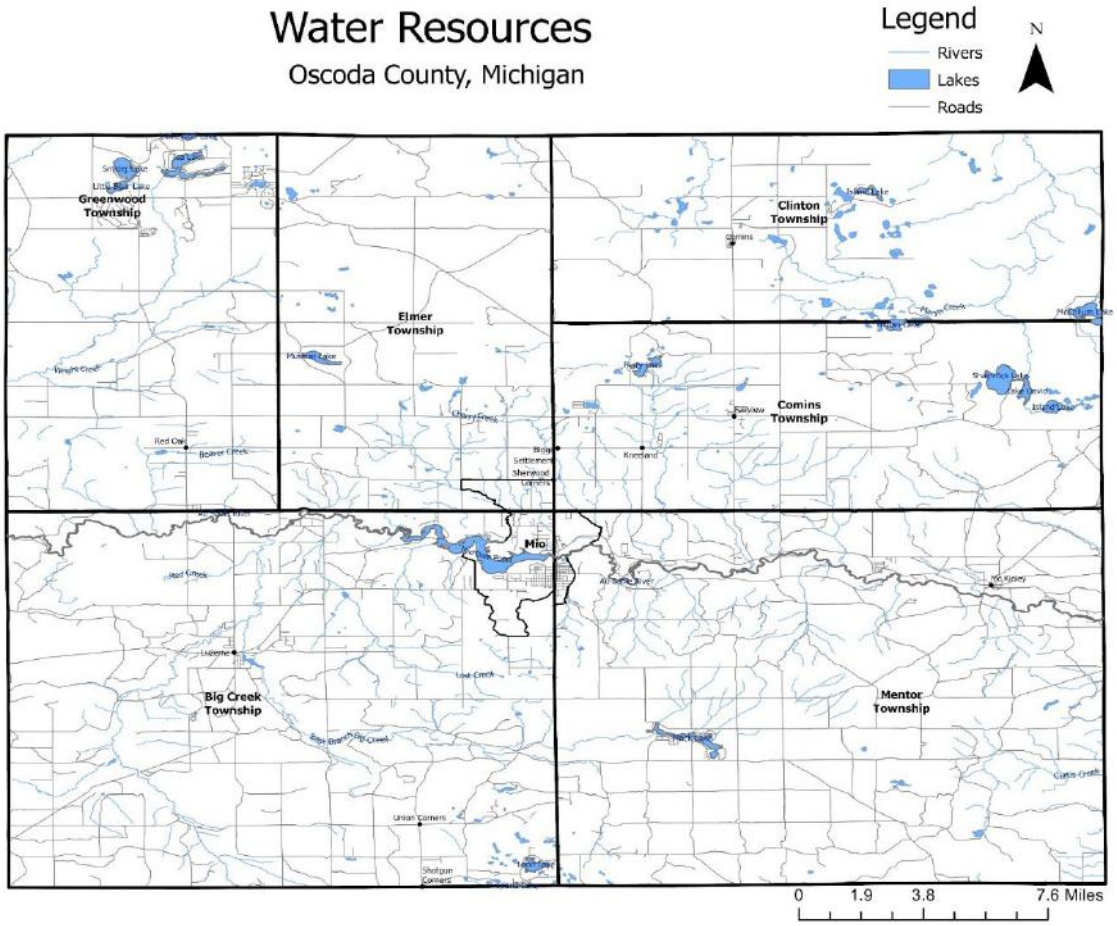


Figure 2-6 Water Resources

Fish and Wildlife

Hunters are attracted to Oscoda County due to the large areas of public hunting lands that provide habitat for deer, grouse, woodcock, rabbit, waterfowl, and squirrel populations. Along with Alpena, Montmorency, Alcona, and Presque Isle Counties, Oscoda County is located within the Bovine Tuberculosis outbreak area that effects the local deer population and other wild animals. The Michigan Department of Natural Resources (DNR) has created a deer management unit (DMU 452) to manage and prevent the spread of the disease through the enforcement of special regulations regarding deer hunting and feeding. The long term effect of Bovine Tuberculosis on the area's hunting is not known.

Natural riparian habitat is one of the most endangered habitats in Oscoda County since property owners clear the brush, aquatic vegetation, and trees down to the water's edge, and replace it with manicured lawns. This practice degrades wildlife habitat and negatively impacts the water quality. Birds that use the riparian habitat for feeding and nesting include the red shouldered hawk, barred owl, kingfisher, northern oriole, red-headed woodpecker, pileated woodpecker, woodcock, wood duck and great blue heron. Deer, raccoon, northern flying squirrel, water vole, mink, river otter, turtles, frogs, snakes, salamanders, and newts also frequent these areas.

Threatened and Endangered Species

There are many endangered, threatened, and special concern plants and animals within Oscoda County as identified by the Michigan Natural Features Inventory database (Table 2-2). The endangered and threatened species are protected under the State of Michigan's Natural Resources and Environmental Protection Act (Part 365 of Public Act 451 of 1994, as amended). The species of special concern are not protected by the act; however, if their population continues to decline, the species would be recommended for endangered or threatened status.

Table 2-2 Oscoda County's Endangered, Threatened, and Special Concern Species

Scientific Name	Common Name	Federal Status	State Status
Sistrurus catenatus	Eastern Massasauga	Listed Threatened	Special Concern
Brychius hungerfordi	Hungerford's crawling water beetle	Listed Endangered	Endangered
Accipiter gentilis	Northern goshawk		Special Concern
Agoseris glauca	Prairie or pale agoseris		Threatened
Alasmidonta viridis	Slippershell		Threatened
Amerorchis rotundifolia	Small round-leaved orchis		Endangered
Ammodramus savannarum	Grasshopper sparrow		Special Concern
Appalachia arcana	Secretive locust		Special Concern
Appalachina sayanus	Spike-lip crater		Special Concern
Astragalus canadensis	Canadian milk vetch		Threatened
Atrytonopsis hianna	Dusted skipper		Special Concern
Bombus terricola	Yellow banded bumble bee		Special Concern
Buteo lineatus	Red-shouldered hawk		Threatened
Cambarus robustus	Big water crayfish		Special Concern

Table 2-2 Oscoda County's Endangered, Threatened, and Special Concern Species			
Scientific Name	Common Name	Federal Status	State Status
Chlosyne gorgone	Gorgone checkerspot		Special Concern
Cirsium hillii	Hill's thistle		Special Concern
Cygnus buccinator	Trumpeter swan		Threatened
Cypripedium arietinum	Ram's head lady's-slipper		Special Concern
Emydoidea blandingii	Blanding's turtle		Special Concern
Falcipennis canadensis	Spruce grouse		Special Concern
Festuca altaica	Rough fescue		Threatened
Gavia immer	Common loon		Threatened
Glyptemys insculpta	Wood turtle		Special Concern
Haliaeetus leucocephalus	Bald eagle		Special Concern
Huperzia selago	Fir clubmoss		Special Concern
Incisalia henrici	Henry's elfin		Threatened
Lasmigona compressa	Creek heelsplitter		Special Concern
Opheodrys vernalis	Smooth green snake		Special Concern
Picoides arcticus	Black-backed woodpecker		Special Concern
Prunus umbellata	Alleghany or Sloe plum		Special Concern
Setophaga cerulea	Cerulean warbler		Threatened
Setophaga discolor	Prairie warbler		Endangered
Source: Michigan Natural Features Inventory Database, MSU Extension, May 2019			

Discharge Permits

Surface Water (National Pollutant Discharge Elimination System) Permits

The State of Michigan controls the discharge of pollutants from waste and wastewater into Michigan's surface waters through the National Pollutant Discharge Elimination System (NPDES) permitting process. This process imposes effluent limitations and other necessary conditions to protect the environment and meet State and Federal regulations. There are eight NPDES permits issued in Oscoda County (Table 2-3).

Table 2-3 National Pollutant Discharge Elimination System (NPDES) Permits, Oscoda County				
Site Name	Address	Site Type	Permit Number	Expiration Date
AMI-Lewiston	5093 Red Oak Road	Industrial	NEC186536	10/2/21
CECO-Mio Hydro Plt	Mio Dam 700 South M-33	Power Plant	MIG250381	4/1/23
Oscoda CRC-Miller Rd Ph 1	Miller Road	Construction Site	MIR115768	9/8/24
MDOT-M-33 & M-72 Oscoda Co	M-33 & M-72, Big Creek, Comins, Elmer & Mentor Twps, Oscoda Co.	Construction Site	MIR115243	8/14/23
Oscoda CRC-Townline Rd	Townline Road	Construction Site	MIR115323	10/8/23
Oscoda CRC-Zimowske Rd Ph 3	Zimowske Road	Construction Site	MIR114681	8/14/22

Groundwater Discharge Permit

The State of Michigan regulates the discharge of wastes and wastewaters into the ground or groundwater system through the groundwater discharge permit program. Field staff review effluent and groundwater data, and inspect discharge facilities. The issuance of a groundwater permit does not authorize the violation of local, state, or federal regulations, nor does it remove the obligation to obtain other permits or government approvals. According to the Michigan Department of Environment, Great Lakes, and Energy (EGLE), there are four groundwater discharge permits issued in Oscoda County: Ausable Valley Nursing Home, Big Creek/Mentor Utility Authority, Garland WWTF-Lewiston, and Oscoda CRC.

Air Discharge (Renewable Operating Permit (ROP)/ Title V) Permits

The State of Michigan administers the Renewable Operating Permit (ROP) system to regulate air emissions for facilities that emit more than a certain amount of air contaminants. According to EGLE, there is one renewable operating permits issued in Oscoda County: BreitBurn Operating LP-Elmer Fudd East.

Sites of Environmental Contamination

The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended regulates facilities of environmental contamination in Michigan. The Remediation and Redevelopment Division of EGLE works toward managing and revitalizing sites of environmental contamination to protect the environment. The division administers two programs: Environmental Remediation (release of hazardous substances from facilities) and Leaking Underground Storage Tanks (release of hazardous substances from underground storage tanks).

The facility inventory database has information for Sites of Environmental Contamination (Part 201), Leaking Underground Storage Tanks (Part 213), and Baseline Environmental Assessments (BEA). The Baseline Environmental Assessment documents the existing contamination and allows a facility to be acquired and/or operated without being held liable for the existing contamination. In Oscoda County, the facility inventory database reports the following:

- 7 sites with completed Baseline Environmental Assessments
- 25 sites listed as Sites of Environmental Contamination (Part 201)
- 8 sites listed as Leaking Underground Storage Tanks (Part 213)

This page intentionally left blank.

Chapter 3 Community Profile

A Brief History of Oscoda County

Oscoda County was officially incorporated in 1881. The County's early settlement and development relied on the agriculture and lumber industries. Early settlements were located near the Au Sable River to transport supplies and materials. Clinton Township, Fairview, Greenwood Township, and McKinley were lumber towns that saw a decline with the decline of the lumber industry. However, Clinton Township, Fairview, and Greenwood Township saw less of a decline than McKinley since those communities were located along a railroad.

Additionally, farming became the area's main industry with the decline of the lumber industry. Settlers established farms in the southwestern part of the county, but abandoned the land due to the thin top soil and poor farming practices. This land reverted back to the government and includes the Huron National Forest and Au Sable State Forest. Today, public lands, two-tracks, fishing and canoeing opportunities on the Au Sable River, and ATV and hiking trails draw visitors to the county.

Mennonite farmers were attracted to the Fairview area because of the availability of inexpensive land. Through the use of better farming practices, the farms have succeeded. Today, the Amish community consists of approximately 50 households, two church districts and three schools. The community also relies on farming, carpentry, producing furniture and cabinetry, and the lumber and pulp industry.

Population

According to the 2017 American Community Survey, Oscoda County has a population of 8,304, which has declined by 1,114 people since 2000 (-11.8%) (Table 3-1). Previously, the County's population had been increasing until 2000 when it began to decline. The County's population density is 14.7 persons per square mile. Between 2000 and 2017, most municipalities in Oscoda County had a declining population except for Greenwood Township, which had a slight population increase of 2.4%. The greatest population declines occurred in Big Creek Township (19.5%), Mentor Township (17.5%) and Comins Township (12.4%). Approximately 22.7% of the county's population lives in Mio.

Table 3-1 Oscoda County and Municipalities Populations, 2000-2017

Municipality	2000 Population	2010 Population	2017 Population	Percent Change	Numeric Change
Oscoda County	9,418	8,640	8,304	-11.8%	-1,114
Big Creek Township	3,380	2,827	2,720	-19.5%	-660
Clinton Township	511	441	509	-0.4%	-2
Comins Township	2,017	1,970	1,767	-12.4%	-250
Elmer Township	1,095	1,138	1,077	-1.6%	-18
Greenwood Township	1,195	1,121	1,224	2.4%	29
Mentor Township	1,220	1,143	1,007	-17.5%	-213

Source: U.S. Census Bureau
Note: Green text indicates an increase; Red text indicates decline

Seasonal Population

In 2017, the U.S. Census Bureau reported that 55.3% of the housing units in the county were seasonal. It is difficult to determine the number of seasonal residents and tourists that visit the county annually; however, an approximate estimate can be obtained by multiplying the number of seasonal housing units (5,067) by the average number of persons per household in the county (2.21) to get an estimate of 11,198 people that are considered to be the seasonal population. If the seasonal population (11,198) is combined with the county's 2017 American Community Survey (8,304), the population estimate for Oscoda County is 19,502. However, this population estimate does not include seasonal visitors or tourists that stay in motels, campgrounds, or family homes. It is impossible to obtain accurate count of the number of the tourists who annually visit the County.

Age Distribution

The 2017 Census data shows that 57.8% of Oscoda County's population was 45 years old or older (Table 3-2). The 45-64 age group is the most populous in all municipalities except Comins Township, where the 65+ age group is slightly larger. Clinton Township has the highest percentage of the 45-64 year old age group, while Elmer Township has the smallest percentage of 65+ residents.

The increase in Oscoda County's median age shows a population that is aging in place. Between 2000 and 2017, the median age of residents in Oscoda County increased from 43.7 to 51.8 during the period 2000-2017 (Figure 3-1). During the same time period, the State's median age has increased from 35.5 to 39.6 years. The difference in the median age between 2000 to 2017 shows Oscoda County is aging at a faster rate than the State, which means the county's aging population will need access to social, emergency response, and medical services. Clinton Township and Greenwood Township have the highest median ages (58.2 and 56.7, respectively), while Elmer Township has the lowest at 42.4 years.

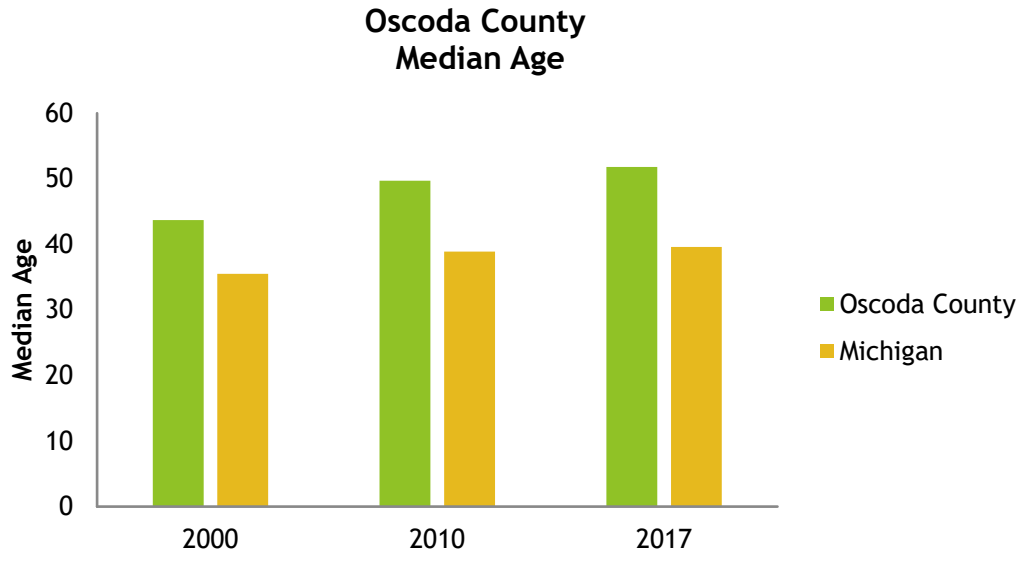


Figure 3-1 Oscoda County's Median Age

Table 3-2 Oscoda County Age Distribution by Municipality													
Community	**< 5 Yrs.**	**%***	**5-19 Yrs.**	**%***	**20-24 Yrs.**	**%***	**25-44 Yrs.**	**%***	**45-64 Yrs.**	**%***	**65 Yrs. & >**	**%***	**Median Age**
Oscoda County	**404**	**4.9**	**1,327**	**16.0**	**386**	**4.6**	**1,395**	**16.9**	**2,615**	**31.6**	**2,177**	**26.2**	**51.8**
Big Creek Township	57	2.1	410	15.0	212	7.8	467	17.1	898	32.9	676	24.8	52.0
Clinton Township	40	7.9	42	8.3	18	3.5	51	10.1	217	42.6	141	27.8	58.2
Comins Township	102	5.8	364	20.6	49	2.8	357	20.2	443	25.2	452	25.6	45.3
Elmer Township	128	11.9	176	16.3	50	4.6	209	19.5	291	27.0	223	20.7	42.4
Greenwood Township	36	2.9	177	14.5	26	2.9	127	10.4	443	36.1	405	33.0	56.7
Mentor Township	41	4.1	158	15.8	21	2.1	184	18.4	323	32.0	280	27.8	51.7
Michigan	**571,999**	**5.8**	**1,910,417**	**19.3**	**723,180**	**7.3**	**2,396,359**	**24.1**	**2,748,380**	**27.7**	**1,575,233**	**15.8**	**39.6**

*Figure shows the percentage each age grouping represents of the local unit's total population.
Source: U.S. Bureau of the Census

Disability Status

Disabled status data is estimated by the American Community Survey and is based on a sample (Table 3-3). A person was classified as having a disability if they had a sensory disability, physical disability, mental disability, self-care disability, going outside the home disability or an employment disability. 41.3% of Oscoda County's population is classified as having some type of disability. 1,759 people between the ages of 18-64 years have some type of disability with ambulatory disabilities being the most common and cognitive difficulty being the next most common. Cognitive disabilities are the most common in the 5-17 years age group. The high percentage of disabilities in Northeast Michigan indicates a need for disabled services.

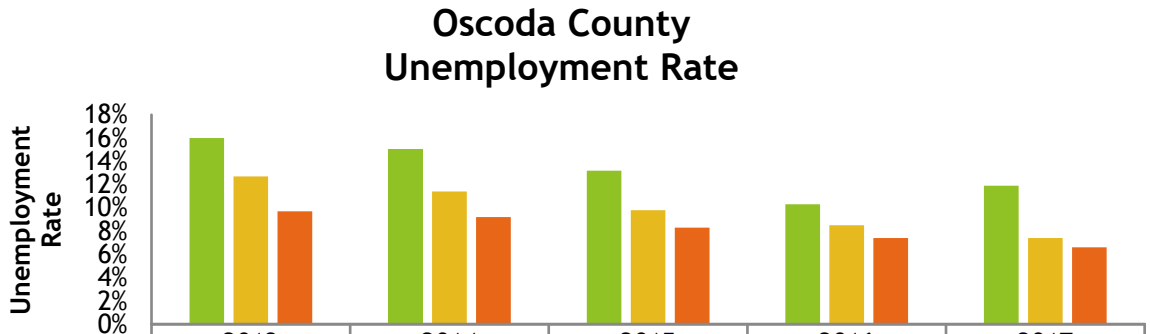
Table 3-3 Disability Status in Oscoda County

Status Type	Number of Persons
Population under 5 years with a disability	2
With a hearing difficulty	0
With a vision difficulty	2
Population 5-17 years with a disability	133
With a hearing difficulty	8
With a vision difficulty	21
With a cognitive difficulty	85
With a ambulatory difficulty	12
With a self-care difficulty	7
Population 18-64 years with a disability	1,759
With a hearing difficulty	247
With a vision difficulty	111
With a cognitive difficulty	377
With a ambulatory difficulty	528
With a self-care difficulty	168
With an independent living difficulty	328
Population 65+ years with a disability	1,536
With a hearing difficulty	418
With a vision difficulty	133
With a cognitive difficulty	184
With a ambulatory difficulty	437
With a self-care difficulty	111
With an independent living difficulty	253

Source: American Community Survey 2017

Selected Economic Indicators for Oscoda County

Over the past seventeen years, Oscoda County has seen a decrease in its population according to the 2017 Community Survey. Additionally, the number of people in the labor force has dropped from 3,894 in 2000 to 3,194 in 2017, and the unemployment rate has increased from 6.1% in 2000 to 11.9% in 2017 (Figure 3-2). The unemployment rate for the County has been consistently higher than the region-wide, State, and national rates.



	2013	2014	2015	2016	2017
Oscoda County	16%	15%	13.20%	10.30%	11.90%
State	12.70%	11.40%	9.80%	8.50%	7.40%
U.S.	9.70%	9.20%	8.30%	7.40%	6.60%

Figure 3-2 Oscoda County Unemployment Rate

Income

A reliable measure of the economic health of families is median household income. All eight counties of Northeast Michigan have generally had a steady increase in median income over the past several decades; however, Northeast Michigan lags behind the State. According to the U.S. Census Bureau, Oscoda County has the lowest median household income in the region at $36,833, which was 69.9% of State's median household income and 63.9% of the national median household income (Table 3-4). In Northeast Michigan, the median household income for most counties is lower than the State. In Oscoda County, 34.5% of households in Oscoda County have a total income with benefits of less than $25,000, and 47.9% of the households have an income of less than $35,000 (Table 3-5).

Table 3-4 Northeast Michigan Median Household Income

Place	2017
Alcona County	$39,424
Alpena County	$40,954
Cheboygan County	$42,876
Crawford County	$42,666
Montmorency County	$39,152
Oscoda County	$36,833
Otsego County	$50,823
Presque Isle County	$43,758
State of Michigan	$52,668
United States	$57,652

Source: U.S. Census Bureau

In Northeast Michigan, the median household incomes of most counties are much lower than the State (Figure 3-3). Generally speaking, individuals who have steady, year-round employment will tend to have higher overall incomes than those who are laid-off for part of the year. As more retirees move into the region and the local economy becomes more reliant on service and tourism job sectors, this trend of widening gaps between regional and state median household incomes is expected to continue.

Table 3-5 Income and Benefits per Household	
Income	**Year: 2017**
Less than $10,000	9.5%
$10,000 - $14,999	9.6%
$15,000 - $24,999	15.4%
$25,000 - $34,999	13.4%
$35,000 - $49,999	19.0%
$50,000 - $74,999	16.9%
$75,000 – $99,999	7.1%
$100,000 +	9.0%
Source: U.S. Census Bureau	

Lower incomes create an imbalance in the labor force necessary for positive economic growth since people will seek employment opportunities with higher incomes in other areas to afford gas, food, and housing increase.

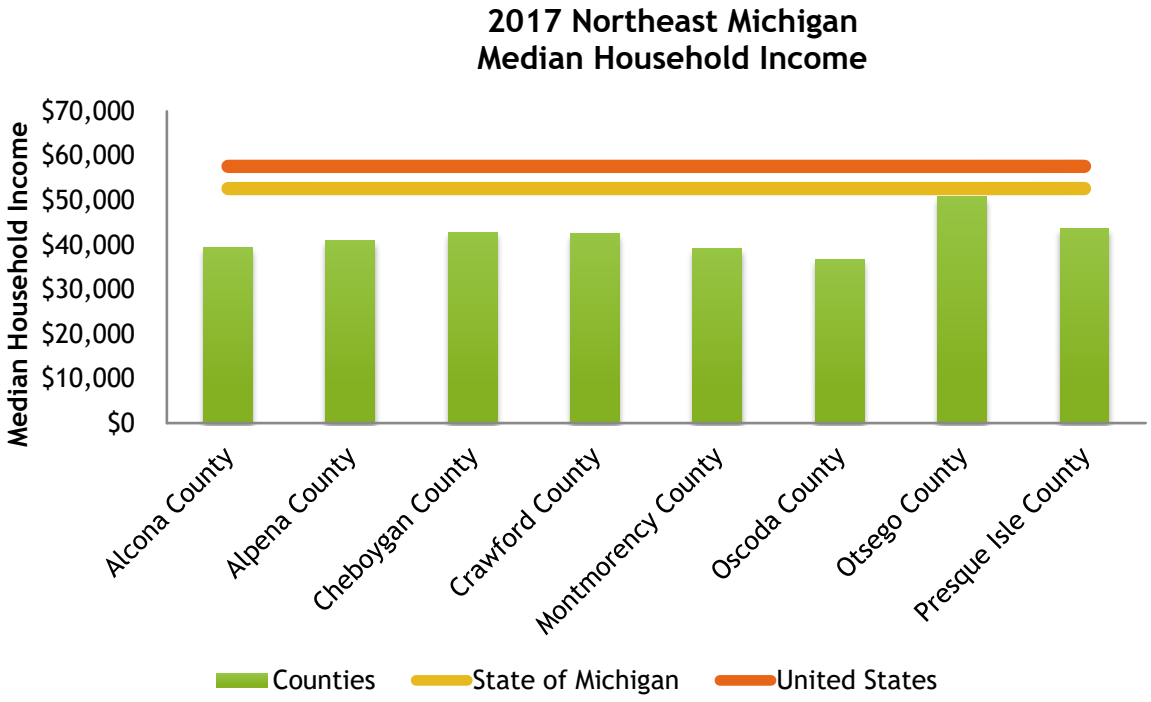


Figure 3-3 Northeast Michigan Median Household Income 2017

Poverty Rates

Poverty rates continue to be a problem in Oscoda County (Table 3-6). 12.7% of all families are estimated to be in poverty. When children are present, this percentage increases to 22.9%. When a female head of household is present, the percentage increases to 35.1% and increases to 45.3% when there are children under 18 in the household with the female head of household.

Table 3-6 Oscoda County Poverty Rates 2017

Category	Percent
Families	12.7
All families w/related children under 18	22.9
Married couple families	8.7
Married couple families w/related children under 18	12.9
Female householder, no husband present	35.1
Female householder, no husband present w/ related children under 18	45.3
Householder 65+ years	6.5

Source: U.S. Census Bureau- American Community Survey

Housing Stock

According to the 2017 U.S. Census, Oscoda County has 9,156 housing units with 3,728 occupied housing units and 5,428 vacant housing units (Table 3-7). Big Creek Township has the most housing units at 3,197 units. Oscoda County has a high percentage of seasonal housing units (55.3%) with 63.9% of Greenwood Township's housing classified as seasonal. Comins Township has a relatively low number of seasonal housing units at 37.9%. Communities with lakes, rivers and considerable private forestlands tend to have higher numbers of seasonal housing units. Communities with high numbers of seasonal housing present unique challenges when mitigating hazards since their geographic location makes them more vulnerable to wildfires and flooding hazards.

Table 3-7 Oscoda County Housing Counts and Occupancy Status

Jurisdiction	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Vacant Units (%)	Seasonal Housing Units	Seasonal Units* (%)
Oscoda County	9,156	3,728	5,428	59.3	5,067	55.3
Big Creek Township	3,197	1,320	1,877	58.7	1,740	54.4
Clinton Township	603	253	350	58.0	319	52.9
Comins Township	1,265	699	566	44.7	479	37.9
Elmer Township	987	382	605	61.3	592	60.0
Greenwood Township	1,761	586	1,175	66.7	1,126	63.9
Mentor Township	1,343	488	855	63.7	811	60.4

* Percent of total housing units
Source: US Census Bureau

According to the 2017 American Community Survey, the majority of the structures built in Oscoda County were built between 1960 and 1979 (Table 3-8). 25.9% of the housing in Oscoda County was built prior to 1960 with 4.7% having been built prior to 1940. Generally, an older housing unit is more likely to need renovations. However, 19.9% of the housing stock in Oscoda County was built after 1990.

Table 3-8 Year Housing Structure Built	
Year Built	**Units**
2000 or later	7.3%
1990-1999	12.6%
1980-1989	14.2%
1960-1979	40.1%
1940-1959	21.2%
1939 or earlier	4.7%
Source: American Community Survey 2017	

Agriculture

According to the 2012 Census of Agriculture County Profile for Oscoda County by the U.S. Department of Agriculture, the number of farms in Oscoda County has increased from 136 farms in 2007 to 145 farms in 2012 (Table 3-9). However, the farmland has decreased from 17,579 acres in 2007 to 16,748 acres in 2012. Despite the decrease in acreage, the average farm made $47,635 in 2012 as opposed to $36,054 in 2007. The 2012 County Profile found the market value of products sold to be $6,907,000 with $1,178,000 in crop sales and $5,729,000 in livestock sales. The Amish and Mennonite farm communities are integral to the county's agricultural base.

Table 3-9 Oscoda County Agricultural Statistics	
Total farm production expenses	$6,243,000
Organic Program certified farms	7 farms
Revenue by cattle and calves	$1,629,000
Forage land used for all hay and haylage, grass silage, and greenchop	4,280 acres
Revenue by milk from cows	$3,497,000
Total livestock inventory	7,531 animals
Source: 2012 USDA Census of Agriculture	

Chapter 4 Land Use Characteristics

Land Divisions and Ownership

Most of the private ownership is divided into tracts 10 acres or larger. However, over the last two decades, land divisions have created five to ten acre parcels. Clinton and Greenwood Townships have large tracts of private land that are 10 acres or greater, and hunt clubs that own large sections of land. Comins Township has large tracts of privately-owned land that are 10 acres or greater, and private camps and ranches. On the eastern half of Comins Township there are large hunt clubs. Elmer Township is isolated and contains tracts of private land that are divided into 10 acres or greater. Small lots and subdivisions can be found within the communities of Mio (Elmer, Big Creek, and Mentor Townships), Comins (Clinton Township), Fairview (Comins Township), Luzerne (Big Creek Township) and McKinley (Mentor Township), and around the county's lakes.

The Huron National Forest occupies most of the southern half of Oscoda County (147,885 acres), while the northwest corner of the county is in State ownership (55,000 acres). Due to these two large holdings, 57% of the land is in public ownership and 83% of the land is forested (Figure 4-1).

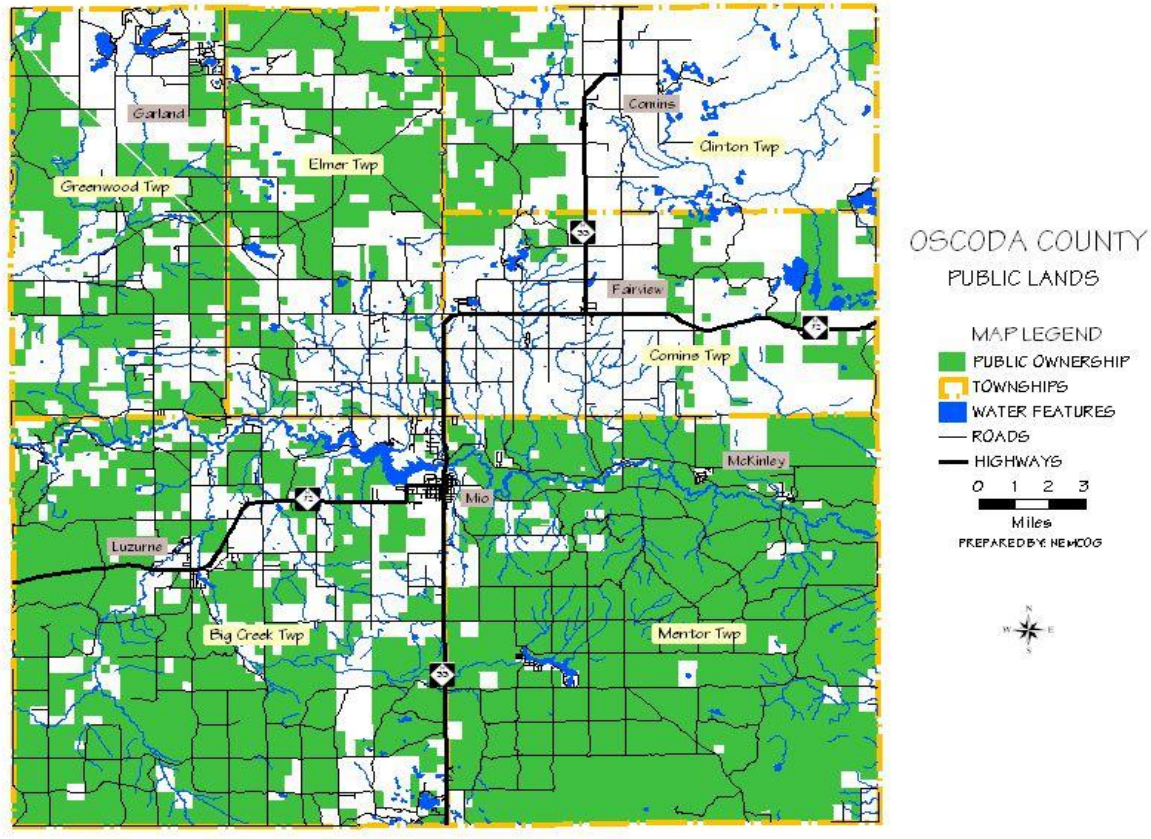


Figure 4-1 Oscoda County Public Lands

In Big Creek Township, approximately 66% (60,640 acres) of the land is publicly-owned. The U.S. Forest Service (USFS) is the major landowner. In Clinton Township, approximately 18% (8,368 acres) of the township is owned by the Michigan Department of Natural Resources and the western third of the township is part of the Oscoda State Forest. In Comins Township, there is approximately 19% (8,760 acres) of publicly-owned land with the USFS owning the majority of the land. The Huron National Forest is located on the eastern side of Comins Township. Approximately 48% (21,800 acres) of Elmer Township is owned by the State of Michigan. A portion of the township is part of the Oscoda State Forest. Greenwood Township has approximately 48% (21,980 acres) of publicly-owned land with the State of Michigan owning the majority of the land. Over half of Greenwood Township is part of the Oscoda State Forest. Over 95% (81,600 acres) of Mentor Township is publicly-owned with the USFS owning 89% of the land since the township is part of the Huron National Forest.

Land Cover/Use

In 1978, a countywide land cover/use inventory was completed by the Michigan Department of Natural Resources' Michigan Resource Information System program, which is the only countywide land cover/use inventory ever completed (Figure 4-2 and Table 4-1). The primary land cover/use in the county is upland forest, mainly jack pine and oak forest types. The top five largest land cover/use categories include the upland forests, upland openings, lowland forests, agriculture, and non-forested wetlands. These five categories account for 97% of the land cover/use. While residential and commercial development has occurred since the 1978 inventory, the amount of undeveloped land is expected to be around 95% of the County. Minimal development has occurred in the county; therefore, no significant changes in development have occurred since the previous plan update.

Table 4-1 Oscoda County Land Cover/Use

Category	Acres	Percent of Total
Residential	6,401.1	1.75%
Commercial	147.6	.04%
Industrial/Extractive/Transportation	868.8	.24%
Institution/Recreation	835.3	.23%
Agricultural	12,092.0	3.31%
Non-forest/upland openings	27,898.5	7.63%
Upland forest	279,371.2	76.40%
Lowland forest	22,621.3	6.18%
Non-Forested Wetlands	11,491.5	3.14%
Surface water	3,937.5	1.08%
Total	**365,664.8**	**100%**

Source: Michigan Department of Natural Resources MIRIS 1978

Commercial

Commercial use occupied less than one tenth of one percent of the county's land area. The largest concentrations of commercial use are found in Mio and Fairview with strip commercial development located along M-33/M-72 between Mio and Fairview. Most of the commercial land uses are service and retail in nature, serving local residents and tourists. Small pockets of commercial uses are found in several rural locations around the county. These rural commercial uses consist of convenience retail uses, which also serve residents and tourists.

Residential
Residential use occupied almost two percent (6,401 acres) of the land in the county and is found in or near the communities of Mio, Fairview, Luzerne, Comins and McKinley. High-income residential development is located at the Garland Golf Resort in Greenwood Township. Greenwood Township also has small, developed lots along the shorelines of its lakes, cottages, and resorts. Seasonal residential development tends to be clustered along lakeshores and streams.

There have been three general trends in Oscoda County's residential development:

- Construction of primary or secondary homes on lots that are two acres or greater
- Housing transitioning from seasonal residences to year-round residences
- Locating residential development along major roads

Industrial/Extractive/Transportation
Land cover/use in this category includes industrial, extractive (sand and gravel pits), and transportation (airports). Industrial/Extractive/Transportation accounts for less than one percent of the land area.

Institutional/Recreational
Land cover/use in this category includes schools, churches, cemeteries and recreational areas. Institutional/Recreational use accounts for 0.2% (835 acres) of the land area in the county. Approximately 57% of Oscoda County is in public ownership, most of which is in the Huron National Forest. While these lands were not mapped as recreational, the land does provide an area for outdoor recreational activities, such as fishing, hunting, cross country skiing, and snowmobiling.

Agricultural
The majority of the agricultural lands are concentrated in the center portion of the county, north of Mio. The townships with the greatest percentage of agricultural lands were Elmer, Comins and Clinton, with smaller amounts found in Big Creek and Mentor. The hilly, fertile farmland in Comins Township is located on the western side of the township. While there has been a downward trend in acreage dedicated to agricultural uses, these lands are falling idle as opposed to being developed.

Non-Forested Uplands
Non-forested uplands include herbaceous open and shrub land. Non-Forested Uplands account for 7.6% (27,898 acres) of the county's land. This land cover/use is scattered throughout the county with large concentrations in the central part. Given the downward trend in farming acreage, this category has increased over the last 25 years since much of the non-forested land was once active farmland.

Upland Forest
The upland forest use accounted for 76.4% (279,371 acres) and was the predominant land cover/use in the county. The most prevalent forest type was jack pine. Young jack pine forests provide critical nesting habitat for the Kirtland Warbler. Other forest types include red and white pine, aspen-birch, northern hardwoods, and oak-aspen.

Lowland Forests and Wetlands

The wetland category comprises non-forested types, such as lowland brush (e.g. tag alder and willow) and wet meadows. Non-forested wetlands accounted for 3% (11,491 acres) of the county's land. Lowland forests are often classified as wetlands since they grow on soils with seasonally high water tables. Lowland forests account for 6% (22,621 acres) of the county's area and support lowland hardwoods and conifers, such as northern white cedar, black spruce, balsam fir, elm, red maple, ash and aspen species. The major wetland areas are adjacent to streams and lakes in the county, which receive surface water and subsurface water discharge that create the streams and creeks that flow into the area lakes. The interconnected water bodies demonstrate how distant activities can impact multiple resources' water quality.

Surface Water

Oscoda County has natural and artificial bodies of water and 219 miles of rivers and streams. Lakes and impoundments were mapped as open water and accounted for one percent of the county's area. The county's major waterway is the Au Sable River, which cuts through the mid-point of the county on an east-west course. Mio Pond (Big Creek Township), an impoundment of the Au Sable River, is the largest water body at 944 acres.

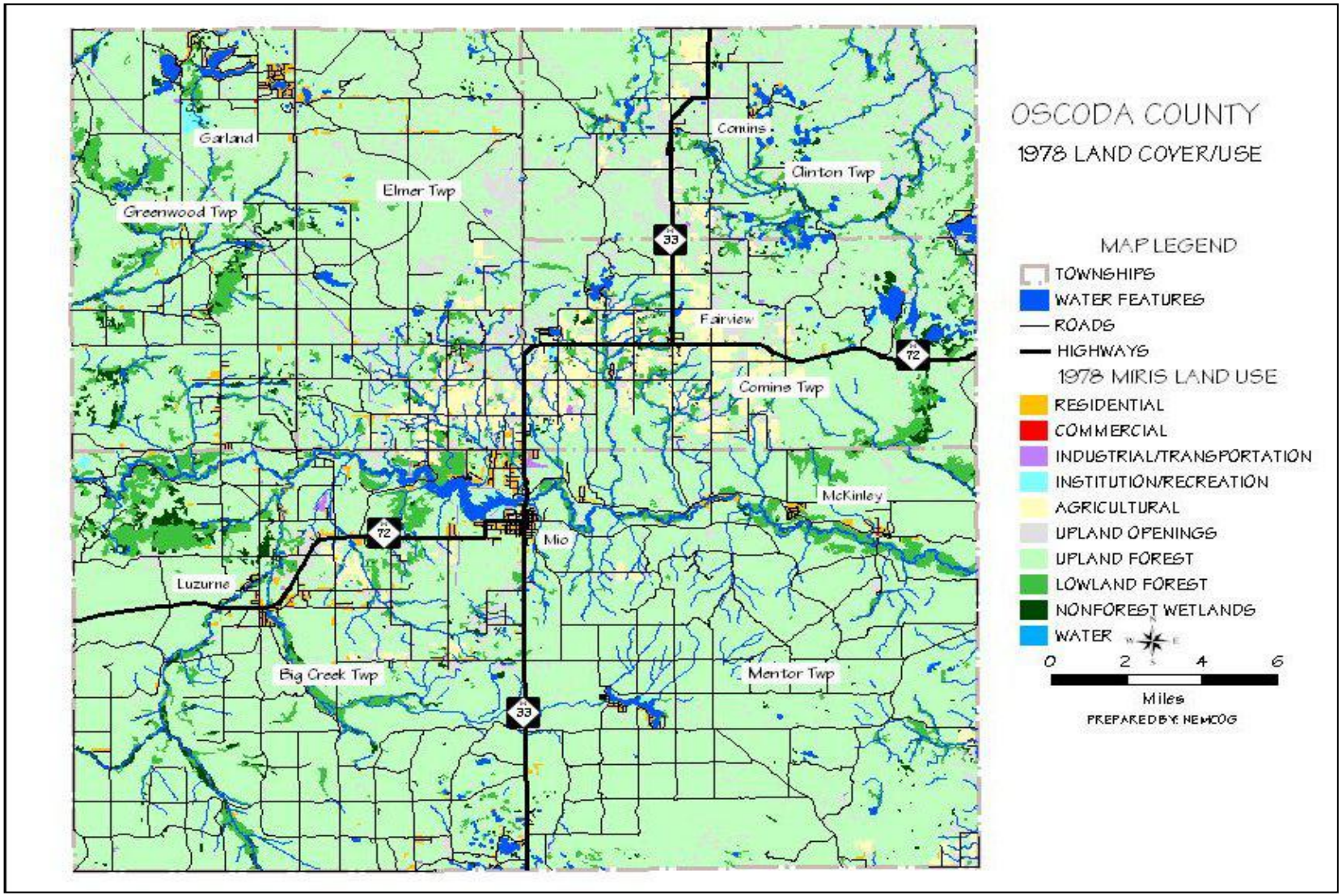


Figure 4-2 Oscoda County Land Cover/Use

This page intentionally left blank.

Chapter 5 Community Services and Facilities

Overview

Community services and facilities play an important role in maintaining and improving quality of life. The location and level of some services, such as public water, public wastewater, and fiber optic lines, determine the types and intensities of development within a community. Oscoda County is primarily a rural community with a relatively low population density, which presents challenges in providing facilities and services to county residents. However, the facilities and services may be sufficient for the needs of the current population and have the potential to be impacted by a hazard.

County Government

The Oscoda County Board of Commissioners (BOC) meets on the second and fourth Tuesday of each month in the BOC Board Room of the Courthouse Annex at 105 S. Court St. in Mio unless posted otherwise. The County is represented by five commissioners. There are many county departments including the clerk/register, treasurer, secretary, courts, equalization, road commission, building, housing commission, emergency management, and county park.

Township Government

Oscoda County has six townships:

- Big Creek Township Hall is located at 1175 Ryno Rd., Luzerne
- Clinton Township Hall is located at 4232 Abbe Road, Comins
- Comins Township Hall is located at 2090 East Miller, Fairview
- Elmer Township Hall is located at 863 West Kittle Road, Mio
- Greenwood Township Hall is located at 4030 Williams Rd., Lewiston
- Mentor Township Hall is located at 216 East 10th Street, Mio

Public Safety

Law Enforcement

The only local Law Enforcement agency in Oscoda County is the Sheriff's Office, which is located at 301 Morenci in Mio. The County 911 system is co-located in the Sheriff Department. In addition to calling 911, residents have the opportunity to text 911 requesting emergency services. Oscoda County does not have a jail, and relies on a small holding cell while contracting detention services with other counties. The County receives assistance from the Michigan State Police at the Alpena Post.

Emergency Medical Services

Oscoda County maintains its own Emergency Medical Services, which is headquartered on Morenci Street in Mio.

Fire Services

Oscoda County has five Fire Departments (Table 5-1). Additionally, wildfire protection on National Forest and State Forest land is coordinated by the US Forest Service Mio Ranger Station, located at 401 Court Street in Mio and the DNR Mio Field Office is located at 191 South Mt. Tom in Mio.

Table 5-1 Fire Departments Serving Oscoda County
Fairview Fire Department, 1947 E Miller Rd., Fairview • Equipment: 1 small light tower • Staff: 16 part-time paid • Service Area: 144 sq. mi. • Population Served: 2,600
Luzerne Fire Department, 2284 Deeter Rd, Luzerne • Equipment: '04 Chevy Silverado truck, 2 1/5 ton tanker, thermal imager, 3 800 MHz radios, 6 mobile & 18 handheld VHF radios, 18 pagers • Staff: 12 volunteers • Service Area: 143 sq. mi. • Population Served: 3,100
McKinley Fire Department, 4725 McKinley, Mio • Equipment: 3 800 MHz radios, 4 or 5 portable VHF radios, 10 mobile radios, 10 pagers • Staff: 10 volunteers • Service Area: East of Abbe Rd to Cherry Creek Rd to the Alcona/ Oscoda Co line to Mack Lake • Population Served: 500 houses & cabins, approx. 250 fulltime residents
Greenwood Township Fire Department, 4014 Williams Rd and 3988 W Kneeland Rd, Lewiston • Staff: 17 part-time paid • Service Area: 108 square miles • Population Served: 1,100
Tri Town Fire Department, 1508 W 11th St., Mio • Equipment: '88 1500gal pumper, '08 Freightliner 3,600 gal vacuum tanker, 3 800 MHz radios, Location for & use of '88 Chevy 5/4 ton pickup truck belonging to DNR • Staff: 16 volunteers • Service Area: 166 sq. mi.

Early Warning Systems

There are two outdoor warning sirens in Oscoda County. One is located in Mio at the Road Commission Building and one is located in Fairview at the Fire Hall. However, the warning siren in Fairview is a manual siren and is not connected to 911 Dispatch.

The County's warning system is directly related to the National Weather Service's NOAA Weather Radio alert system and the National Emergency Alert System. Primarily, the County uses NOAA Weather Radios to warn the public of impending hazards. The Emergency Manager contacts the National Weather Service to broadcast announcements. The NOAA transmitters are located in Alpena, Gaylord (Waters), and West Branch. In Oscoda County, it is difficult to find a location where a NOAA signal cannot be received; however, there are areas where communication is difficult due to the county's hilly terrain. Additionally, the Emergency Alert System broadcasts over every radio and television station in the area; however, the Emergency Alert System is not broadcast over satellite TV.

Medical Facilities

There are no hospitals located in Oscoda County. Residents receive medical services from McLaren Bay Region-Primary Care-Mio in Mio, the AuSable Valley Health Center in Fairview, and the Alcona Health Center Clinics in Lincoln and Harrisville. For healthcare services not available at these facilities, residents travel to MidMichigan Medical Center-Alpena in Alpena, Munson Healthcare Grayling in Grayling, MidMichigan Medical Center-West Branch in West Branch, Ascension St. Joseph Hospital in Tawas City, Oscoda VA Clinic in Oscoda, Grayling VA Clinic in Grayling, and Munson Healthcare in Traverse City.

District Health Department #2 serves the areas of Alcona, Iosco, Ogemaw, and Oscoda Counties and is located in Harrisville, Alcona County. The Health Department provides home health care services, environmental health services, and personal health services to the community that may not be available or affordable.

AuSable Valley Community Mental Health Authority provides mental health services in Oscoda, Iosco, and Ogemaw Counties. It provides services to people with intellectual or developmental disabilities, a serious persistent mental illness, and/or people who may be seriously emotionally disturbed.

Utility Services

Oscoda County has a large amount of public lands and landlocked parcels that cause the county to have a lack of utilities in some areas (unserved areas). Since landowners must pay to run the utility lines, some have chosen not to expand the system due to the high cost. Instead, these landowners rely on cellular telephones.

The Big Creek/Mentor Utility Authority provides public water and sewer services to portions of Mio, while residents and businesses in the remainder of the County rely on on-site private wells for domestic drinking water and on-site septic systems for wastewater disposal. District Health Department # 2 regulates and maintains a permitting system for private wells and septic systems.

DTE provides natural gas service within Mio and along County Road F-41. Frontier provides telephone service to the largest geographic area of the County. Consumers Energy and Presque Isle Electric & Gas Co-op provide electricity to the county's developed areas.

Education System

Oscoda County is part of four school districts: Fairview Area School District, Mio-AuSable Schools, West Branch-Rose City Area Schools, and Johannesburg-Lewiston Area Schools. Fairview Area School District, West Branch-Rose City Area Schools, and Mio-AuSable Schools are part of the C.O.O.R. (Crawford, Oscoda, Ogemaw, Roscommon) Intermediate School District, while Johannesburg-Lewiston Area Schools is part of the Cheboygan-Otsego-Presque Isle Educational Service District.

The Fairview Area School District enrolled 298 K-12 students during the 2018-2019 school year. Mio-AuSable Schools enrolled 526 students during the 2018-2019 school year. Schools for the other two school districts are located outside of the county. Schools for West Branch-Rose City Area Schools and Johannesburg-Lewiston Area Schools are located outside of the county.

Special Populations

Since the 2014 update, the following assisted living facilities are no longer licensed according to the Department of Licensing and Regulatory Affairs: Beechwood CLF in Rose City and County House AFC.

Nursing Homes and Adult Foster Care Facilities:

- Au Sable Valley Health Center is an assisted living facility in Fairview with 62 beds.
- Wellspring Lutheran Services provides senior services, foster care, and family services in Fairview.

Transportation Network

Roads and Highways

The major north-south highway in Oscoda County is State Route M-33, which cuts through the center of northeastern Michigan and connects county residents with Interstate 75 to the south (Figure 5-1). The county's major east-west route is M-72, which connects the county with Grayling and I-75 to the west and with Harrisville and Lake Huron to the east. Other significant roads include County Road 608 (runs east-west through Greenwood and Elmer Townships), County Road 489 (runs north-south through Greenwood and Big Creek Townships and connects to M-72), County Road 610 (runs north-south and follows the boundary between Elmer and Clinton Townships and connects to M-72) and County Road 600 (runs east-west from M-72 through Mentor Township and connects Mio to the small community of McKinley). In addition, the U.S. Forest Service maintains 500 miles of roads within their territory.

In Big Creek Township, the 2017 annual average daily traffic for M-72 west of Mio had 1,933 vehicles, and M-33 had 2,768-3,127 vehicles going south and 6,807 vehicles going north. Additionally, the 2017 annual average daily traffic in Mio for M-33 was 6,807 vehicles going north and 3,127 vehicles going south, and M-72 had 3,780 vehicles going west. In Clinton Township, the 2017 annual average daily traffic for M-33 was 2,663 vehicles. In Comins Township, the 2017 annual average daily traffic for M-33 was 2,663 vehicles and M-72 had 1,290 vehicles. In Mentor Township, the 2017 annual average daily traffic for M-33 was 2,768 vehicles.

Public Transportation and Rail Service

Oscoda County Area Transit Specialists (OCATS) is a non-profit transit organization located in Mio. It offers public transportation to all Oscoda County residents for personal and medical needs anywhere in the state for a fee. Additionally, the Council on Aging provides bus transportation to senior citizens and handicapped persons.

No passenger or freight rail services exist within the county. However, the Michigan AuSable Valley Railroad is a small narrow gauge railroad in Fairview (Comins Township) that runs through the Huron National Forest and Comins Creek Valley. In 2018, the railroad temporarily closed to address maintenance issues.

Airport

There are two private airfields (Garland Airport and Lost Creek Airport) in Oscoda County. Garland and Lost Creek are open for public use. Oscoda County owns and operates the Oscoda County Dennis Kauffman Memorial Airport north of Mio. The airport has two asphalt runways with dimensions of 3000 ft. x 75 ft. and 914 m x 23 m. Several private resorts have small grass runways for their customers use.

Water Transportation

The Native Americans used the waterways, such as the Au Sable River, as primary transportation routes. Additionally, early settlers used the Au Sable River system to move supplies and people, and haul raw materials to the factories along the coastline for processing. Today, the rivers are used for recreational boating, canoeing, fishing and swimming.

Community Events

The Oscoda County Fairgrounds are located north of M-72 on Caldwell Road in Comins Township. The following is a list of community events that occur throughout Oscoda County:

- Mio Pond Fishing Tournament, June
- Au Sable Valley Engine & Tractor Show, June
- Cruise In and Car Show at Mio Moose Lodge, June
- Mio Mud Bogs, July
- Luzerne Parade and Carnival, July 4
- Comins Parade and Potluck, July 4
- Mio Parade, July 4
- Au Sable River Canoe Marathon, July
- Northern Michigan Relief Sale, August
- Holiday Light Parade in Mio, November

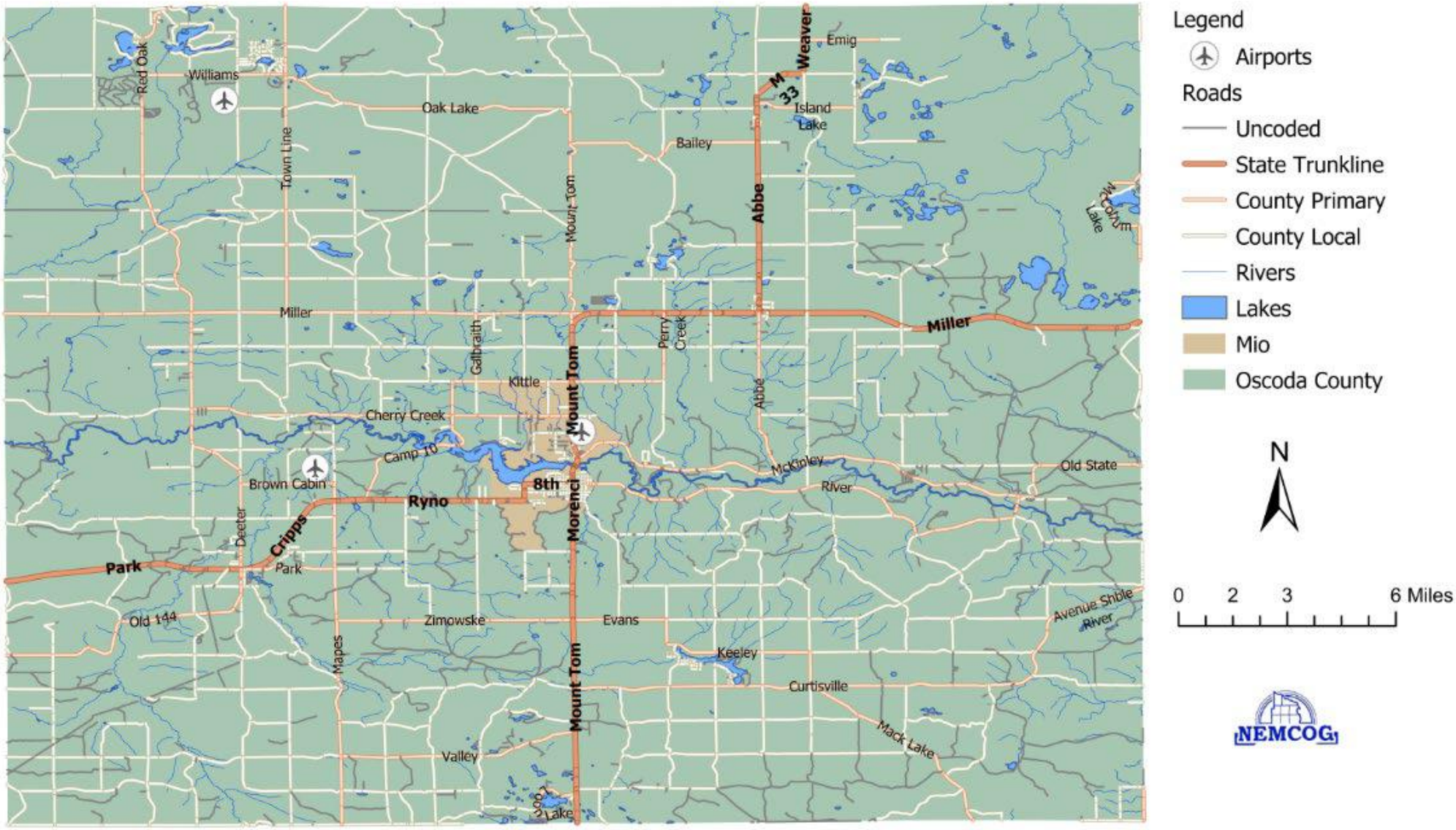


Figure 5-1 Oscoda County Transportation Network

Community Capability

Overview

Currently, the communities in Oscoda County have a limited number of staff and financial resources. For example, none of the communities have planners, foresters, floodplain managers, public works engineers, transportation engineers, or civil engineers on staff. Therefore, the communities have limited capabilities in implementing the hazard mitigation action and implementation strategies. However, all agencies, communities, and organizations use a combination of staff, elected officials, appointed officials (e.g. planning commission) and contractual services to provide some level of prevention and educational activities. To fully implement the hazard mitigation plan, the communities in Oscoda County would need additional staff and funding.

Planning and Zoning

The Oscoda County Planning Commission adopted a master plan for 2014-2018. Within the master plan, the county has objectives and action items to educate landowners and landlords about development rules and regulations, enforce existing ordinances and county rental codes, support infill development in the county's community centers, develop sub-area plans for each community to determine which areas should be preserved and which areas should be developed, work with county jurisdictions to establish lakefront and riverfront development guidelines, discourage development in areas that have moderate to severe limitations, protect areas of unique character, historical value and/or high natural value, provide land for endangered species protection, and to establish development guidelines and alternatives that encourage developments to incorporate minimal clearing, woodland protection, and flexibility in siting buildings.

Oscoda County has no zoning enforced at the county level. Three of the county's six townships have exercised their authority under state statutes to administer their own planning and zoning: Comins, Greenwood and Mentor Townships. These three communities have a zoning administrator, planning commission and zoning board of appeals that administer their zoning. The planning commissions are responsible for overseeing the master plan, recreation plan and zoning ordinance. The Township Boards and County Board are the governing bodies responsible for managing finances and making policy decisions. None of the communities have planning and zoning staff and rely on planning commissions to oversee planning and zoning activities. NEMCOG provides planning assistance to local communities on a project by project basis. Communities do not have staff, but rely on elected officials to conduct township business.

Planning and Zoning are the principal tools used by local communities to manage growth, preserve community character, direct development away from hazardous areas, protect property values, enhance economic viability, and provide developers with the flexibility to arrange structures on properties and incorporate Firewise development standards into their designs. Since planning and zoning are not retroactive, they have minimal effect on older developments. Additionally, they have the potential to create public controversy, variance requests, and zoning modifications. However, planning and zoning are used to establish and implement a community's goals and desired future. Building codes can work with and against planning and zoning since the codes provide guidance on how to build in both compatible and incompatible land use areas.

The master plan analyzes the existing conditions of a community, incorporates public input, and generates goals to establish the community's desired future. It includes a section on the future land use of the community, which is designed to guide land use decisions over time. The future land use section contains information about the future land use categories, important resource areas in need of protection, special issue areas (e.g. utility service areas, waterfront development, roads, etc.), compatible and incompatible land uses, and a map that depicts the development types and densities envisioned by the community. Zoning, capital improvement plans, and recreation plans implement the master plan.

Zoning ordinances and zoning maps are local laws that regulate how property can be developed, and are primarily used by communities to implement their master plans through the regulation of development types, intensity and location. Communities can use zoning to implement hazard mitigation strategies for land use development, such as developing standards for private/public road construction, driveway standards, and creating development requirements.

Capital improvement plans guide communities' major public expenditures for the next 5 years. These expenditures include creating access roads and fire breaks, and reducing wildfire fuels projects. Capital improvement plans can be used to create a project timeline to implement hazard mitigation strategies.

Public Safety

Oscoda County has an Emergency Management Office and Local Emergency Planning Committee. The County operates a countywide 911 system and the Sheriff's Office operates under the County Board of Commissioners.

Local agencies and units of government have fire suppression crews. The Townships provide fire and rescue service either on their own or through a cooperative arrangement. The U.S. Forest Service and the Michigan Department of Natural Resources have foresters who conduct forest and fuels management on public lands. Forestry consultants and the County Conservation District provide forest management assistance on private lands.

Infrastructure

Oscoda County's drain commissioner works with communities and landowners regarding drainage and flooding issues. The County Road Commission works in conjunction with the townships to manage the local road network, while the Michigan Department of Transportation is responsible for State and Federal highways.

Chapter 6 Hazard Identification and Assessments

Overview

Oscoda County is vulnerable to a wide range of natural, technological, and human-related hazards. Emergency management officials are challenged with managing these threats to protect life and property. In order to be effective at mitigating, preparing for, responding to, and recovering from all hazards, the types of hazards facing a county should be identified and understood. Hazard identification provides communities with a realistic base to plan for mitigation, preparedness, response, and recovery activities.

Oscoda County's risk and vulnerability assessments were determined based on the hazard maps, community profile, community input, and the weighted hazard ranking process recommended in *Publication #207*. However, it should be noted the assessments are not reliable predictors for the occurrence of any hazard. The assessments were used to determine if a hazard poses a risk to the county, inform the mitigation goals and objectives, and to guide emergency management official(s) in setting annual priorities and goals for resource allocation, mitigation strategies, and preparedness techniques.

Between January 1950 and April 2019, Oscoda County has had 176 storm events reported to the National Oceanic and Atmospheric Administration's National Centers for Environmental Information data center (NOAA). Damages from these events are estimated to be approximately $3.9 million.

Natural Hazards

Wildfires

Description

A wildfire is an unplanned, uncontrolled fire in grassland, brushland, or forested areas. Wildfires can occur in any forest type under dry conditions; however, some forest types are more susceptible to wildland fires. For example, jack and red pine forest stands have a high risk for wildfires, while oak and white pine forest stands have a moderate risk. The primary cause of wildfires is from human activities, specifically burning outdoor debris. Wildfires cause destruction to property and timber resources, and injuries or loss of life to wildlife and persons living or recreating in wildfire prone areas. Long-term effects include scorched and barren land, soil erosion, landslides/mudflows, water sedimentation, and loss of recreational opportunities.

Historically, Michigan's landscape has been shaped by wildfire; however, over the last several decades, the current landscape has transformed from wildland to residential development. With the increase in residential development in and around rural areas prone to wildfires, there is an increase in the potential for loss of life and property damage. Unfortunately, rural areas do not have enough fire suppression forces available to protect every structure from wildfires.

In Michigan, approximately 600 wildfires are reported each year with the majority occurring in April, May and June (Figure 6-1). The Michigan DNR is primarily responsible for wildfire suppression and prevention; however, the U.S. Forest Service and local fire departments assist them. In 2018, the Michigan Department of Resources reported there were 301 fires and as of June 2019, there were 168 fires.

Location

Over 80% of Oscoda County is forested with various tree species due to the soils, moisture, and past activities, such as logging, fires, and land clearing. Jack pine, aspen-birch and oak are the most common forest types, with jack pine being the most prevalent. A review of the pre-settlement vegetation map of Oscoda County shows extensive areas covered with pine and oak forests, which mean the area has a history of wildfires. Pine and oak forests during the pre-settlement time covered 71% of the county with 63% of the stands being jack pine. Today, jack pine covers 34% of the county.

All of the county's communities and developed areas are highly vulnerable to wildfires since the community centers and rural residential developments interface with the high risk forest types (e.g. pine, oak, and aspen). In 2001, multiple federal agencies developed a list of urban wildland interface communities in the vicinity of Federal lands that have a high risk from wildfires. The list contained the following Oscoda County Communities: Big Creek Township, Clinton Township, Comins Township, Greenwood Township, Luzerne, Mack Lake, Mentor Township, and Mio. Also, the State of Michigan developed a comprehensive list of communities that have a high risk from wildfires.

Previous Occurrences and Probability of Future Occurrences

Oscoda County has a history of wildfire based on the pre-settlement vegetation data. From 2001 to 2012, the Michigan Department of Natural Resources reported there were 61 wildfires in Oscoda County that burned 256 acres (not including wildfires suppressed by the U.S. Forest Service or local fire departments). According to the Michigan Department of Natural Resources Wildland Fire Interactive Map, Oscoda County has had 29 wildland fire incidents between 2013 and 2018 that burned 60.9 acres. Table 6-1 provides information about the most significant fire incidents near Grayling and Mio, Michigan. Fires from Grayling, Michigan were included since Crawford County is adjacent to Oscoda County and fires in either county can cross political boundary lines. Since Oscoda County has had 285 reported wildfires in the last 18 years, the data shows approximately 1 event will occur every 0.06 years.

Extent

Extent can be measured by the number of acres burned and the cost of property damage. In Oscoda County, the costliest fire occurred between April 30 and May 1, 2006. Approximately 5,950 acres were burned, 7 vehicles were destroyed, property damage was estimated at $600,000, and firefighting costs were greater than $800,000 since crews were flown in from New Mexico and Montana. Additionally, people in neighboring counties were ordered to evacuate. Other significant wildfires in the county burned between 687 and 5,200 acres. Additionally, the majority of the upland forests in Big Creek and Mentor Townships are composed of jack pine, which need fire to get seeds from their cone.

Table 6-1 Significant Wildfires in Oscoda and Crawford Counties		
Location/Name of Fire	**Date**	**Event**
Mack Lake Fire	May 1980	A wildfire destroyed 44 homes and buildings in Oscoda County. 1,500 people were evacuated, one firefighter died, and it caused $2 million in total property and timber loss, burned 24,000 acres.
Stephan Bridge Road Fire (occurred simultaneously with Indian Glens Fire)	May 1990	Strong winds and dry conditions rekindled ashes in Grayling, MI and spread the fire. The fire burned 76 homes, 125 structures, 37 vehicles and boats, and over 5,900 acres of forestland with property losses resulting in $5.5 million, including $700,000 in total timber losses. No fatalities and 1 injury.
Billman Fire (Indian Glens) (occurred simultaneously with Stephan Bridge Fire)	May 1990	615 acres burned; 5 houses and 15 outbuildings damaged or lost
Luzerne Fire	1992	687 acres burned; destroyed several homes
Northern Lower Peninsula	May 1999	Michigan DNR fought nearly 40 wildfires that were fueled by dry conditions. In Oscoda County, an 850 acre fire burned in the Huron-Manistee National Forest.
Sunrise Fire	2000	180 acres burned; 1 outbuilding damaged or lost
Mio (Oscoda County)	April 30-first week of May 2000	Approximately 5,200 acres in the Huron-Manistee National Forest were burned before being contained a week later. 300 firefighters and two aerial water tankers were deployed. Approximately 30 people were evacuated. No injuries or structural damage.
Oscoda County	April 30- May 1, 2006	An individual burning brush ignited a wildfire in Hughes Lake and winds spread the fire. Almost 300 personnel fought the fire (crews were flown in from New Mexico and Montana). Approximately 5,950 acres of timber and brushland were burned south of M-72, east of M-18, and west of M-33. 16 structures and 7 vehicles were destroyed with property damage estimated at $600,000 (not including firefighting costs that were greater than $800,000). Evacuations were ordered as far as Crawford County.
Staley Lake Fire	2008	80 acres burned

Table 6-1 Significant Wildfires in Oscoda and Crawford Counties		
Location/Name of Fire	**Date**	**Event**
Four Mile Road Fire	April 24, 2008	Sparks from a passing train ignited a fire south-southeast of Grayling, Michigan. The fire crossed I-75 and burned 1,300 acres. Half a dozen cabins near Simpson Lakes were lost. 50 homes were evacuated and power was lost in Grayling. The Grayling Game Club sustained $287,000 in damages, Michigan DNR response costs and timber damages were about $619,000, and property damages were about $750,000.
Meridian Boundary Fire/Range 9 Fire	May 18-26, 2010	The Meridian Boundary Fire occurred from a debris fire on May 18, 2010 and was not controlled until May 26, 2010. It burned 8,800 acres in Crawford and Kalkaska Counties, destroyed 12 residences, damaged 6 residences, and either destroyed or damaged 36 outbuildings, resulting in ~ $825,000 in property damages. The Range 9 Fire occurred when a controlled burn on an artillery range become uncontrolled due to winds, and burned 1,100 acres of grassy areas in Camp Grayling. It also destroyed 4 seasonal homes, resulting in property damage estimated at $125,000. The Range 9 Fire was extinguished on May 18, 2010.
Howes Lake Fire	2011	817 acres burned; 2 outbuildings damaged or lost; burned in a residential area
Source: Michigan Department of Natural Resources, *2019 Michigan Hazard Analysis*		

Vulnerability Assessment

All of the county's existing and future buildings and populations are at-risk to wildfires. Additionally, neighboring counties are also at-risk since wildfires can spread across political boundaries. Historically, jack pines (pyrophytic plants) covered about 63% of the county, but today cover about 34% of the county today due to residential developments being built in wildfire prone areas. Multiple federal agencies found that all of the county's communities have a high risk from wildfires since the community centers and rural residential developments are located in forest types that have high wildfire risks. Wildfires burn property and structures, which results in high damage costs. Additionally, wildfires can cause death or injuries for people who become trapped in the fire or who are fighting the fire. In northeastern Michigan, the large number of permanent and seasonal homes and the increase in tourists during the driest (most vulnerable) times of year greatly increases wildfire risks. Wildfires can cause a loss in timber production and agricultural revenue from the fire damaging timber supplies and agricultural products, and killing livestock. Approximately 147,885 acres of southern half of Oscoda County are part of the Huron National Forest, and about 55,000 acres in the northwest corner of the

county is owned by the State of Michigan. These two large landholdings account for 83% of the county being forested. Oscoda County has 145 farms that have decreased in acreage since 2007. The market value of crop sales is $1,178,000 and the market value of livestock sales is $5,729,000. Communication and power infrastructure can be damaged by wildfires, which would result in power outages, reduced/a loss of warning notifications to the public, and the inability to call for emergency services. Also, residents and businesses may have to evacuate and find shelter.

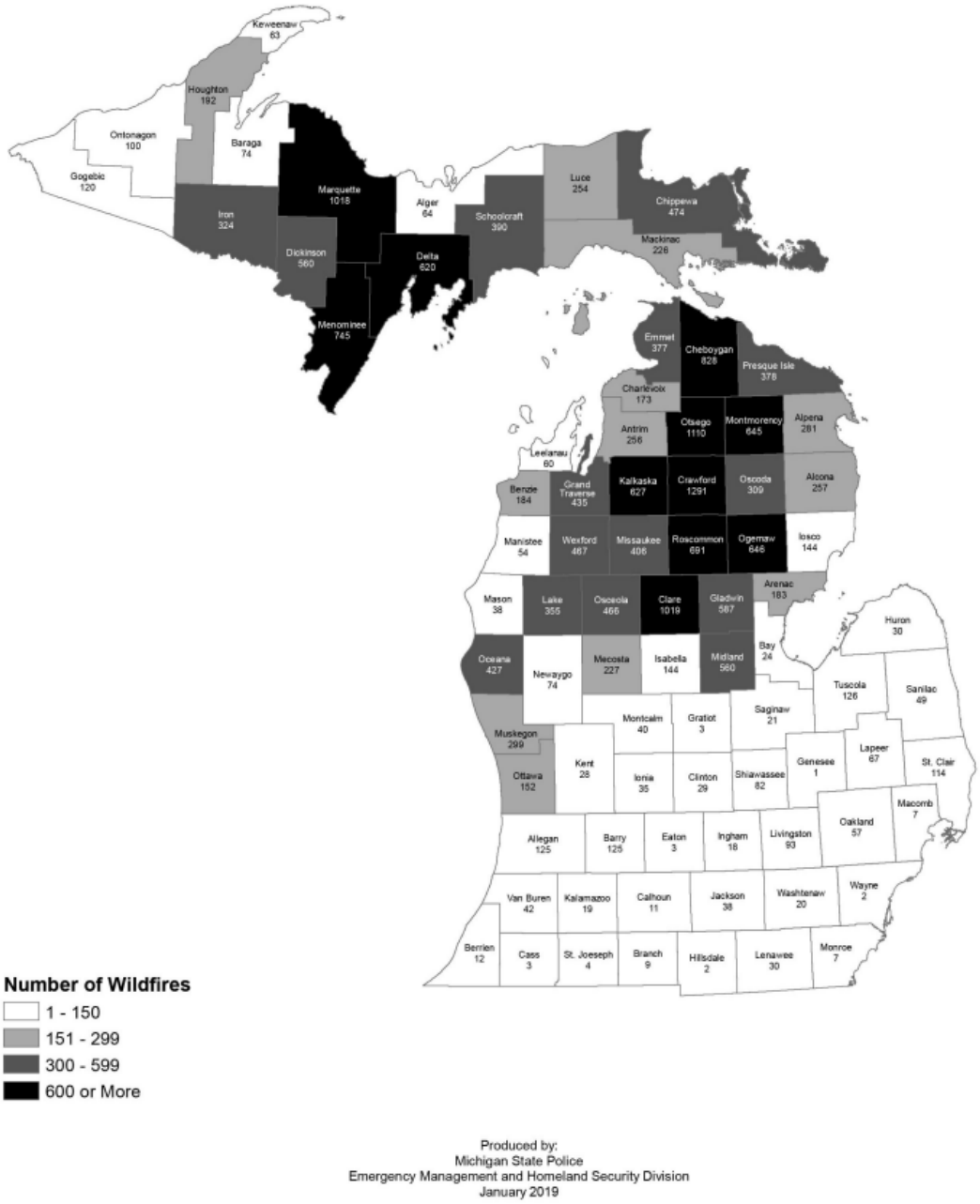


Figure 6-1 Number of Wildfires per County in Michigan

Severe Winds (Derecho)

Description
A derecho is a long-lived windstorm that is associated with fast-moving severe thunderstorms that occur during the spring or summer; however, can occur any time of the year. According to The National Severe Storms Laboratory, winds in excess of 58 miles per hour are considered to be a derecho. Severe windstorms can cause damage to homes and businesses, power lines, trees and agricultural crops, and may require temporary sheltering of individuals without power for extended periods of time.

According to the 2019 Michigan Hazard Mitigation Plan, the statewide average number of severe wind events is 395 with 2 average annual deaths, 13 average annual injuries, and an expected annual loss of $51.3 million. Windstorms occur in all areas of Michigan, although more often along the lakeshore and in central and southern Lower Michigan. On average, severe wind events can be expected 2-3 times per year in the Upper Peninsula, 3-4 times per year in the northern Lower Peninsula, and 5-7 times per year in the southern Lower Peninsula. Along the Great Lakes shoreline, strong winds regularly occur and occasionally have gusts over 74 miles per hour when in conjunction with a storm front according to the Michigan Department of State Police's Publication 207 (p. 32-33).

In the Northern Lower Peninsula, the 2019 Michigan Hazard Mitigation Plan states on average there are 2 average annual events, 0.2 average annual deaths, 2.6 average annual injuries, and approximately $4.7 million in property and crop damage per year.

For example, during September 26-27, 1998, Northern Lower Michigan experienced severe thunderstorms that produced strong winds that damaged or destroyed homes, businesses and public facilities, and downed trees and power lines.

On April 30, 1984, another windstorm struck the entire Lower Peninsula and resulted in winds up to 91 mph in some areas. The storm caused severe shore erosion, and damaged 6,500 buildings, 300 mobile homes, and 5,000 vehicles. The storm also resulted in 1 death, several injuries, and over 500,000 customers without power.

Another storm event that moved across Michigan occurred on November 10-11, 1998. This storm was the strongest storm ever recorded in the Great Lakes with wind gusts of 50-80 miles per hour and a peak gust of 95 miles per hour reported on Mackinac Island. It damaged buildings, downed trees and power lines, killed one person, and left over 500,000 people without power. By the morning of November 11, the winds had pushed so much water into Lake Huron that the water level on Saginaw Bay bottomed out 50" below chart datum, which exposed and dried up to one-half of the bay bed. As the wind died down, the water level in the Saginaw Bay rose to its more normal level.

Measuring Severe Winds
The Beaufort Wind Scale is used to describe wind strength through observation. Table 6-2 shows the Beaufort Wind Scale.

Table 6-2 Beaufort Wind Scale			
Force	**Wind Speed (knots)**	**Description**	**Specifications for use on Land**
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind varies
2	4-6	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Dust, leaves, and loose paper lifted; small tree branches move
5	17-21	Fresh Breeze	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	-
12	64+	Hurricane	-

Location

Severe winds are a regional event that is not confined to geographic boundaries and can affect several areas at one time. Also, the severity of the winds may range across the affected areas. All of Oscoda County is at risk to the occurrence and impacts from severe winds.

Previous Occurrences

According to the USDA's Soil Survey of Oscoda County, Michigan, thunderstorms occur about 31 days each year with the majority of the events occurring in the summer. Since the 2014 Oscoda County Hazard Mitigation Plan Update, Oscoda County has had three reported wind events with $20,000 in property damages. The most severe windstorm occurred on April 24, 1993 with wind speeds up to 90 mph in Oscoda County.

Extent

Winds are measured by wind speed and the amount of damage. The most severe windstorm in Oscoda County occurred on April 24, 1993 with wind speeds up to 90 mph. The event resulted in $50,000 in damages. However, both stronger winds and higher damage estimates are possible.

Probability of Future Occurrences

Since there have been 51 high wind and thunderstorm wind events reported in the last 38 years, the data shows approximately 1 event would occur every 0.7 years. However, it should be noted that the majority of the events occurred in the 1980's and 1990's.

Vulnerability Assessment
All existing and future buildings and populations are at-risk to severe winds. Severe winds have the potential to blow shingles, siding, awnings, and other features off buildings. Falling trees and tree limbs can damage structures as well as cause timber damage that would result in a loss of timber production. Severe winds can pick up objects and hurl them through the air, which may result in damage to structures or harm to people. Sometimes, structures can be blown off their foundations. Severe winds can also blow down communication infrastructure, utility poles, and aboveground power lines. Businesses in Mio and Fairview may have to close due to power outages. The few events that are held at the Oscoda County Fairgrounds in Comins Township do not attract a large number of people. Out of the people who do attend, there are signs directing them to safety areas.

Ice and Sleet Storms

Description
Ice and Sleet Storms are storms that generate sufficient quantities of ice or sleet that result in hazardous conditions and/or property damage. Ice storms occur when cold rain freezes on contact with the surface and coats the ground, trees, buildings, and overhead wires with ice. Often times, ice storms are accompanied by snowfall, which sometimes causes extensive damage, treacherous conditions, and power loss. On the other hand, sleet storms are small ice pellets that bounce when hitting the ground or other objects. It does not stick to trees or wires, but can cause hazardous driving conditions. When electric lines are down, households are inconvenienced, and communities experience economic loss and the disruption of essential services.

According to the *2019 Michigan Hazard Mitigation Plan,* Michigan has 16 average annual ice and sleet storm events with 0.2 average annual deaths, 0.5 average annual injuries, and $11.4 million in average annual property and crop damage.

Location
Ice and sleet storms are a regional event that is not confined to geographic boundaries and can affect several areas at one time. Also, the severity of the ice and sleet storms may range across the affected areas. All of Oscoda County is at risk to the occurrence and impacts from ice and sleet storms.

Previous Occurrences
Oscoda County has had two reported ice storms with one occurring in 2001 and one occurring in 2005. No deaths, injuries, or property/crop damage occurred from these events. Power lines were able to sustain the weight of the ice and roads were extremely icy. Both events were coupled with snow, which means there is the potential for ice and sleet storm events to be reported as snowstorm events.

Extent
Ice and sleet storms can be measured based on the amount of damages. Neither event that was reported to NOAA by trained spotters had any deaths, injuries, or damages.

Probability of Future Occurrences
Since 2001, there have been 2 reported ice storm events in Oscoda County. This data shows approximately 1 event would occur every 9.5 years. However, it should be noted that both events occurred in the early 2000's. Additionally, not all of the ice and sleet storms may have been reported

based on the lack of injuries, deaths, and extensive damages. Therefore, the number of ice and sleet storm events and damages may be higher.

Vulnerability Assessment
Walking can cause injuries from falls that may result in fractures or broken bones. Ice accumulation can cause damage to communication and power infrastructure, which can result in power outages. Icy roads can cause traffic accidents, which may result in injuries and loss of life. Heating shelters and evacuations may be required if power outages last a long time. Power outages and ice covered roads can limit access to food and basic supplies since businesses would have to close and the roads would not be travelable.

Snowstorms

Description
Snowstorms are periods of rapid snow accumulation with high winds, cold temperatures, and low visibility that have the potential to shut down towns and cities. Blizzards are the most perilous snowstorms and are characterized by low temperatures, strong winds, and enormous amounts of fine, powdery snow. Snowstorms have the potential to reduce visibility, cause property damage, and loss of life.

According to the 2019 Michigan Hazard Analysis, Michigan has 360 snowstorms with 0.1 average annual deaths, 0.1 average annual injuries, and $1.9 million in average annual property and crop damage. Michigan experiences large differences in snowfall over short distances due to the Great Lakes. The average annual snowfall accumulation ranges from 30 to 200 inches with the highest accumulations in the northern and western parts of the Upper Peninsula. In Lower Michigan, the highest snowfall accumulations occur near Lake Michigan and in the higher elevations of northern Lower Michigan. For example, the average snowfall ranges from 141 inches in the Gaylord area to 78 inches in the Mio area in the northeast region of the Lower Peninsula.

Location
Snowstorms are regional events that are not confined to geographic boundaries and can affect several areas at one time with varying severity depending on factors such as elevation and wind patterns. All of Oscoda County is at risk to the occurrence and impacts from snowstorms.

Previous Occurrences
Since 1997, there have been 55 winter storm events, including heavy snowstorms, blizzards, winter weather, and winter storms reported in Oscoda County. There has been $100,000 in property damage, and no deaths, injuries, or crop damage. In January 1999, Oscoda County received a Presidential Emergency Declaration for a snowstorm and blizzard.

Extent
Snowstorms can be measured based on snowfall accumulations or damages. The average annual snowfall in Oscoda County is 78.34 inches. On March 2, 2012, Oscoda County had $100,000 in property damages caused by heavy snow.

Probability of Future Occurrences
Since 1997, there have been 55 winter storm events in Oscoda County. It should be noted that winter storm events refer to heavy snowstorms, blizzards, winter weather, and winter storms. This data shows approximately 1 event will occur every 0.4 years though winter weather hazards can fluctuate from year to year. For example, there were six reported events in 2007 and no reported events in 2017.

Vulnerability Assessment
All existing and future buildings and populations are at-risk for snowstorms. Downed trees and branches can cause damage to buildings and other structures. The weight of snow on roofs can cause the roofs to collapse and ice dams can cause water damage to buildings. Additionally, cold temperatures can freeze pipes in buildings that can rupture and leak. Salting can cause damage to the roads and sidewalks. The weight of snow accumulations on communication and power infrastructure can cause power outages. Shoveling snow can cause heart attacks. During and immediately after a snowstorm, the driving conditions are dangerous since blowing snow, ice, and slush can create slippery roads. Blizzards can create whiteout conditions that result in low to no visibility. Stranded motorists may get hypothermia or frostbite. Heating shelters and evacuations may be required if power outages last a long time. Power outages and snow covered roads can limit access to food and basic supplies since businesses would have to close and the roads would not be travelable.

Tornadoes

Description
A tornado is a violently rotating column of air that extends from a thunderstorm to the ground, and can occur any time during the day and year. It can only be seen if water droplets, dust, and debris form a funnel. The funnel cloud can have winds that reach up to 300 miles per hour with an interior air pressure that is 10-20% below the surrounding atmosphere's pressure. The length of a tornado path is approximately 16 miles, but there have been tracks reported up to 200 miles. Tornado path widths are generally less than one-quarter mile wide. These storms are the most violent of the atmospheric storms since they have the potential to destroy buildings, uproot trees, hurl objects, and cause loss of life. According to the National Oceanic and Atmospheric Administration/National Weather Service's Storm Prediction Center, tornadoes cause approximately 60 deaths and hundreds of millions of dollars in property damage each year.

According to the *2019 Michigan Hazard Mitigation Plan*, Michigan is located on the northern fringe of the nation's tornado belt and has a statewide expected annual loss of about $19.6 million due to tornadoes. Michigan also has an average of 18 tornadoes, approximately 4 deaths, and approximately 50 injuries per year. Between 1999 and 2019, Michigan has had 314 reported tornado events with 52.9% as EF0 (weak) or EF1 (moderate), 38.9% reported as F0 or F1 (weak), 6.7% as EF2 (significant) or EF3 (severe), and 1.6% as F2 (strong). In Northern Michigan, tornados are most likely in the summer months, although some have occurred in the spring and fall.

Measuring Tornadoes
Prior to 2007, the United States used the Fujita Scale to measure the intensity of tornadoes (Table 6-3). The Fujita Scale used mathematical interpolation to assign wind estimate guesses to a damage scale. In 2007, the United States began using the Enhanced Fujita Scale to measure the intensity of tornadoes

since the wind estimates are more associated with the degree of tornado storm damage than the Fujita Scale (Table 6-3).

Table 6-3 Fujita Scale and Enhanced Fujita Scale			
Fujita Scale	**Fujita Scale Wind Estimate (MPH)**	**Enhanced Fujita Scale**	**Enhanced Fujita Scale Wind Estimate (MPH)**
F0	< 73	EF0	65-85
F1	73-112	EF1	86-110
F2	113-157	EF2	111-135
F3	158-206	EF3	136-165
F4	207-260	EF4	166-200
F5	261-318	EF5	Over 200
Source: National Oceanic and Atmospheric Administration/National Weather Service Storm Prediction Center, May 2019			

Location

Tornadoes are a regional event that are not confined to geographic boundaries and can affect several areas at one time. Also, the magnitude of tornadoes may range across the affected areas. All of Oscoda County is at risk to the occurrence and impacts from tornadoes. It should be noted that it is impossible to predict where and with what magnitude a tornado will touchdown.

Previous Occurrences

Between July 1987 and July 2019, Oscoda County has had seven reported tornadoes touchdown, causing over $2.9 million in property damage (Table 6-4). As a result of these tornadoes, there have been no deaths, two injuries, and no crop damage. The most destructive tornado to touch down in the county occurred on July 3, 1999, causing $1.5 million in damage and two injuries. A Governor's Disaster Declaration was issued for the July 3, 1999 tornado. The second most destructive tornadoes occurred on October 18, 2007, causing $1.35 million in damages.

Table 6-4 Tornado Events in Oscoda County							
Date	**Time**	**Location**	**F-Scale**	**Deaths**	**Injuries**	**Property Damage**	**Crop Damage**
7/9/1987	1420 EST	Greenwood Township	F1	0	0	$250	$0
4/24/1993	1740 EST	Greenwood Township	F1	0	0	$50,000	$0
5/28/1995	1455 EST	Big Creek Township	F2	0	0	$0	$0
7/2/1997	1410 EST	Big Creek Township	F1	0	0	$0	$0
7/3/1999	1825 EST	Mio	F2	0	2	$1,500,000	$0
10/18/2007	1912 EST-5	Big Creek Township	EF2	0	0	$1,350,000	$0
10/18/2007	1942 EST-5	Clinton Township	EF1	0	0	$40,000	$0
Source: National Oceanic and Atmospheric Administration, National Centers for Environmental Information, Retrieved May 2019							

Extent
Based on the Fujita Scale, Oscoda County's most damaging tornado occurred in Mio with winds ranging from 113-157 mph. It caused two injuries and $1.5 million in property damages, and did not cause any deaths. According to the Enhanced Fujita Scale, Oscoda County's most damaging tornado occurred in Big Creek Township with winds ranging from 111-135 mph. It caused $1.35 million in property damages and did not cause any deaths or injuries. Despite these two events ranging between 111-157 mph, future tornadoes may have greater wind speeds.

Probability of Future Occurrences
Since 1987, there have been seven reported tornado storm events in Oscoda County. This data shows approximately 1 event will occur every 5 years. However, it should be noted the majority of the events occurred in the 1990's. Historical data shows Greenwood and Big Creek Townships have a higher risk for tornadoes (Table 6-4).

Vulnerability Assessment
All of Oscoda County's existing and future buildings, population, and infrastructure are at-risk and vulnerable to tornadoes. Buildings and above ground infrastructure in a tornado's path will be damaged and/or destroyed. Older buildings and light construction structures (houses) have a greater risk of damage. About 80.2% of the county's housing structures were built before 1980. Buildings adjacent to a tornado's path may have no to little damage dependent on the amount and type of debris hurled from a tornado at the adjacent buildings. Through a FEMA study in 1999, it was found that mobile homes, homes with crawlspaces, and building with large spans (schools, gyms, factories, theaters, etc.) are more susceptible to damage from tornadoes. Schools are vulnerable to tornadoes due to the number of students and employees in the buildings. Tornadoes can close roads due to debris on the road or road damage/destruction from the tornado. Tornadoes can cause injuries or death when people are in or near the tornado's path (picked up by the tornado or struck by debris). Individuals in buildings may have injuries or die if they are trapped in a building struck by a tornado or are struck by debris or falling objects. Tornadoes can contaminate water supplies, cause fires, and cause hazardous material spills (pipeline or septic tanks) or gas leaks. If a tornado damages businesses or infrastructure, it will cause economic losses in the county since businesses will have to close and the cost of repairs will impact the business. Tornadoes can also cause power outages. Governments will have to spend money for search and rescue teams, shelters, and clean-up efforts. Also, structural and vegetative debris storage areas may be filled to capacity.

Riverine and Urban Flooding

Description
Riverine flooding occurs when rivers, streams, and lakes overflow into adjacent floodplains due to prolonged, intense rainfall, rapid snowmelt or ice jams. Flooding can damage or destroy property, disable utilities, destroy crops and agricultural lands, make roads and bridges impassable, and cause public health and safety concerns. Floods occur in the early spring, but also occur in the winter due to ice jams, and during the summer or fall from severe thunderstorms. Flooding caused by severe thunderstorms has a greater impact on watercourses with smaller drainage areas.
Urban flooding occurs when water flows into low-lying areas because it does not have a place to go. This flooding occurs from a combination of excessive rainfall, snowmelt, saturated ground, and inadequate drainage, and is becoming more common in Michigan. Since development is occurring in

floodplains, the natural landscape is unable to properly disperse the water. Urban flooding also has the potential to overflow onto docks or other structures with electricity running to them, which increases the risk for an electric shock drowning. Additionally, storm and sanitary sewers are unable to handle the water flows associated with storm events.

According to the 2012 Michigan Hazard Analysis, Michigan tends to have a major flood event every two years with minor local flood events occurring annually. The 2012 Michigan Hazard Analysis also reports the annual flood-related damages are estimated to be between $60 and $100 million. From 1975-2010, Michigan experienced eleven flood disasters that resulted in both a Presidential Major Disaster Declaration and a Governor's Disaster Declaration, and nine that resulted only in a Governor's Disaster Declaration.

Location

FEMA has not developed flood insurance maps for Oscoda County. Flooding occurs along the Au Sable River in Big Creek and Mentor Townships, near Red Oak in Greenwood Township, in Luzerne in Big Creek Township, in McKinley in Mentor Township, and in Fairview in Comins Township. Figure 2-6 shows the location of the water resources and wetlands in the county. Generally, the wetlands show where the floodplains and hydric soils are located. The county's interconnected streams and creeks are part of the Au Sable and Thunder Bay Watersheds. The severity of flood events depends on the amount of rainfall, the soil moisture content, the amount of snow, and the water levels of the Great Lakes (high water levels cause a backwater effect on the rivers that flow into them). There are approximately 3,937 acres of surface water that includes 219 miles of streams and rivers in the county. Wetlands are found in areas adjacent to the county's water resources and assist in preventing floods through the collection and storage of floodwaters. Unfortunately, data is unavailable for specific locations of localized flooding.

Previous Occurrences

Though not a common occurrence in the county, riverine flooding has occurred when spring snowmelt coincides with prolonged, intense rains. Specifically, riverine flooding occurs in the Au Sable tributary creeks and streams from ice jams and how the Mio dam regulates the river. Between 2001 and 2006, there have been two flash flood events and one flood event reported to NOAA in Oscoda County. No deaths or injuries occurred from these events.

In 2001, a combination of runoff from snowmelt and rainfall resulted in high water on the Au Sable River throughout Oscoda County that did not have any damage reported. In 2005, rainfall and the ice constrictions on the Au Sable River caused the river to rise above flood stage near Red Oak. The river crested at 6.66 feet on January 17 (flood stage is 6 feet) and did not have any damages. The flash flood event on July 17, 2006 resulted in $3,000 in damages. It was caused by severe thunderstorms with hail and wind. Kittle Road was washed out in Elmer Township and two other roads were affected, which were closed two weeks after the event. In 2006, the Governor issued an emergency disaster declaration for thunderstorms and heavy rain. On February 19, 2018, a Governor's Disaster Declaration was issued in Oscoda County for flooding.

Extent

In Oscoda County, flood extent can be measured by the amount of property damage. On July 17, 2006, the county experienced a flood event that caused $3,000 in damages. The event occurred from severe

thunderstorms with hail and wind. The county may see an increase in flood events from an increase in rain and snowfall, and the backwater effect from the current high water levels of the Great Lakes.

Probability of Future Occurrences

Since 2001, there have been three flood events reported in Oscoda County. This data shows approximately 1 event would occur every six years. Though flooding is not a common occurrence in Oscoda County, it should be noted that the number of flooding events may increase due to the changing climate conditions. Currently, Oscoda County has an annual average of 29.84 inches of rain and 78.34 inches of snowfall. Unfortunately, data is unavailable for the number of people and structures in the county's floodplains.

Vulnerability Assessment

The riverine and urban flooding events analyzed in this section relate to the natural and built environments. Flooding due to a dam failure is analyzed in the dam failure section of this chapter.

Oscoda County has a declining population and little development. Previous flood events have not been severe enough to cause people or vehicles to be carried away by the water currents. The majority of the existing buildings on the Au Sable River are located in Mio and McKinley with the rest of the area along the Au Sable River left undeveloped. Existing buildings may experience flooding if they are located in the county's floodplains or on hydric soils, and special design considerations were not taken into account during the construction phase. These buildings have the potential to be damaged, destroyed, and compromised. After the flood event(s), they may develop mold, have foundation damage, and may rot. The presence of mold will increase the health risk for people with breathing conditions. Floodwaters can conceal dangerous conditions, such as damaged electrical wires, debris, and diseases. Electrical wiring on docks may become damaged from a flood, which increases the risk for someone to die from an electric shock. The contaminants and pollutants in floodwaters can degrade watersheds, and cause diseases, infections, and injuries to people traversing or playing in the waters. Flooding can damage roads and bridges, impact wells, and cause vehicles to crash. Roads may be closed for extended periods of time, which would impact traffic flow and emergency response times. About 6.5% of the county's land area is classified as floodplains (this number is incorporated into both the wetland and lowland forest existing land use categories in Chapter 4). Floodwaters can also cause erosion along inland lakes and streams, which can degrade fish habitats and fill hydroelectric dam reservoirs. Generally, property owners near the county's water resources replace the riparian wetlands on their property with manicured lawns, which degrades wildlife habitat and removes the natural environment's ability to store flood waters. In Clinton, Comins, and Elmer Townships, there are small parks or a campground located near waterbodies that may become flooded dependent on the severity of the backwater effect from the Great Lakes.

National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) to reduce the impact of flooding on private and public structures by providing affordable insurance. The program is administered by FEMA and requires participating communities to adopt and enforce floodplain management ordinances that meet or exceed the NFIP minimum requirements. In addition, if communities participate in the Community Rating System (CRS), residents and business owners can receive reduced flood insurance premiums.

When NFIP was created, it included discounted policies that paid at rates that do not reflect the true flood risk of the properties. The Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) required FEMA to eliminate certain subsidies and it set limits on the amount that rates may increase. However, the Homeowner Flood Insurance Affordability Act of 2014 repealed some of the provisions in BW-12 and included gradual rate increases to properties receiving subsidized rates until the premium reaches its full-risk rate, adding a surcharge to all policies, and having a Flood Insurance Advocate to advocate for fair treatment of NFIP policyholders.

According to the Federal Emergency Management Agency Community Status Book Report for Michigan, Oscoda County does not participate in the National Flood Insurance Program since floodplain maps have not been developed for the county. Oscoda County does not have any participating communities in the NFIP program, which means the county does not have any FEMA repetitive loss structures.

Extreme Temperatures (Extreme Heat and Extreme Cold)

Description
Prolonged periods of very high or very low temperatures are often accompanied by other extreme meteorological conditions, such as high humidity, drought, heavy snowfall, or high winds. Extreme heat or extreme cold primarily affect the most vulnerable segments of the population, such as the elderly, children, impoverished individuals, and people in poor health.

Nationwide, there have been approximately 175 deaths per year that are attributable to extreme heat according to the 2019 Michigan Hazard Analysis. The threats from extreme heat are heatstroke, sunstroke, muscle cramps, heat exhaustion, and fatigue. It is hazardous to livestock and agricultural crops, causes water shortages, exacerbates fire hazards, exacerbates respiratory problems, prompts excessive energy demands, and causes infrastructure failures. Urban areas experience the most serious extreme heat with the combined high temperatures and high humidity that produce a heat-island effect. According to the 2019 Michigan Hazard Mitigation Plan, Michigan has 11 average annual extreme heat events with 0.4 average annual deaths and 41 average annual injuries.

In the United States, approximately 700 people die each year as a result of severe cold temperature-related causes according to the 2019 Michigan Hazard Analysis, with a significant number of deaths occurring due to illnesses or disease that are negatively impacted by severe cold weather, such as stroke, heart disease, and pneumonia. Exposure to extreme cold temperatures can be life threatening and can cause hypothermia and frostbite. According to the 2019 Michigan Hazard Mitigation Plan, Michigan has 35 average annual extreme cold events with 1 death, 9.4 average annual injuries, and $6.4 million in average annual property and crop damage. Extreme cold affects transportation modes and power utilities, resulting in dead vehicle batteries and loss of power/heat.

Measuring Extreme Temperatures (Extreme Heat and Extreme Cold)
Extreme heat is measured with the National Weather Service's Heat Index Chart (Figure 6-2). The chart uses relative humidity and air temperature to determine the likelihood of heat disorders with prolonged exposure or strenuous activity. Individuals are unable to shed excess heat from their bodies when they experience prolonged exposure to hot temperatures, which results in heat disorders.

Extreme cold is measured with the windchill index, which is a measure of the rate of heat loss from exposed skin caused by the combined effects of wind and cold. As the wind increases, heat is carried away from the body and reduces the external and internal body temperatures. Figure 6-3 shows the NOAA Wind Chill Chart as it corresponds to various temperatures and wind speeds.

Figure 6-2 National Weather Service Heat Index Chart

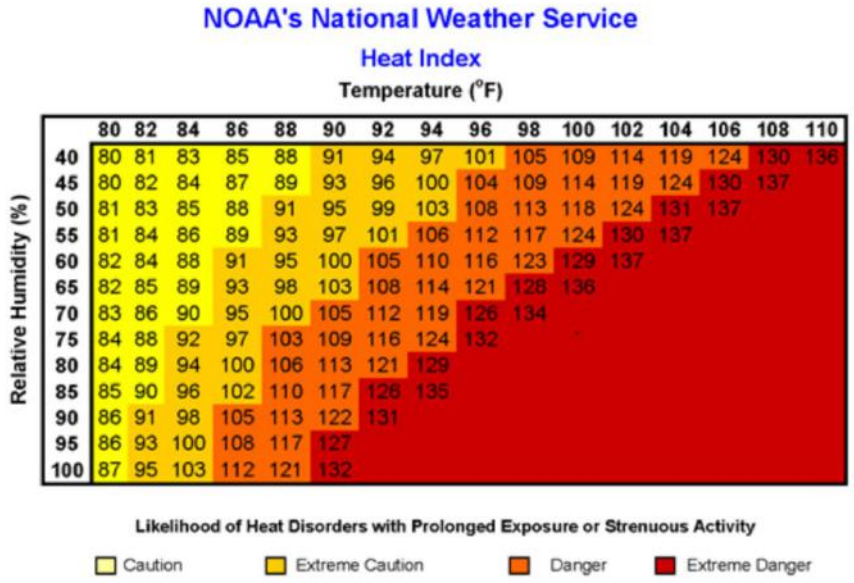
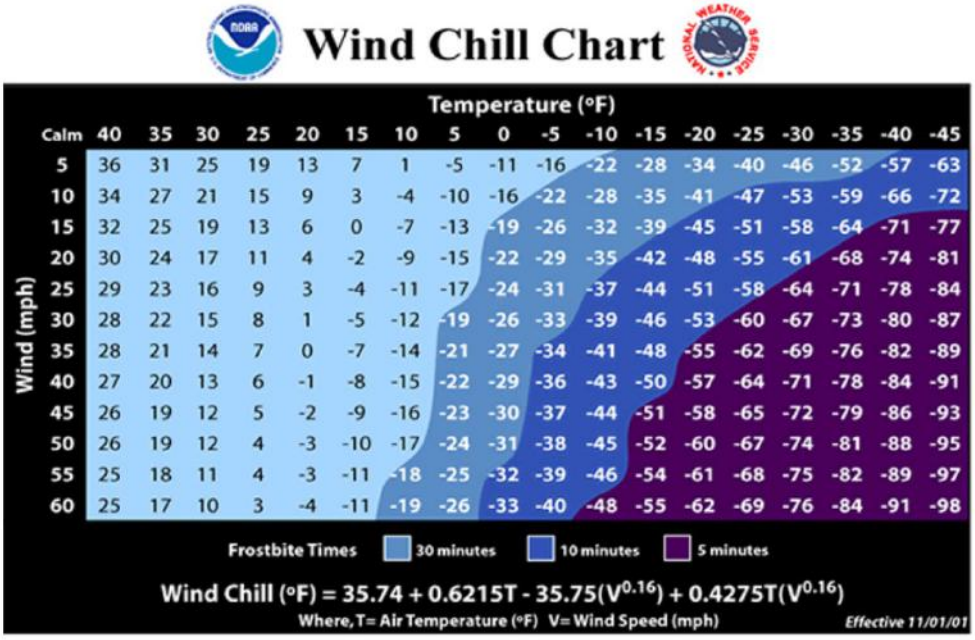


Figure 6-3 National Weather Service Wind Chill Chart



Location
Extreme temperatures are a regional event that are not confined to geographic boundaries and range in severity

across the affected areas. All of Oscoda County is at risk to the occurrence and impacts from extreme temperatures.

Previous Occurrences
A comparison between average maximum/minimum temperatures and extreme maximum/minimum temperatures assists in understanding the risk for extreme temperatures in the county. Figure 6-4 shows the average maximum temperatures and extreme maximum temperatures in Oscoda County between 1887 and 2006 from the Western Regional Climate Center, Mio Hydro Plant Station (205531). Figure 6-5 shows the average minimum temperatures and extreme minimum temperatures in Oscoda County between 1887 and 2006 from the Western Regional Climate Center, Mio Hydro Plant Station (205531).

Oscoda County has had two extreme heat events in 2001 and 2018. The events did not have any deaths, injuries, or property/crop damages. The events consisted of hot and humid conditions that caused outdoor events to be modified and attendance at outdoor events to be lower than normal.

Between 2007 and 2015, there has been three extreme cold events reported in Oscoda County. The events did not have any deaths, injuries, or property/crop damages. The low temperatures caused schools to close. However, since cold temperatures typically occur during winter months, many events may have gone unrecorded.

Probability of Future Occurrences
Since 2018, there have been two extreme heat events in Oscoda County. This data shows approximately 1 extreme heat event would occur every 9 years.

Since 2015, there have been three extreme cold events in Oscoda County. This data shows approximately 1 event would occur every 3 years. Since extreme cold events tend to occur during the winter months and are coupled with blustery winds and snowstorms, these events may have been reported as other hazards or not at all, which means there may have been more extreme cold events in the county.

Extent
Extreme heat temperatures can be defined by record highs and the National Weather Service Heat Index. On July 13, 1936, the highest recorded temperature was 112 degrees Fahrenheit in Mio, Michigan, which is the highest recorded temperature in Michigan and also occurred simultaneously in Stanwood, Michigan. This temperature correlates to extreme danger of having a heat disorder from prolonged exposure or strenuous activity (Figure 6-2). However, it should be noted that hotter events are possible. Oscoda County does not have any areas that produce a heat island effect.

Extreme cold temperatures can be defined by record lows and the National Weather Service Wind Chill Index. On February 17, 1979, the lowest recorded temperature was -38 degrees Fahrenheit in Mio, Michigan. This temperature correlates to frostbite exposure of 5-30 minutes (Figure 6-3). However, it should be noted that colder events are possible.

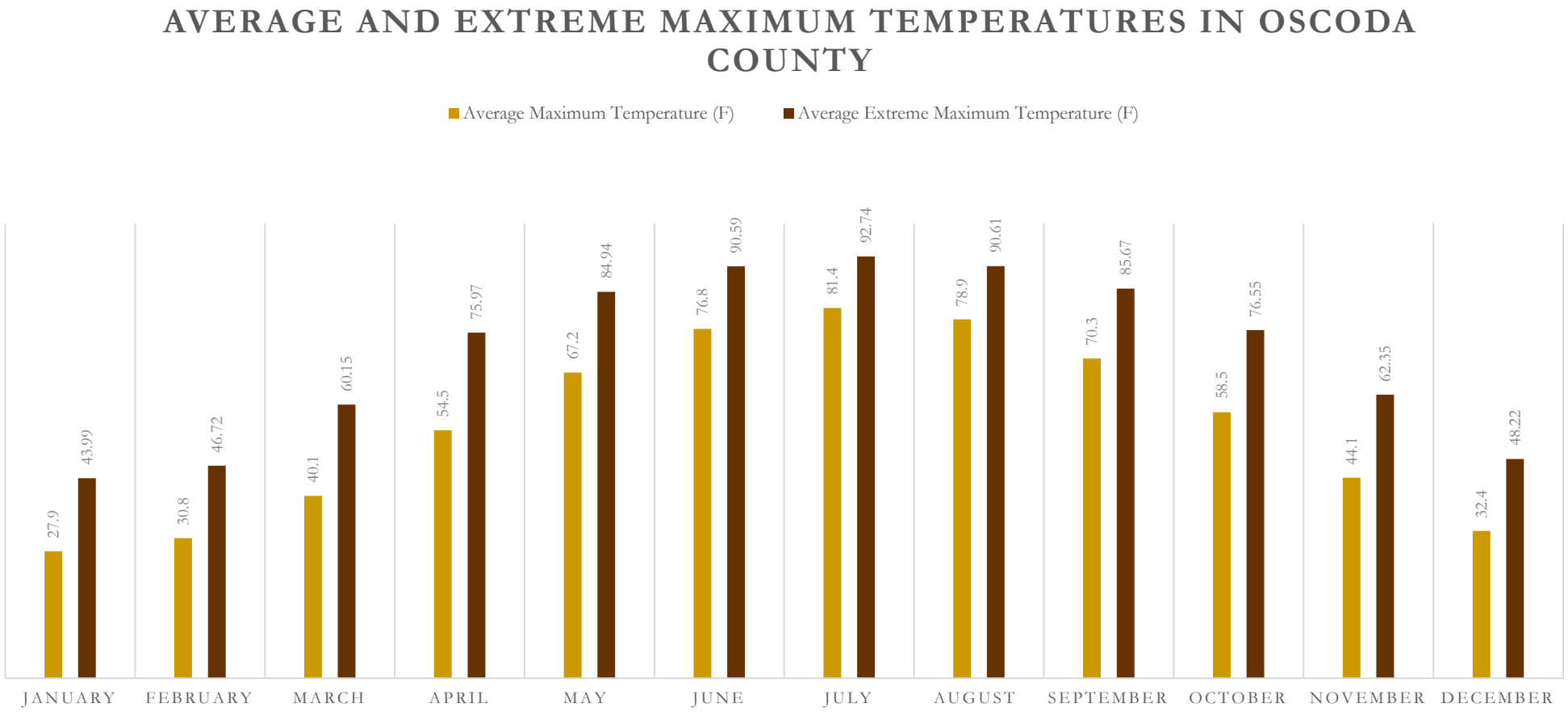


Figure 6-4 Average and Extreme Maximum Temperatures in Oscoda County

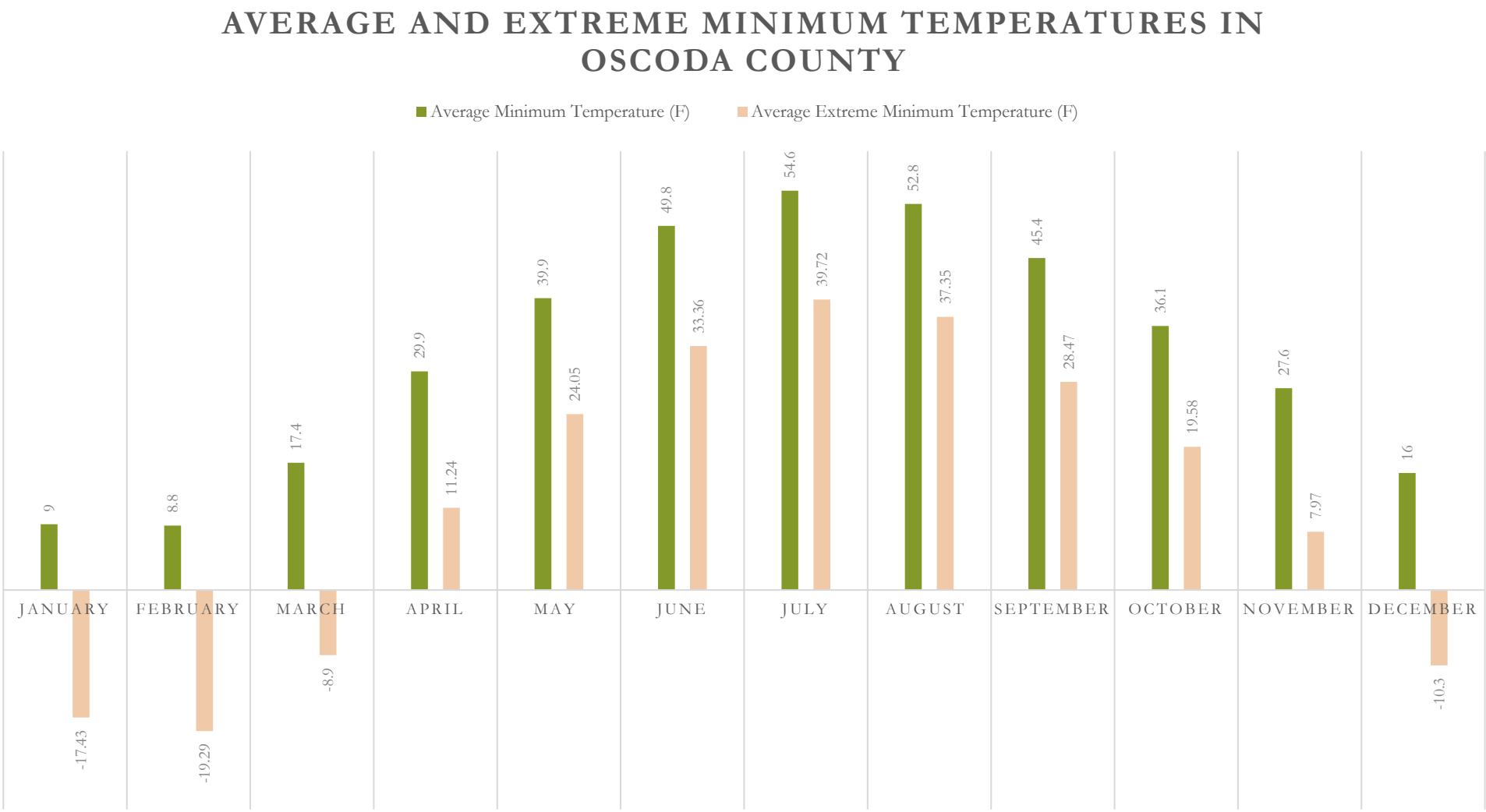


Figure 6-5 Average and Extreme Minimum Temperatures in Oscoda County

Vulnerability Assessment
All of Oscoda County's existing and future buildings, population, and infrastructure are at-risk and vulnerable to extreme temperatures (extreme heat and extreme cold). About 20.9% of the county's population is aged 19 and under, and 26.2% of Oscoda County's population is 65 years and older with a median age of 51.8 years. Despite disability data being based on a sample, the data shows 41.3% of the county's population has a hearing, vision, cognitive, ambulatory, self-care, or independent living disability. In the Fairview area, there is an Amish Community that consists of approximately 50 households, two church districts and three schools.

Extreme heat has little effect on buildings and infrastructure. However, in rare cases, buildings can collapse or buckle. Utility infrastructure can fail and cause power outages, or put stress on utility service due to an increase in the usage of air-conditioning units. Heat can also cause pavement to expand. Elderly adults, and young children are more susceptible to heat disorders since older adults are more likely to be on medications or have chronic illnesses that affect their body's ability to regulate heat, and young children rely on others to keep them cool and hydrated. Athletes and outdoor workers are also susceptible since they are more likely to become dehydrated. Low income populations are susceptible since they may not have or be able to afford an air conditioning system for their home. Extreme heat negatively impacts air quality by increasing the amount of pollutants in the air, which can aggravate existing respiratory illnesses, and can decrease lung function after long-term exposure to high temperatures. Water quality is impacted by heating up waterbodies (Au Sable River) or heating up the runoff that drains into them. This hotter water may degrade the water resources as well as kill fish, macroinvertebrates, and vegetation. Additionally, extreme heat can damage crops. The county's soils are normally deficient in moisture with a low/medium amount of nutrients and extreme heat would deplete any moisture in the soils.

Extreme cold temperature events can cause pipes to freeze and burst in buildings, broken water mains, and stress to concrete and asphalt, which is costly to repair. After exposure to extreme cold temperatures, individuals may get frostbite or hypothermia, or they could die. Elderly, children, and individuals without access to an adequate heat source are considered to be at a higher risk to the impacts from extreme cold events. Additionally, extreme cold events could cause power outages and potentially result in carbon monoxide-related deaths due to the indoor usage of gas-powered furnaces and alternative heating sources. Risks for structural fires also increase with the use of alternative heating and power sources. Business and school operations would be disrupted since people are advised to remain indoors to reduce their exposure.

Drought

Description
Drought is a consequence of a natural reduction in the amount of expected precipitation over an extended period of time, usually a season or more in length. Drought differs from normal arid conditions found in low rainfall areas since the aridity is a permanent characteristic in the arid areas. The severity of a drought depends on its location, duration, geographical extent, and the water supply demands from human activities and vegetation. Due to the multi-faceted nature of droughts, it is difficult to define it, and assess when and where it will occur. Some of the severe impacts droughts have on communities and regions include:

- Water shortages for human consumption, power generation, recreation and navigation, and industrial, business, and agricultural uses
- Reduction in quality and quantity of crops
- Reduction of water quality in lakes, streams, and other natural water bodies
- Malnourished wildlife and livestock
- Increase in wildfires and wildfire-related losses
- Decline in tourism in areas dependent on water-related activities
- Decline in land values due to the impact of drought conditions on the economic or functional use of the property
- Reduction in tax revenue due to income losses from the agriculture, retail, tourism, and other industry sectors
- Increase in insect infestations, plant disease and wind erosion
- Potential loss of life due to food shortages, extreme heat, fire, increased pollutant concentrations in surface water, and diminished sewage flows

According to the *2012 Michigan Hazard Analysis*, drought is a natural part of Michigan's climate and can be exacerbated by the heat during the warmer months. The *2019 Michigan Hazard Mitigation Plan* states Michigan has 3 average annual drought events with no deaths or injuries, and greater than $7 million in annual property and crop damage. The most common type of drought is agricultural drought, where severe soil-moisture deficits lead to serious consequences for crop production.

In the late 1980's, Michigan experienced a drought that caused an estimated $40 billion in damages from agricultural losses, river transportation disruption, water supply shortages, wildfires, and other related economic impacts across the Central and Eastern portions of the United States. Communities instituted temporary water use restrictions and a state task force was formed to study the drought and formulate mitigation strategies. In June 1988, the Governor issued a statewide outdoor burning ban to prevent potential wildfires. Between 1989 and 1990, the Northeastern Lower Peninsula experienced drought conditions for eight months in a row.

Between 1998 and 2003, Michigan experienced another drought that caused an estimated $6-9 billion in damage from Texas to the Carolinas, over $1 billion in damage in the Eastern U.S. in 1999, and over $4 billion in damages and costs in the South-Central and Southeastern U.S. in 2000. The northeastern and southwestern areas of the Lower Peninsula experienced 9 to 10 months of drought conditions between 1999 and 2000. In 2001, the drought/heat wave damaged or destroyed one-third of Michigan's fruit, vegetable, and field crops, which resulted in a U.S. Department of Agriculture Disaster Declaration for 82 of the state's counties. In addition, Southeast Michigan experienced water shortages, which resulted in local officials issuing periodic water usage restrictions. In September 2002, Michigan communities were under water use restrictions and the agricultural yields were estimated to be less than 50%, while counties in eastern Michigan were declared agricultural disaster areas.

Measuring Droughts

Two main methods to measure drought are the Palmer Drought Severity Index (PDSI) and the U.S. Drought Monitor. The PDSI was the first comprehensive drought index and the U.S. Drought Monitor is a newer index that combines quantitative measures with input from experts in the field.

The Palmer Drought Severity Index (PDSI) responds to weather conditions that have been abnormally dry or abnormally wet and is calculated with precipitation and temperature data, and the local available water content of the soil. The index's scale ranges from -6.0 (dry) to +6.0 (wet), where zero is normal. Oscoda County has one station that maintains PDSI information. The station shows Oscoda County's inland areas are currently experiencing a wet period (Figure 6-6).

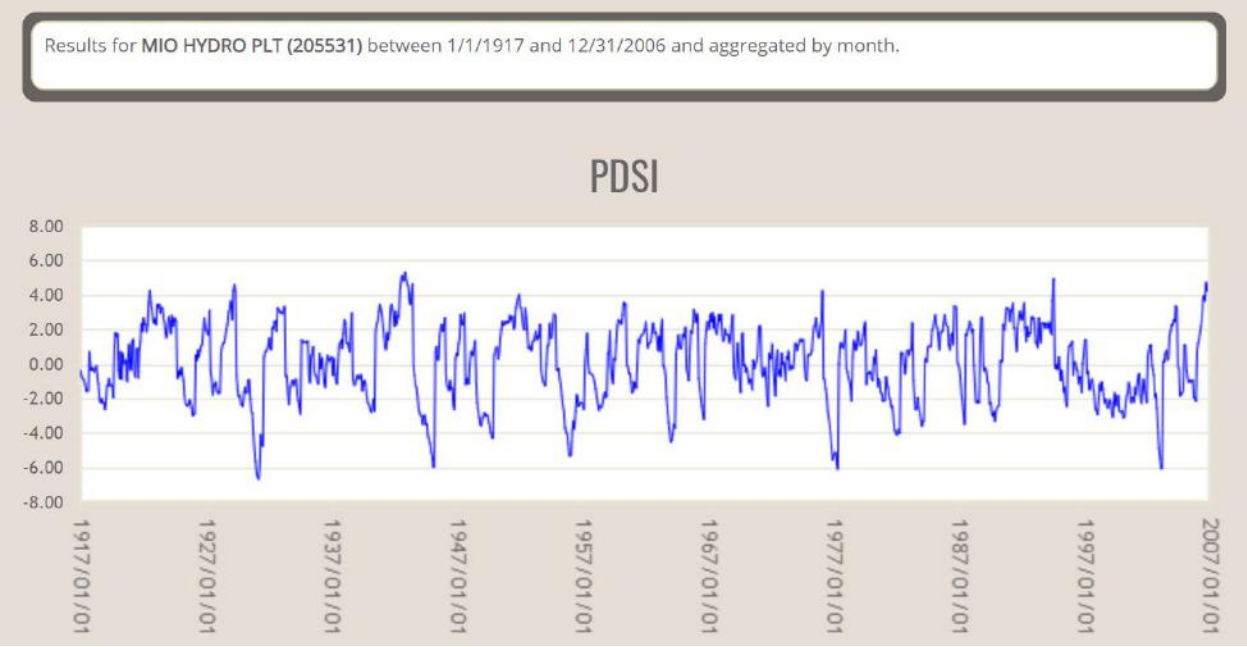


Figure 6-6 Palmer Drought Severity Index for the Mio Hydroelectric Plant
Source: The National Drought Mitigation Center's Drought Risk Atlas

The U.S. Drought Monitor classifies droughts into four categories from least intense (D1) to most intense (D4) and has an additional category for drought watch (D0). Drought watch (D0) results in short-term dryness with slowed planting, slowed crop and pasture growth, and some lingering water deficits. Moderate Drought (D1) results in some crop and pasture damage, low streams, reservoirs, or wells, some water shortages, and voluntary water-use restrictions. Severe Drought (D2) results in crop or pasture losses, common water shortages, and water restrictions. Extreme Drought (D3) results in crop and pasture losses, widespread water shortages and water restrictions. Exceptional Drought (D4) results in water emergencies with widespread crop and pasture losses, and a shortage of water in reservoirs, streams, and wells.

Location

A drought is a regional event that is not confined to geographic boundaries and can affect several areas at one time. Also, the severity of the drought may range across the affected areas. All of Oscoda

County is at risk to drought occurrence and impacts. Southeast Elmer Township and Western Comins Township have concentrated farming operations.

Previous Occurrences

The amount of precipitation received each year has the potential to inform the impact drought may have on the county. Oscoda County's average annual precipitation is 29.84 inches, and its average annual snowfall is 78.34 inches.

In Michigan, droughts are monitored and analyzed through its ten climate divisions. According to the *2019 Michigan Hazard Analysis,* Oscoda County is part of Climate Division 4, along with Alcona, Alpena, Cheboygan, Crawford, Iosco, Montmorency, Ogemaw, Otsego, Presque Isle, and Roscommon Counties. The U.S. Drought Monitor for Climate Division 4 shows the division's area tends to be abnormally dry with some moderate and severe droughts throughout the years (Figure 6-7). Between 1895 and 2018, 51% of the years did not have any drought months in Climate Division 4 according to the *2019 Michigan Hazard Analysis*. The most extreme drought in this climate division occurred in February 1931 with a Palmer Index of -6.13. The division also had droughts in the following time periods: 1895-1896 (15 months), 1908-1911 (37 months), 1913-1915 (21 months), 1925-1926 (10 months), 1930-1931 (12 months), 1948-1949 (17 months), 1955-1956 (12 months), 1963-1964 (8 months), 1976- 1977 (11 months), 1989-1990 (8 months), 1998-1999 (11 months), and 1999-2001 (21 months).

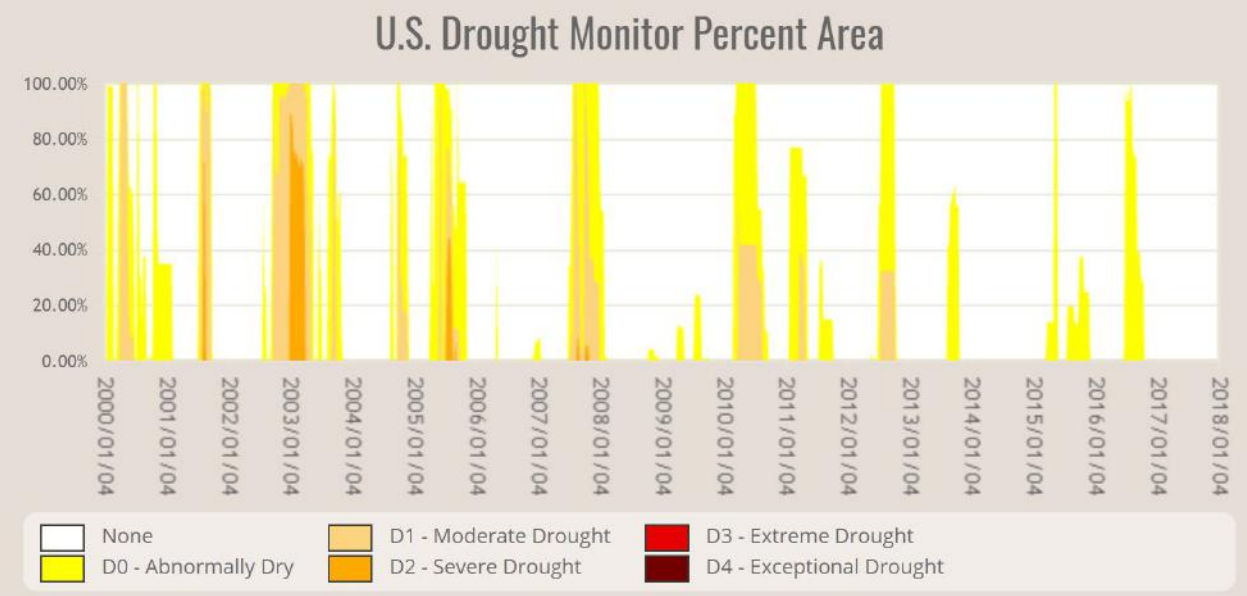


Figure 6-7 U.S. Drought Monitor Percent Area for Climate Division 4
Source: The National Drought Mitigation Center's Drought Risk Atlas

On March 2, 1977, Oscoda County received a Presidential Drought Emergency Declaration during the 1976-77 drought in the Great Plains, Upper Midwest, and West. The drought conditions contributed to wildfires, crop damage, and low Great Lakes levels in Michigan.

Extent

Generally, the county experiences abnormally dry conditions that fall into the drought watch category of the U.S. Drought Monitor. The most severe droughts occurred in 2001, 2003, 2005, and 2007. Despite

not experiencing exceptional droughts, the county does have the potential to experience them in the future.

Probability of Future Occurrences

Due to the limited amount of data available for droughts, an exact probability is difficult to calculate. However, based on the U.S. Drought Monitor Index, Oscoda County experienced drought in 16 out of the 18 years on record, which equates to an 88% chance that a drought will occur each year. It is difficult to predict future occurrences of drought in the county since multiple factors, such as climate change, precipitation, humidity, and temperature, can influence drought conditions. However, droughts are more likely to occur in the summer months when the higher temperatures increase evaporation rates. Based on the data from the U.S. Drought Monitor Index, abnormally dry conditions are predicted for future drought occurrences in the county, which would result in slowed planting, slowed crop and pasture growth, and some water deficits.

Vulnerability Assessment

It is difficult to quantify drought conditions since droughts do not have specific boundaries and are dependent on the weather-related factors. In Oscoda County, impacts from droughts include an increased potential for wildfires, a reduction in farm products, a reduction in timber production, and loss of tourism. Drought conditions may increase the risk for wildfires, which would require residents to be warned and/or evacuated. Droughts can also impact the county's public health through the reduction of the quality and quantity of available water for drinking, business operations, and recreational, agricultural, and forestry management activities. The Au Sable River attracts many tourists for recreational opportunities, and a drought has the potential to deplete this water source and cause fish kill. While droughts have not been severe enough to fully deprive the county of water, it is possible. Additionally, droughts may impact food prices and may result in food product shortages since limited farming occurs in the county due to its soils being moisture deficient with a low/medium amount of nutrients. Oscoda County has 145 farms that have decreased in acerage since 2007. The market value of crop sales is $1,178,000 and livestock sales is $5,729,000.

Lightning

Description

Lightning is a discharge of electricity in the atmosphere between the clouds, air, or ground to equalize the charged regions in the atmosphere. It is still being debated how the electrical charges build up in the clouds. Lightning generally occurs during thunderstorms; however, it can occur without a thunderstorm, such as during intense forest fires and heavy snowstorms. Lightning that occurs without nearby rain is most likely to cause forest fires.

In the United States, approximately 100,000 thunderstorms occur annually according to the *2019 Michigan Hazard Analysis*. According to the National Weather Service Storm Data, in the last 10 years (2009-2018), the U.S. has averaged 27 lightning fatalities and 243 injuries. The *2019 Michigan Hazard Analysis reports* that lightning on average damages more structures and kills and injures more people in the U.S. per year than tornadoes or hurricanes despite being perceived as a minor hazard.

The *2019 Michigan Hazard Analysis* compiled the following statistics from NOAA and the National Lightning Safety Institute (NLSI) for the period of 1959-1994:

- The majority of lightning strikes had one victim (91%)
- The majority of lightning strikes occurred during the summer months: June (21%), July (30%), and August (22%)
- Most lightning strikes occur between 2 p.m. and 6 p.m.

The NLSI estimates that 85% of lightning victims are children and young men (ages 10-35) engaged in recreation or work-related activities. Approximately 10% of lightning strike victims die, and 25% of survivors suffer serious long-term after-effects, such as memory and attention deficits, sleep disturbance, fatigue, dizziness, and numbness. Additionally, the NLSI estimated that annual lightning damage to property exceeds $4-5 billion in the United States.

Michigan's lightning deaths and injuries are fairly consistent with the national trends in terms of location of deadly or injury-causing strikes (Table 6-5, Table 6-6). According to the National Weather Service records through the mid-2000s, Michigan has incurred 101 lightning deaths, 711 lightning injuries, and 810 lightning casualties (deaths and injuries combined). During 1959-1995, Michigan was ranked 2nd nationally (behind Florida) in lightning injuries, 12th nationally in lightning deaths. During 1998-2008, Michigan is ranked 13th in the number of lightning deaths.

Table 6-5 Lightning Related Deaths in Michigan, 1959-2005

Number of Deaths	Location	Percent of Total
29	Open fields, ball fields	29%
26	Under trees (not golf)	26%
11	Boats / water-related	11%
10	Golf course	10%
4	Near tractors / heavy equipment	4%
2	At telephone	2%
19	Other location / unknown	19%

Source: Storm Data, National Climatic Data Center; *2019 Michigan Hazard Analysis*

Table 6-6 Lightning Related Injuries in Michigan, 1959-2005

Number of Injuries	Location	Percent of Total
243	Open fields, ball fields	34%
104	Under trees (not golf)	15%
35	Golf course	5%
26	Boats / water-related	4%
20	Near tractors / heavy equipment	3%
19	At telephone	3%
264	Other location / unknown	37%

Source: Storm Data, National Climatic Data Center; *2019 Michigan Hazard Analysis*

Location
Lightning is not confined to geographic boundaries and is a regional event. Since lightning occurs randomly, it is impossible to predict where lightning will occur and how severe it will be. All of Oscoda County is at risk to the occurrence and impacts from lightning.

Previous Occurrences
Between May 2004 and July 2019, two lightning events have been reported to NOAA in Oscoda County. In 2004, a lightning strike caused a fire at a lumber yard in Fairview. The lightning event in Red Oak on July 23, 2011 had two deaths and one injury from a lightning strike.

Extent
One method to measure lightning extent is by flash density even though not all flashes result in a lightning strike. In Oscoda County, there are 1.5 to 6 flashes per square mile per year on average according to Vaisala, Inc. Another way to measure lightning extent is by the amount of damage reported. Unfortunately, the cost of damage was not reported to NOAA for the two lightning events in Oscoda County.

Probability of Future Occurrences
Since there have been two lightning events reported in the last 16 years, the data shows that approximately one event would occur every eight years. However, not all lightning events may have been reported since events with injuries, deaths, and extensive damages tend to be the only ones reported. Therefore, the number of lightning events and damages may be higher.

Vulnerability Assessment
All existing and future buildings, exposed infrastructure, and populations are at risk from lightning events since it may cause structural and wildland fires, loss of electrical and telecommunications equipment, and damage to buildings or vehicles from falling trees struck by lightning. People that work outside or participate in outdoor recreation activities are at a higher risk to be struck by lightning.

Hailstorms

Description
Hailstorms occur when a severe thunderstorm produces hail that falls to the ground. Hail is formed when the updrafts of the storm carries water droplets above the freezing level, where they form into rounded or irregular lumps of ice that range from the size of a pea to the size of a grapefruit. When the weight of the hail is no longer supported by the air, it falls to the ground and has the potential to batter crops, dent automobiles, and injure people and wildlife. Sometimes, large hail appears before a tornado since it is formed in the area of a thunderstorm that tornadoes are most likely to form.

According to the 2019 Michigan Hazard Mitigation Plan, Michigan has on average 191 hail storms, an expected annual statewide loss of about $16.6 million, no deaths, and approximately 1 injury per year. Despite damaging hail occurring in every part of Michigan, the areas of the state most prone to severe thunderstorms (e.g. the Southern half of the Lower Peninsula) are also most prone to large and damaging hail. The majority of the hailstorms occur during the growing season from May through August when crops have the greatest potential to be damaged by hail.

According to the 2012 Michigan Hazard Analysis, the National Weather Service began recording hail activity in Michigan in 1967. The National Weather Service issues forecasts for severe thunderstorms with sufficient warning time to allow residents to take appropriate action to reduce the effects of hail damage to vehicles and some property. However, little can be done to prevent damage to crops. For example, during September 26-27, 1998, a line of severe thunderstorms moved across northern Lower Michigan producing hail up to 2" in diameter, destroying an estimated 30,000-35,000 bushels of apples at area farms, and damaging several homes and vehicles.

Measuring Hailstorms
Hailstorms are categorized using the TORRO Hailstorm Intensity Scale, which ranges from H0 (Hard Hail) to H10 (Super Hailstorms).

Location
Hailstorms are regional events that frequently accompany thunderstorms, and are not confined to geographic boundaries. The severity of hailstorms may range across the affected areas. All of Oscoda County is at risk to the occurrence and impacts from hailstorms. According to the National Weather Service, Oscoda County is in an area of the United States that has on average two days of hailstorm events per year.

Previous Occurrences
Between January 1983 and April 2019, Oscoda County had 49 hailstorms reported to NOAA. Since the 2014 Oscoda County Hazard Mitigation Plan Update, Oscoda County has had four reported hail events with no damages, injuries, or deaths.

Extent
The greatest extent hail reported in Oscoda County was 1.75 inches, which is correlates to H6 (Destructive) on the TORRO Hailstorm Intensity Scale. According to the scale, hailstones of this size are equivalent to a golf ball and can damage ground aircraft and brick walls.

Probability of Future Occurrences
With 49 events reported in the past 37 years, Oscoda County experiences approximately one event every 0.7 years. However, not all hailstorm events and damages may have been reported to NOAA, which means the number of events and damages may be higher.

Vulnerability Assessment
All existing and future buildings, exposed infrastructure, and populations are at risk from hailstorms since hail causes damage to roofs, brick walls, glass, landscaping, crops, and cars. Hail can also damage roads, sidewalks, bridges, and above ground utilities. Hail has the potential to cause injury and death, and populations are advised to take shelter when an event occurs.

Technological Hazards

Infrastructure Failures

Description
Infrastructure provides essential services, such as electric power, heating, air conditioning, water, sewage disposal and treatment, storm drainage, communications, and transportation. Infrastructure failures occur when public or private utility infrastructure becomes temporarily disabled. These failures can occur at any time and last from a few seconds to weeks. Infrastructure failures also cause widespread economic losses to businesses and industries, limit security, and alter lifestyles. Generally, the elderly, children, impoverished individuals, and people in poor health are most impacted by infrastructure failures. For example, people unable to afford generators or have access to fireplaces will have more difficulty getting through the failure.

Since infrastructure is becoming more complex and interdependent, these failures can be large in scope and magnitude. For example, a power outage during extreme heat and cold events has the potential to cause a person to die in their homes which creates a public safety emergency, and it may cause water or wastewater treatment systems to become inoperable which may result in a public health emergency. Additionally, northern Michigan has fewer infrastructure networks than an urban area; however, a failure affects a larger geographical area since residences and businesses are spread out.

Michigan's infrastructure is aging, which is affecting maintenance funding and user demand. Additionally, Michigan's codes and standards for the design, construction, and operation of public and private utility infrastructure require a minimum level of structural integrity and operational performance, which is not adequate to protect infrastructure during a disaster. In 2018, the State of Michigan established the Michigan Infrastructure Council to develop a 30 year statewide strategic framework to address the need for infrastructure improvements in Michigan. For more information, see the following website: https://www.michigan.gov/mic.

Location
Since the population and businesses are spread throughout Oscoda County, the entire county is susceptible to infrastructure failures. Even though the county has a large amount of forested areas, infrastructure does traverse these areas.

Previous Occurrences and Probability of Future Occurrences
In 2004, a large area of Northeast Michigan temporarily lost phone service due to a beaver cutting through a fiber optic line. The potential for an incident does exist based on the age of the county's infrastructure and the availability of funding for maintenance efforts.

Extent
Since Oscoda County is classified as rural, its infrastructure is spread over a large geographic area. If there is an infrastructure failure, a large area would be impacted. For example, Mio and Fairview account for approximately 28% of the residences in Oscoda County. If a failure occurred with the natural gas delivery system, all of the residences would be impacted as well as most of the businesses.

Vulnerability Assessment

About 20.9% of the county's population is aged 19 and under, and 26.2% of Oscoda County's population is 65 years and older with a median age of 51.8 years. Despite disability data being based on a sample, the data shows 41.3% of the county's population has a hearing, vision, cognitive, ambulatory, self-care, or independent living disability.

In Oscoda County, the electrical system consists of above ground power transmission lines that traverse forested areas, with the exception of the downtown business district in Mio. Damage to these lines would cause a power outage over a large area since the county is rural in nature. A power outage would impact the population based on the time of year (winter would require heating stations to be set up and summer would require cooling stations to be set up), and if the population has any medical issues that require machines or refrigerated medicine. Also, much of the county is not covered by cell phone service due to its topography and lack of infrastructure. Businesses, residents, and visitors would not be able to reach out to family and friends, or call for emergency services if the existing communication infrastructure fails. Damage to the roads would cause them to be closed until fixed. These road closures would increase drive times and emergency response times.

Structural Fires

Description

Structural fires occur when any fire ignites one or more structures of residential, commercial, industrial, institutional, or other type. These fires are considered to be the most common hazard with most incidents being limited in scale and not having the ability to threaten or harm an entire community. However, fires in facilities, such as hotels, entertainment venues, schools, and hospitals, pose a great risk due to the large number of persons involved.

According to the National Fire Protection Association and the U.S. Fire Administration, the U.S. had 499,000 structure fires and 3,400 civilian fire deaths in 2017 with a national average of 2.3 deaths and 9.3 injuries per 1,000 fires. Michigan generally matches the national trend for structure fires.

From 1975 to 2009, the number of reported fires in Michigan has trended downwards, with annual numbers fluctuating. In 2003, the Fire Marshal Division of the Michigan Department of Licensing and Regulatory Affairs reported nearly 19,000 structural fires occurred in Michigan resulting in 161 deaths, 624 injuries, and $230 million in estimated damages. In 2006, Michigan's fire death rate was 15.4 persons per million, which ranked it in the middle of all states. In 2017, the U.S. Fire Administration reported that Michigan reported 3.7 deaths and 15.6 injuries per 1,000 fires through the National Fire Incident Reporting System.

Location

All of the existing and future structures in Oscoda County are at-risk for a structural fire.

Previous Occurrences and Probability of Future Occurrences

According to the Michigan Department of State Police Fire Marshal Division in 1998, there were 6.58 structural fires and other types of fires per 1000 persons in Oscoda County. On May 4, 2016, the historic courthouse in Mio was destroyed by a fire. In 2018, Oscoda County received 54 fire calls with 15 structural fire calls, 12 vehicle fire calls, and 27 other fire calls according to the National Fire Incident Reporting System for Michigan. The fire service had one fire related injury, there was one civilian fire

related death in 2018, and the total fire loss amount was $70,500. All of the existing and future buildings are at-risk to a structural fire dependent on the age of the structures, infrastructure, and the distance between structures. The 1998 data and the 2018 data shows the number of structural fires has increased over time.

Extent
All existing and future structures are at-risk of a structural fire in Oscoda County.

Vulnerability Assessment
All of the existing and future buildings, populations, and infrastructure in Oscoda County are at-risk to a structural fire. The county has aging housing stock and infrastructure that was built under building codes and rules for fire prevention that are no longer in effect today. Aged electrical lines increase a buildings risk for structural fires. Also, buildings without smoke and carbon monoxide detectors increase the risk for deaths. If not contained, the structural fires can turn into wildfires.

Oscoda County relies on a network of township volunteer fire departments, which means there is a lack of full-time professional firefighters who are available to conduct fire inspections and take other preventive measures to lessen the threat of structural fires. Therefore, efforts in Oscoda County are directed at fire suppression and make it challenging to maintain sustainable fire prevention and inspection programs. Additionally, some communities may not have fire prevention codes and rely on the State Rules for Fire Prevention, while other communities have developed local ordinances. However, the costs of compliance for existing buildings may be prohibitive for business owners, yet it would be beneficial for new construction to comply with both State building code and State Rules for Fire Prevention.

Dam Failure

Description
A dam is either man-made or constructed by wildlife, and controls the flow of water for agriculture, flood-control, artificial lakes, municipal water supplies, and energy generation. A dam failure occurs when an impoundment either collapses or fails which results in flash flooding downstream or water pouring over the top of the dam during a flood event. This failure may be due to poor operation, lack of maintenance, or vandalism of the dam. Dam failures can result in loss of life and extensive damage to property and natural resources since they occur unexpectedly.

According to EGLE, there are 2,500 dams in Michigan with 813 regulated by Part 307, Inland Lake Levels, and 235 regulated by Part 315, Dam Safety of The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The dams regulated by Part 307 have a court issued order that establishes the level at which the lake is to be maintained; while the dams regulated by Part 315 are over 6 feet in height and over 5 acres are impounded during the design flood. Additionally, the Federal Energy Regulatory Commission (FERC) regulates 99 hydroelectric dams under the Federal Power Act. Since 1888, EGLE has documented approximately 302 dam failures in Michigan with an estimated average annual property and crop damage of $0.3 million.

Part 315 requires EGLE staff to determine the hazard potential classification for each dam according to the potential downstream impact the dam would have if it failed and to establish an inspection

schedule. Dam inspections are required every three to five years for state regulated dams based on their hazard potential rating. For dams classified with a high or significant hazard potential, dam owners are required to prepare and maintain emergency action plans. Additionally, owners are required to have the local emergency management coordinators review the plans for consistency with local emergency operations plans before the owners submit the emergency action plan to EGLE.

The FERC licenses and inspects private, municipal, and state hydropower projects. The FERC requires every applicant to develop and file an emergency action plan with the Regional Engineer unless granted a written exemption. The plan describes the actions that will be taken to moderate or alleviate a problem at the dam and the actions that will occur to respond to dam incidents or emergencies. It also includes inundation maps that identify critical infrastructure and at-risk populations. A yearly comprehensive review of the emergency action plan is conducted, which may include a functional exercise with local emergency management officials.

Location

There are dams in all of Oscoda County's townships (Figure 6-8). The Mio Dam in Big Creek Township is the only dam in the county that has a high hazard potential. All other dams have a low hazard potential.

Previous Occurrences and Probability of Future Occurrences

Oscoda County has not had any previous reported dam failures. According to the National Inventory of Dams, Oscoda County has fifteen dams with an average age of 69 years (Table 6-7). Based on the aging infrastructure, there is a potential for a dam failure. Proper dam maintenance procedures may be able to predict and prevent the possibility of a future event.

Further analysis will only focus on the Mio Dam since it is the only dam in the county with a high hazard potential. The other dams in the county have a low hazard potential and are not required to have an emergency action plan. Therefore, the low hazard potential dams will not be further analyzed at this time.

Extent

The extent of a dam failure can be measured by the amount of damage that occurs and the number of deaths and injuries. Mio Dam is located in Big Creek Township near a population center. Despite a previous dam failure not occurring, the Mio Dam is 104 years old and has the potential to fail.

Vulnerability Assessment

Mio Dam has a high hazard potential, which means there is some development downstream in the dam's hydraulic shadow and it is expected there will be environmental impacts from the release of contaminated sediments behind the dam. Consumers Energy owns the Mio Dam and has compiled inundation maps for the Au Sable River that show failure of the dam would flood homes in the McKinley area and campgrounds on Alcona Pond. The inundation maps for the Mio Dam can be found in the Mio Emergency Action Plan since they are protected copies that cannot be placed in other plans or re-distributed.

A flood event due to a dam failure would prevent access to buildings, carry people and vehicles away, cause businesses to lose their businesses and inventories, and residents to lose their houses and belongings. About 80.2% of the county's housing structures were built before 1980. Buildings would be

damaged, destroyed, and compromised, and would develop mold, rot, and foundation damage from floodwaters. The presence of mold would increase the health risk for populations with breathing conditions. Floodwaters may damage roads, bridges, electrical systems, communication systems, overflow sewers, and impact natural gas tanks where they are at-risk for fire or explosions. Roads may be close for long periods of time, which would impact traffic flow and emergency response times. Floodwaters also can conceal damaged electrical wires and debris. Contaminants and pollutants in the floodwaters can degrade watersheds, and increase the population's risk for diseases, infections, and injuries. Flooding from a dam failure would be costly. Possible evacuation procedures should be put in place, and residents and visitors should be aware of evacuation routes.

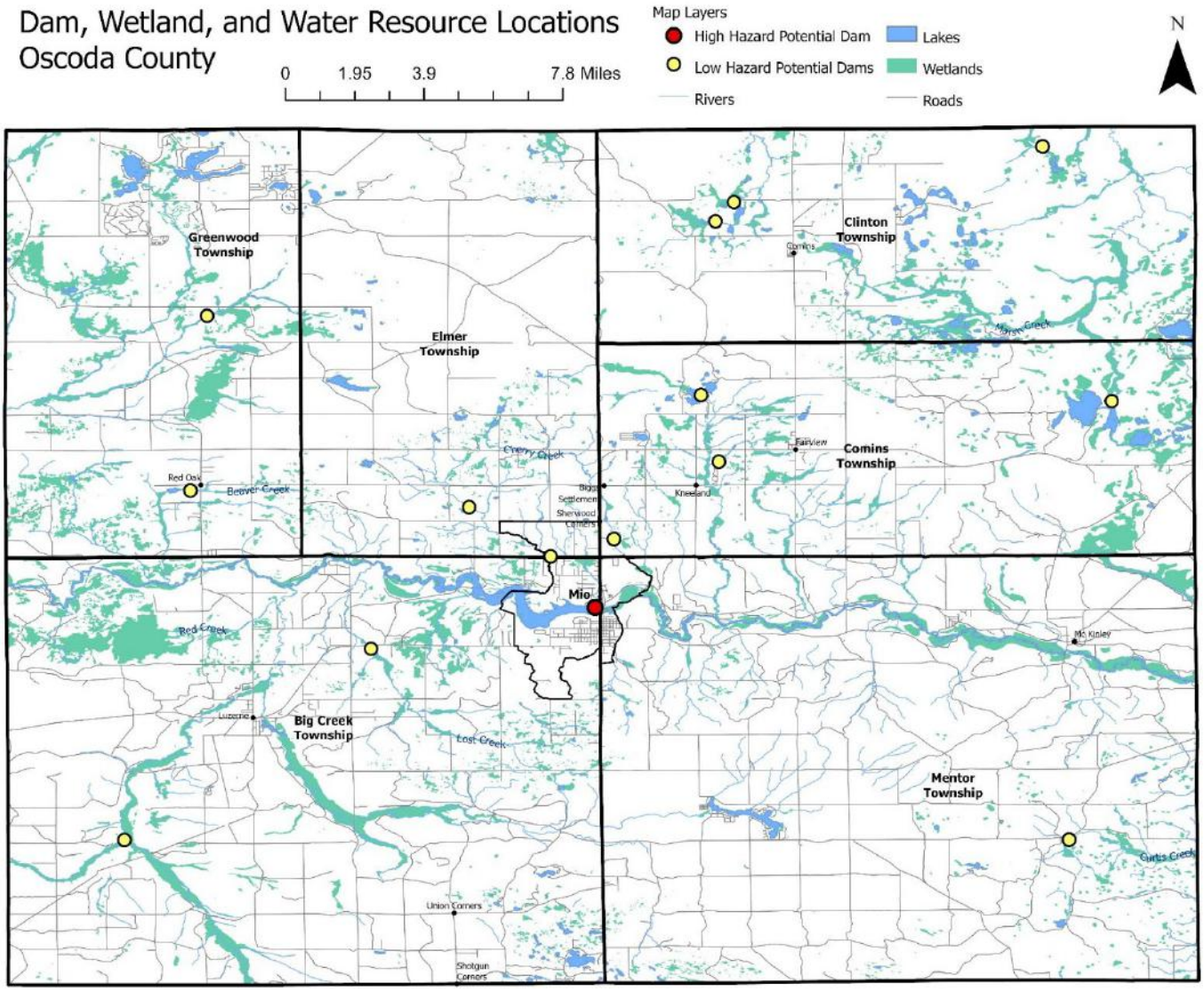


Figure 6-8 Dam, Wetland, and Water Resource Locations in Oscoda County

Table 6-7 Oscoda County Dams									
	Name	Height (ft)	Storage (acre-feet)	Location	Regulatory Agency	Dam Type	Year Completed	Dam Purpose	Hazard Potential
1	Pankey Dam/Dumka Dam	10	60	Lost Creek	State	Private	1900	Recreation	Low
2	Rhoads Dam	9	120	Gilchrist Creek	State	Private	1900	Other	Low
3	Davis Dam	17	50	Honeywell Creek	-	Private	1900	Recreation	Low
4	Mio Dam	38	6,061	Au Sable River	Federal (FERC)	Public Utility	1917	Hydroelectric	High
5	Woodland Dam	22	150	Boiling Springs Creek	State	Private	1931	Recreation	Low
6	Reed Ranch Dam	14	650	Upper South Branch of the Thunder Bay River	State	Private	1938	Recreation	Low
7	Nawakwa Dam/Bullock Creek Dam	15	120	Bullock Creek	State	Private	1940	Recreation	Low
8	Bills Dam	14	50	Honeywell Creek	-	Private	1961	Recreation	Low
9	Upper Boron Dam/Upstream Dam	10	56	Wright Creek	State	Private	1962	Recreation	Low
10	Glen Lake Dam	15	150	Beaver Creek	-	Private	1975	Recreation	Low
11	Okie Kauffman Dam	20	82	Guslers Creek	State	Private	1975	Recreation	Low
12	Blamer Dam	15	60	Cherry Creek	State	Private	1976	Recreation	Low
13	Red Shoulder Unit #1 Dam	7.5	70	Tributary to Wilbur Creek	State	Federal	2000	Recreation	Low
14	Perry Lake Dam	9.1	315	Perry Creek	State	Private	2010	Recreation	Low
15	Hunt Creek Dam	14	90	Hunt Creek	State	Private	-	Other	Low
Source: National Inventory of Dams, Retrieved July 2019									

Transportation Hazardous Material Accident

Description
A transportation hazardous material incident is an uncontrolled release of hazardous materials during transport that pose risks to health, safety, property, and the environment. All modes of transportation (e.g. highway, railroad, seaway, airway, and pipeline) carry thousands of hazardous material shipments on a daily basis through local communities. A transportation accident involving any of the hazardous material shipments could cause a local emergency that would affect the immediate vicinity of the accident site or a small portion of the surrounding community. The Pipeline and Hazardous Materials Safety Administration of the U.S. Department of Transportation regulates over 1 million daily shipments of hazardous materials in the United States.

All areas in Michigan are vulnerable to a hazardous material transportation incident with Southern Michigan being more vulnerable due to its highly concentrated populations. The State has experienced numerous small scale incidents that are responded to by local fire departments and hazardous material teams. Fortunately, Michigan has not experienced large scale incidents.

Location
Mio (Big Creek, Elmer, and Mentor Townships), Fairview (Comins Township), and Comins (Clinton Township) are vulnerable to transportation hazardous material accidents.

Previous Occurrences and Probability of Future Occurrences
Oscoda County does not have any major accidents reported, but may have had minor accidents that were not reported. However, there is the potential for an accident since M-72 and M-33 run through Oscoda County and intersect at Mio.

Extent
The extent of a transportation hazardous material accident can be measured by the location of an incident. M-72 and M-33 are the most susceptible to a transportation hazardous material accident since these are the major thoroughfares in the county.

Vulnerability Assessment
Existing and future buildings, infrastructure, and populations located along the major roadways, M-72 and M-33, are at-risk for a transportation hazardous material accident. An accident has the potential to leak material into the county's surface water and groundwater systems, which would impact wells. In the Fairview area, there is an Amish Community that consists of approximately 50 households, two church districts and three schools. Additionally, an accident could cause damage to buildings near the road, other vehicles, and damage communication and utility infrastructure that could cause power outages and a loss of communication lines. Between 1,290 to 6,807 vehicles travel on Oscoda County's roads. Dependent on the severity of the incident, individuals may experience chemical burns, nausea, vomiting, poisoning, and disorders of the body's organ systems. Businesses may close and a spill could cause the soil around businesses and residences to become contaminated.

Transportation Accidents (air, land, and water)

Description
Transportation crashes or accidents involve air, land or water-based commercial passenger carriers. These accidents can result in mass casualties and tremendous injuries due to large numbers of passengers, unpredictable weather, mechanical failures, and human error. These accidents have the potential to strain local response and medical services. Airplane accidents tend to occur either during take-off or landing according to the NTSB and airline industry. When responding to these accidents, it may be difficult to suppress the fires, rescue and provide first aid to survivors, establish a mortuary facility, detect the presence of explosive, radioactive, or other hazardous materials, and provide crash site security and crowd control. Water transportation accidents may require underwater rescue and recovery efforts. Vulnerable populations to these hazards include communities near airports, communities with railroad tracks through them, communities with commercial intercity passenger bus or local transit bus service, communities with school bus service, and communities with commercial marine passenger service or along water bodies.

Michigan has approximately 19 commercial passenger airports, more than 130 certified intercity carriers that provide passenger, charter, commuter, and special bus service to 220 Michigan communities with six offering regular route service, an intercity rail passenger system that consists of 568 route miles, along three corridors, serving 22 Michigan communities, 72 local bus transit systems serving 85 million passengers and 20 commercial marine passenger ferries.

Location
The entire county is susceptible to air, land, and water transportation accidents with the water accidents strictly occurring on all waterways (rivers, streams, lakes, etc.). The air transportation accidents have a greater chance of occurring at the two private airports in Big Creek and Greenwood Townships, the county-owned airport in Mentor Township, and in the areas of the small privately-owned runways.

Previous Occurrences and Probability of Future Occurrences
Oscoda County does not have any major accidents reported. However, this is the potential for accidents on all the county's roadways, waterways, and at the airports.

Extent
All of Oscoda County is at-risk for an air, land, or water transportation accident. Air accidents would primarily occur around the privately-owned and publicly-owned airports. Land transportation accidents would primarily occur along the roadways and motorized trails. Water transportation accidents would primarily occur on the county's major lakes, and on the Au Sable and Big Creek Rivers. Even though Oscoda County does not have any reported major air, land or water transportation accidents, the county does have the potential for accidents. The extent can be measured by the amount of property damages, deaths, and injuries. According to the University of Michigan Transportation Research Institute's *Societal Costs of Traffic Crashes and Crime in Michigan: 2017 Update*, Oscoda County has not had any fatal traffic crashes, 2 traffic crashes with serious injuries, and property damage for 254 out of 307 traffic crashes. The average cost of a traffic crash casualty was $23,452 with the total traffic crash cost for all 307 accidents equaling $7,199,819. Unfortunately, data is unavailable to quantify the extent of air and water transportation accidents.

Vulnerability Assessment

Oscoda County does not have passenger rail service, commercial marine passenger service, intercity bus service or commercial airports. However, it does have private and public airports, and school bus and specialized public transit services that could result in death and injuries if an accident occurred. An air transportation accident has the potential to cause deaths, injuries, and large amount of property damage if a plane hits the county's buildings, infrastructure, or year-round and/or seasonal populations. Since the county-owned airport is located in Mio, an accident around this airport would have large property damages and high casualties due to its commercial and residential areas. Additionally, this airport is near the Mio Dam, which is deemed a high hazard dam and a fixed hazardous material site. Land transportation accidents have the potential to cause damage to other vehicles, injuries, and possibly death since 1,290 to 6,807 vehicles travel on the county's roads. Dependent on the severity of the accident, it can cause a road closure that would impact the county's traffic flow patterns. Additionally, it could reduce emergency service response times. Water transportation accidents can cause death and injuries to individuals as well as high property damage costs. Dependent on the severity of the incident, the accidents have the potential to contaminate the water resources.

Oil and Gas Accidents (well and pipeline)

Description

Oil and gas well or pipeline accidents occur when there is an uncontrolled release of oil or natural gas, or the poisonous by-product hydrogen sulfide, from production wells or from a pipeline that causes property damage, environmental contamination, injuries, and loss of life. Michigan is a major consumer and producer of oil and natural gas products that are transported and stored throughout the state. The State has the greatest underground natural gas storage capacity in the nation and supplies natural gas to its residents and neighboring states. However, these underground pipelines have the potential to leak, rupture, and explode, which puts many communities at risk. In Michigan, oil and natural gas wells are located in 63 counties in the Lower Peninsula. Between 1927 and 2009, there have been 56,525 oil and natural gas wells drilled in Michigan with about half of them producing oil and gas. As of 2012, Michigan wells have produced approximately 1.4 billion barrels of crude oil and 6 trillion cubic feet of gas. Despite being highly regulated and having a fine safety record, the threat of oil and gas well accidental releases, fires, and explosions still exists. Additionally, unplugged abandoned wells impact the health and safety of surrounding communities since they have the potential to allow natural gas to flow underground and accumulate in nearby buildings, contaminate nearby water wells, and leak into soils and the water system.

In addition, well and pipeline accidents have the potential to release hydrogen sulfide, which is a poisonous gas that explodes when mixed with air temperatures of 500 degrees or above. Hydrogen sulfide gases can be found around oil and gas wells, pipeline terminals, storage facilities, and transportation facilities where the gas or oil have a high sulfur content. Hydrogen sulfide has a "rotten egg" odor in concentrations from .03 parts per million (ppm) to 150 ppm, while in larger concentrations it paralyzes the olfactory nerves, so the odor is no longer an indicator of the hazard. Over 1,300 wells in Michigan have been identified as having hydrogen sulfide levels exceeding 300 ppm. At concentrations of 700 ppm, one breath of hydrogen sulfide can kill. Hydrogen sulfide can cause the failure of high-strength steels and other metals, which requires all company and government responders to be familiar with the emergency procedures and the kind of materials safe for use in sour gas well response.

Location
Oscoda County's oil and gas wells and pipelines are located throughout the entire county since the sedimentary bedrock holds gas and oil deposits. The pipelines run along the western and northern portions of the county with one major high pressure gas line. Smaller lines deliver natural gas to homes and business, and from wells to processing/compressor facilities. These facilities remove the brine and moisture from the natural gas and transmit the gas to major processing and storage facilities.

Previous Occurrences and Probability of Future Occurrences
Oscoda County has not had any reported major incidents; however, the potential for an incident does exist.

Extent
The majority of the oil and gas wells and pipelines are located in the northern section of the county with a small cluster in the south-central area of the county. According to 2017 data from EGLE, Oscoda County had 559 oil and gas wells with 11 active, 87 plugging approved, 459 producing and 2 temporarily abandoned. There are gas processing facilities in the well fields that are connected to the wells with numerous small, low pressure gas lines. Even though Oscoda County has not had any major reported incidents, the possibility of an oil and gas well and pipeline accident does exist.

Vulnerability Assessment
The existing and future buildings and populations near the oil and gas well and pipelines are at-risk if there is an oil and gas well and/or pipeline accident. These accidents consist of accidental releases, fires, and explosions that would cause damage and/or destruction to the buildings, infrastructure, and natural areas around the event. Oil and gas well and pipeline accidents have the potential to contaminate water wells and spread into the surface water and groundwater systems. These accidents can also negatively impact air quality through the release of hydrogen sulfide that can accumulate in oil and gas wells, pipeline terminals, storage facilities, transportation facilities, and nearby buildings. Hydrogen sulfide can cause paralysis of the olfactory nerves, burns, death, and the failure of high strength metals.

Fixed Site Hazardous Material Accident

Description
Fixed site hazardous material incidents occur when there is an uncontrolled release of hazardous materials from a fixed site that pose risks to health, safety, property, and the environment. Due to technological advances, hazardous materials are present in quantities of concern in business and industry, agriculture, universities, hospitals, utilities, and other facilities. These materials include corrosives, explosives, flammable materials, radioactive materials, poisons, oxidizers, and dangerous gases. Federal and state agencies regulate hazardous materials and many communities have plans and procedures to immediately respond to an incident.

Location
Oscoda County has one SARA III Title II Site: the Mio Dam.

Previous Occurrences and Probability of Future Occurrences

Oscoda County does not have any recorded fixed site hazardous material accidents. However, there is the potential for an accident at Charter Communications. Emergency Plans are on file with the Oscoda County Local Emergency Planning Committee.

Extent
The extent of a fixed site hazardous material accident can be measured by the location and number of the fixed sites containing hazardous materials. Oscoda County only has one fixed hazardous material site in Big Creek Township at the Mio Dam. The affected area is documented in the protected copies of the inundation maps for the Mio Dam.

Vulnerability Assessment
All existing and future buildings, infrastructure, and populations in the inundation area of the Mio Dam are at-risk to a fixed site hazardous material accident. An accident could impact the air quality in Mio, which is a population center in Oscoda County. Individuals affected by the hazardous material may experience chemical burns, nausea, vomiting, disorders of the lungs, kidneys, or liver, and poisoning. An accident could also cause Mio to be evacuated and a need for shelters. It would cause businesses to close and owners may have to pay for repairs caused by the accident. The hazardous material also has the potential to leak into the county's water system and wells, and cause communication and utility infrastructure to fail.

Scrap Tire Fire

Description
Scrap tires end up in dumps and landfills, forestlands, along roads, or in recycling facilities, some of which have more than several hundred thousand tires. The tires provide fuel for fires since the shape of a tire allows air to flow into the interior of a pile of tires, which renders standard firefighting practices nearly useless. Scrap tire fires impact the air, soil and water quality since the burning tires release hazardous compounds into the air, and the tires' oily residue can seep into the ground and water system. Sometimes, the burning oil can spread the fire to adjacent areas and burn for months. These fires can cause an area to become a Superfund site.

Although infrequent, scrap tire fires can become a major hazard affecting entire communities due to the difficulty in extinguishing them and the expensive cleanup. Scrap tire fires differ from conventional fires since small scrap tire fires can require significant resources to control and extinguish, the costs of fire management are beyond what local governments can absorb, the environmental consequences are significant, and the Rubber Manufacturers Association reports that a fire can convert a standard passenger vehicle tire into about two gallons of oily residue.

According to the EPA and the Rubber Manufacturers Association, approximately 290 million tires are discarded in the United States each year, with approximately 80% of the tires being reused or recycled. As of 2017, Michigan generates approximately 10 million scrap tires annually according to the Michigan Department of Environment, Great Lakes, and Energy (EGLE). At the time of the 2014 update, Michigan had more than 24 million scrap tires at disposal sites throughout the state.

Location

The collection of scrap tires can occur throughout Oscoda County. There is a scrap yard off of M-72 (west of Mio) that collects scrap tires. Additionally, the county has had tire recycling collection days in 2017 and 2018.

Previous Occurrences and Probability of Future Occurrences
There have been no recorded occurrences of scrap tire fires in Oscoda County. Based on this data, Oscoda County will not have scrap tire fires in the future. However, with the collection of scrap tires at the scrap yard and in areas that few people know about, there is the potential for a fire in the future.
Extent
Extent can be measured by the number of acres burned and property damage costs. Since Oscoda County has not had a reported scrap tire fire, data is not available to determine the number of acres burned, property damage, and cost to fight the fire. However, there is a potential for an event to occur in an area of the county that few people know has a stockpile of tires.

Vulnerability Assessment
If a scrap tire fire were to occur in the county, all of the county's existing and future buildings and populations would be at-risk. Additionally, neighboring counties would also be at-risk since the fires are difficult to control and can spread across political and geographical boundaries. Depending on the location of a scrap tire fire, it has the potential to cause a wildfire since pre-settlement data shows Oscoda County has a history of wildfires and federal agencies have found the county's communities have a high wildfire risk. Similar to wildfires, scrap tire fires burn property and structures, and have the potential to cause death and injuries for people who become trapped in the fire or are fighting the fire. Scrap tire fires also have high costs due to property damage and firefighting needs. Scrap tire fires can cause a loss in timber production and agricultural revenue from the fire damaging timber supplies and agricultural products, and killing livestock. Communication and power infrastructure can be damaged by the fires resulting in power outages, reduced/loss of warning notifications to the public, and the inability to call for emergency services. Also, residents and businesses may have to evacuate and find shelter.

Human-Related Hazards

Public Health Emergencies

Description
Public health emergencies occur when there is a widespread and/or severe epidemic, contamination incident, bioterrorist attacks, or other situation that negatively impacts the health and welfare of the public. These emergencies include disease epidemics, large-scale food or water contamination incidents, extended periods without adequate water and sewer services, harmful exposure to chemical, radiological or biological agents, and large-scale infestations of disease-carrying insects or rodents. A common characteristic of public health emergencies is that they impact or have the potential to impact a large number of people either statewide, regionally, or locally in scope and magnitude. These health emergencies can occur as primary events or as secondary events from another hazard or emergency (e.g. flood, tornado, or hazardous material incident). The elderly and low income populations are most vulnerable to public health emergencies.

Throughout the years, there have been many pandemics. For example, there was an outbreak of severe acute respiratory syndrome (SARS) in 2003. This virus was a new coronavirus that resulted in over 8,000

infections and a 10% mortality rate around the world. Additionally, a new strain of H1N1 was detected in 2009, which had approximately 300,000 deaths. Older people were less likely to get sick from this disease since they had derived immunity from a flu strain that had circulated in the mid-20th century. Since 2012, Middle East respiratory syndrome (MERS), a coronavirus, has been reported in 27 countries where there have been approximately 2,494 people infected and 858 deaths. In 2017, the World Health Organization (WHO) put SARS and MERS on its priority pathogen list to spur further research into coronaviruses.

On March 11, 2020, the WHO declared the SARS-CoV-2 (COVID-19) outbreak a pandemic. The new coronavirus had not been previously identified in humans and does not have a vaccine or treatment. It was first reported in China on December 31, 2019. In early 2020, COVID-19 began impacting numerous countries around the globe. In response, countries and some states in the U.S. instituted bans and restrictions on travel, instituted nationwide lockdowns, closed schools and businesses, requested study abroad students return to their countries, transitioned from in-person to online classrooms, cancelled/postponed events (e.g. conferences, concerts, sporting events, commencement ceremonies, etc.), requested people call before arriving at hospitals, instituted bans on the number of people that can gather in one area, instituted social distancing of six feet between individuals, and some churches temporarily suspended services. Some citizens responded by purchasing supplies en masse, which caused some supply shortages. On March 13, 2020, the U.S. declared COVID-19 a national emergency and began developing a sweeping relief package, which was signed by President Trump on March 27, 2020. On March 23, 2020, Michigan announced an order for all Michigan businesses and operations to temporarily suspend in-person operations that are not necessary to sustain or protect life, and to stay home unless they are part of the critical infrastructure workforce, engaging in outdoor activities, or performing necessary tasks (e.g. going to the grocery store). On March 28, 2020, President Trump approved Governor Whitmer's request for a Major Disaster declaration in Michigan, which allows Michigan to participate in FEMA programming.

Additionally, Bovine Tuberculosis, a wildlife disease, has impacted the personal, social, and economic health of the residents and visitors of Oscoda County. Government regulations and enforcement actions have affected the County's agriculture and tourism industries.

Location
Public health emergencies do not have geographic boundaries and affect all of Oscoda County.

Previous Occurrences and Probability of Future Occurrences
As of November 9, 2020, there have been 238,308 confirmed cases and 8,008 deaths in Michigan, and 56 confirmed cases and two deaths in Oscoda County. It is impossible to predict when a major event will occur or how severe it will be. However, a pandemic has a higher probability of occurring in areas where there is a high population concentration and during cold weather.

Extent
The extent of a public health emergency can be determined by the number of cases and deaths, and the amount of money spent to prepare for and respond to public health threats. In Oscoda County, District Health Department #2 works with local, state, and federal agencies to prepare for and respond to public health threats. It developed a comprehensive emergency preparedness program capable of responding to a variety of emergency situations with funds from the Centers for Disease Control. Additionally,

Region 3 Healthcare Coalition promotes an all hazards emergency healthcare preparedness program. Also, there is a growing Amish community in Oscoda County, which generally do not participate in immunization programs and makes this community highly vulnerable to a public health emergency. Between March 19, 2020 and November 9, 2020, Oscoda County administered 2,192 tests for COVID-19 with 46 positive tests.

Vulnerability Assessment

A public health emergency will have a severe impact over a large geographic area or in densely populated areas. Additionally, the hazard will have a serious financial impact on residents and businesses. In extreme cases, travel may be prevented, and businesses and schools will be closed. If businesses close for extended periods of time, employees will lose wages and the ability to pay their bills, and the businesses will lose revenue, which may cause them to go out of business and employees to lose their jobs. At risk-populations include individuals who are at higher risk of severe complications from infectious diseases (older adults, pregnant women, children, people with pre-existing medical conditions), individuals with limitations that impact their ability to receive and respond to information, individuals who rely on personal care assistance, individuals with transportation needs, and individuals who have difficulty coping in new environments. About 20.9% of the county's population is aged 19 and under, and 26.2% of Oscoda County's population is 65 years and older with a median age of 51.8 years. Despite disability data being based on a sample, the data shows 41.3% of the county's population has a hearing, vision, cognitive, ambulatory, self-care, or independent living disability. In the Fairview area, there is an Amish Community that consists of approximately 50 households, two church districts and three schools. The DNR develops management plans for wildlife diseases. In Oscoda County, the DNR has created a deer management unit (DMU 452) to manage and prevent the spread of bovine tuberculosis and has created a public outreach program to assist people with identifying wildlife disease and determining what to do.

Terrorism/Sabotage/Nuclear Attack

Description

Sabotage and terrorism involve an intentional, unlawful use of force or violence against persons or property to intimidate or coerce a government or the civilian population to further political, social, or religious objectives. Since sabotage/terrorism objectives are widely varied, the potential targets are also varied. Any public facility, infrastructure, controversial business, assembly place, large computer systems operated by government agencies, financial institutions, healthcare facilities and colleges/universities can be considered a potential target. Regardless, terrorists seek the greatest possible media exposure to frighten as many people as possible. Sabotage/terrorism techniques include bombings, assassinations, organized extortion, use of nuclear, chemical and/or biological weapons, information warfare, ethnic/religious/gender intimidation (hate crimes), state and local militia groups that advocate to overthrow the U.S. Government, eco-fanaticism (destruction or disruption of research or resource-related activities), and narcotics smuggling and distribution organizations.

A nuclear attack is any hostile action taken against the United States that involves nuclear weapons and results in property destruction and/or loss of life. Nuclear weapons are powerful explosive devices that can devastate an area. The entire United States is subject to the threat of a nuclear attack; however,

the strategic importance of military bases, population centers and certain types of industries place these areas at a greater risk. With the end of the Cold War, the threat of a nuclear attack against the U.S. diminished slightly with the dismantling of nuclear warheads aimed at U.S. targets. However, the number of countries capable of developing nuclear weapons continues to grow despite the ratification of an international nuclear non-proliferation treaty. Additionally, nuclear weapons have the potential to be acquired and/or developed by terrorist organizations.

Even though a nuclear attack is unlikely in Michigan, the extent of destruction and casualties from a nuclear weapon still make this hazard a possibility. Unfortunately, there is no way to assess the probability of a nuclear attack and most mitigation strategies would originate from and be prompted by federal initiatives and defense priorities. However, some things should be considered, such as the ability to shelter or evacuate people, maintain government functions and social services, protect critical computer and communications systems, and create redundancies in infrastructure and critical services.

Location
The population centers in Oscoda County are at risk for terrorism, sabotage, and nuclear attack. However, the population centers are small and will not create high profile media coverage.

Previous Occurrences and the Probability of Future Occurrences
In the last 15 years, Oscoda County has not had any recorded incidents of terrorism/sabotage/nuclear attack. Based on this information, Oscoda County would not have any terrorism/sabotage/nuclear attacks in the future. However, an event does have the potential to occur dependent on furthering political, social, and religious interests. Unfortunately, it is impossible to predict when an event will occur and how severe it will be.

Extent
The extent of a terrorism/sabotage/nuclear attack can be measured by the amount of damage that occurs. Since an event has not occurred in the county, no injuries, deaths, or damages have been incurred.

Vulnerability Assessment
Terrorism/Sabotage/Nuclear Attack will have minimal impacts and financial burdens on residents and businesses since the County does not have high profile targets, such as military installations, Federal and State government offices, large population centers, etc. Therefore, terrorism/sabotage/nuclear attack will not be further analyzed at this time.

Civil Disturbance

Description
Civil disturbances occur from collective behavior that results in lawbreaking, a perceived threat to public order, or the disruption of essential functions. Large portions of a community may be encompassed by civil disturbances and require the involvement of multiple community agencies to respond to the disturbance. Some facilities that may be adversely impacted by civil disturbances include government buildings, military bases, colleges/universities, businesses, hospitals, and police and fire facilities. There are four types of civil disturbances:

- **Protests:** Formal organization of demonstrations to achieve collective goals that are threatening, disruptive, and malicious (e.g. political protests, labor disputes, etc.). Sometimes these events result in property destruction, service interruptions, and interference with law-abiding citizens and emergency responders.
- **Hooliganism:** Unorganized, unlawful acts by either an individual or a collective that are inspired by crowds (e.g. disorder following sporting events and college parties, "block parties," etc.). These acts cause property destruction, assaults, disorderly conduct, and criminal victimization. Sometimes hooliganism can include elements of protest.
- **Riots:** A disorganized, violent gathering of people that involves assaults, intimidation, and property destruction. Sometimes, individuals attempt to exploit the disorder (e.g. looting, arson, etc.).
- **Insurrection:** A deliberate effort to disrupt or replace the established government or its representatives (e.g. prison uprisings, political conflicts, ethnic conflicts, etc.).

Large-scale civil disturbances rarely occur; however, they are usually an offshoot of labor disputes with a high degree of animosity between two dissenting parties, high profile/controversial judicial proceedings, the implementation of controversial laws or other governmental actions, resource shortages caused by a catastrophic event, disagreements between special interest groups over a particular issue or cause, or a perceived unjust death or injury to a person held in high esteem by a particular segment of society.

Location
The population centers in Oscoda County are at risk for civil disturbances. However, this hazard has a low chance of occurring in the county.

Previous Occurrences and Probability of Future Occurrences
Oscoda County has not had any recorded incidents of civil disturbances. Based on this information, Oscoda County would not have any civil disturbances in the future. However, an event does have the potential to occur dependent on political, social, and religious interests. Unfortunately, it is impossible to predict when an event will occur and how severe it will be.

Extent
The extent of civil disturbances can be measured by the amount of damage that occurs. Since an event has not occurred in the county, no injuries, deaths, or damages have been incurred.

Vulnerability Assessment
Civil disturbance events will have minimal impacts and financial burdens on residents and businesses since the County does not have areas that would provide high profile media coverage or areas that attract crowds. Therefore, civil disturbance will not be further analyzed at this time.

Oscoda County and its Local Jurisdictions

The Oscoda County Hazard Map shows areas of high wildfire risk in red (pine forests) and yellow (oak-pine forests and aspen-birch forests) (Figure 6-9). The map shows waterways that have a high potential for springtime flooding are in dark green (wetlands from National Wetlands Inventory Data).

The local jurisdictions have base and hazard maps (Figures 6-10 to 6-21). The base maps show the community's infrastructure, facilities, and public lands. The legend below corresponds to the base maps. The hazard maps show the hazards in each jurisdiction. The hazard map display high wildfire risk areas as pine, oak, and aspen-birch forest types, and high riverine flooding risks as all of the wetland types. Information for unincorporated communities are included in the information and maps for the appropriate jurisdiction. Mio is incorporated into Big Creek, Elmer, and Mentor Townships.

MAP LEGEND FOR COMMUNITY MAPS COMMUNITY SERVICES AND FACILITIES			
1 Fire Stations	5 WWTP	9 Health Dept. Buildings	13 DNR Offices
2 Schools	6 Municipal Water Supplies	10 Bus Stations	14 Campgrounds
3 Government Buildings	7 Police Stations	11 Ports/Harbors	15 Industrial Parks
4 Solid Waste Facilities	8 Medical Facilities	12 Colleges/Universities	16 Chambers of Commerce

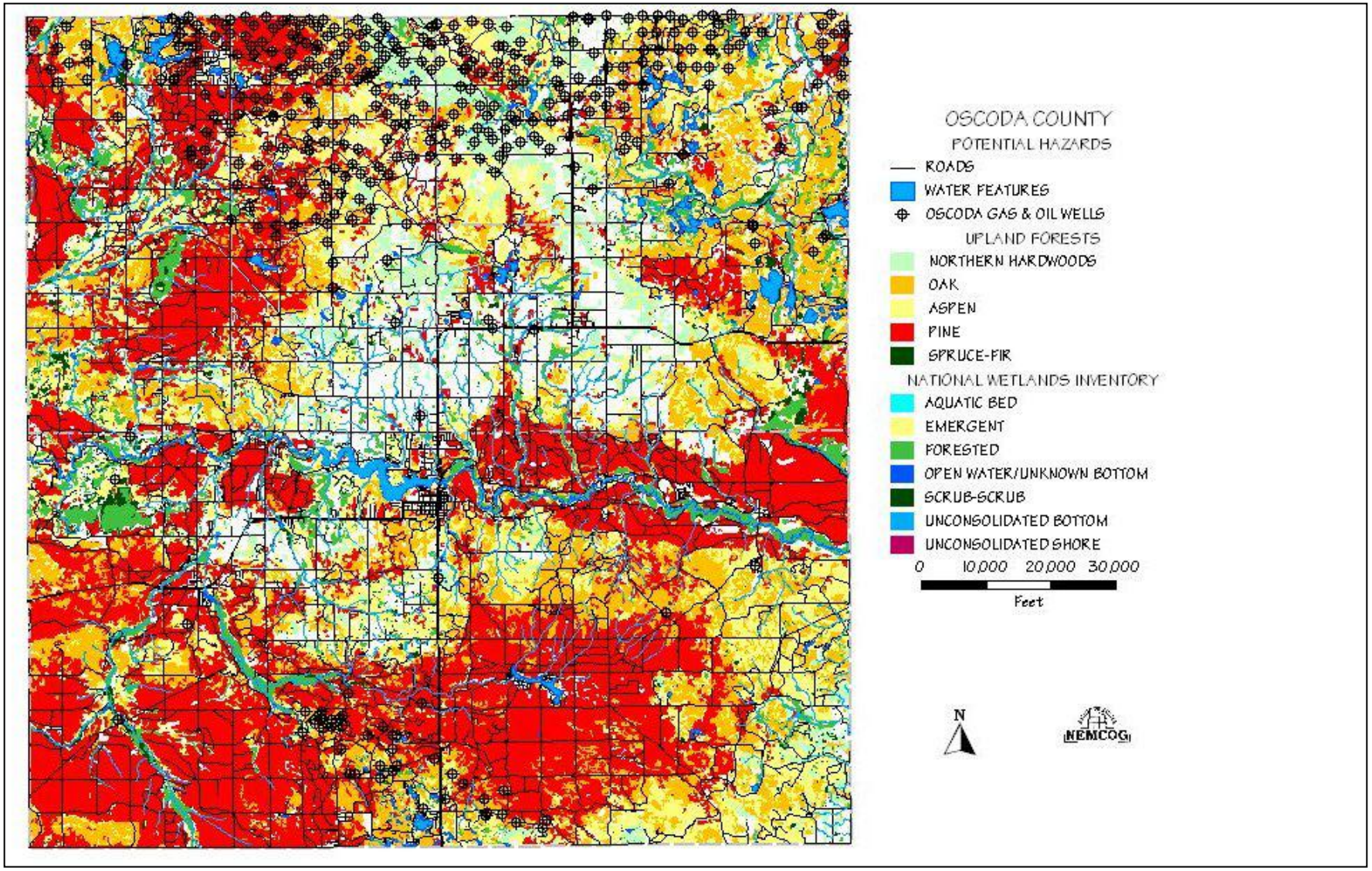


Figure 6-9 Oscoda County's Potential Hazards

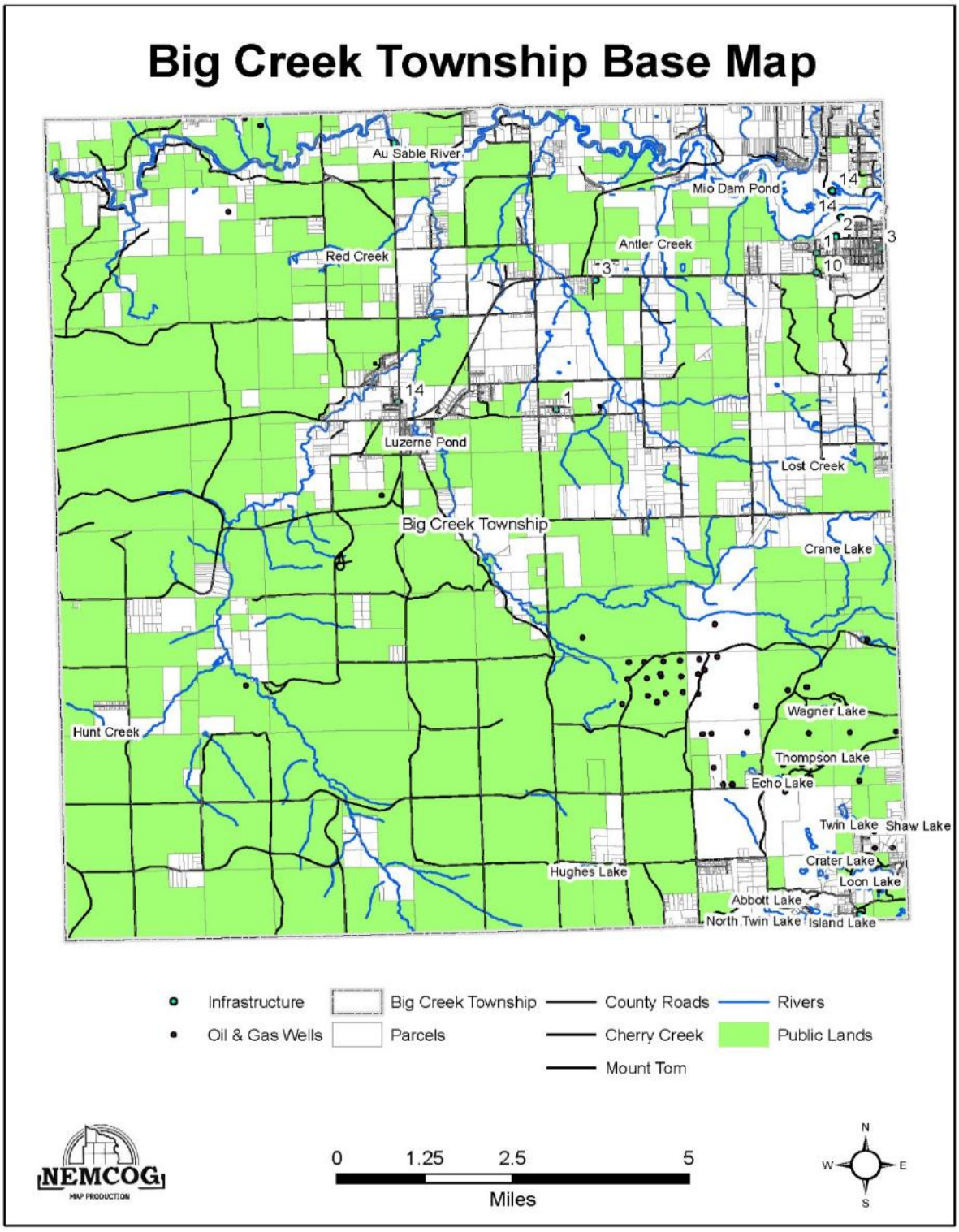


Figure 6-10 Big Creek Township Base Map

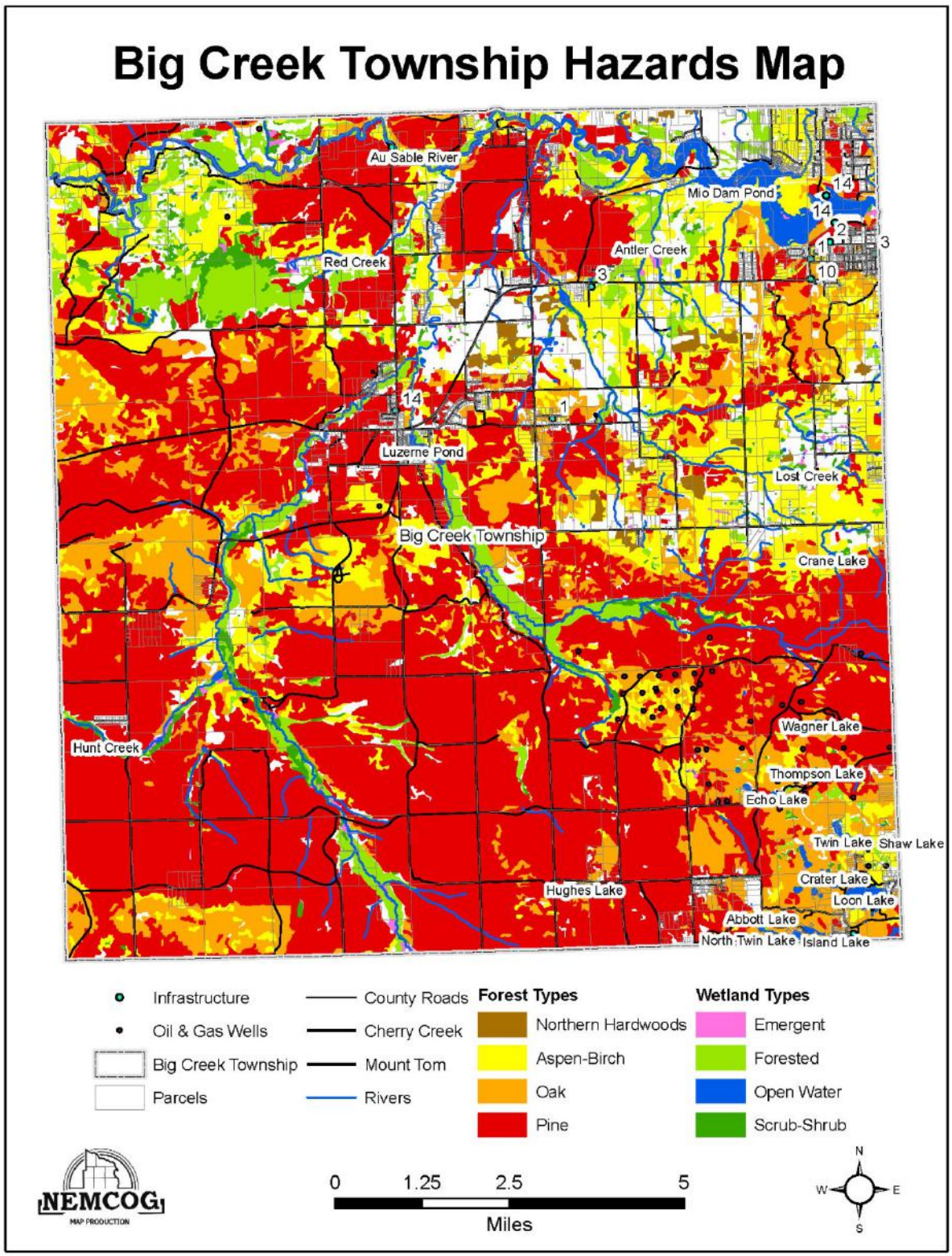


Figure 6-11 Big Creek Township Hazards Map

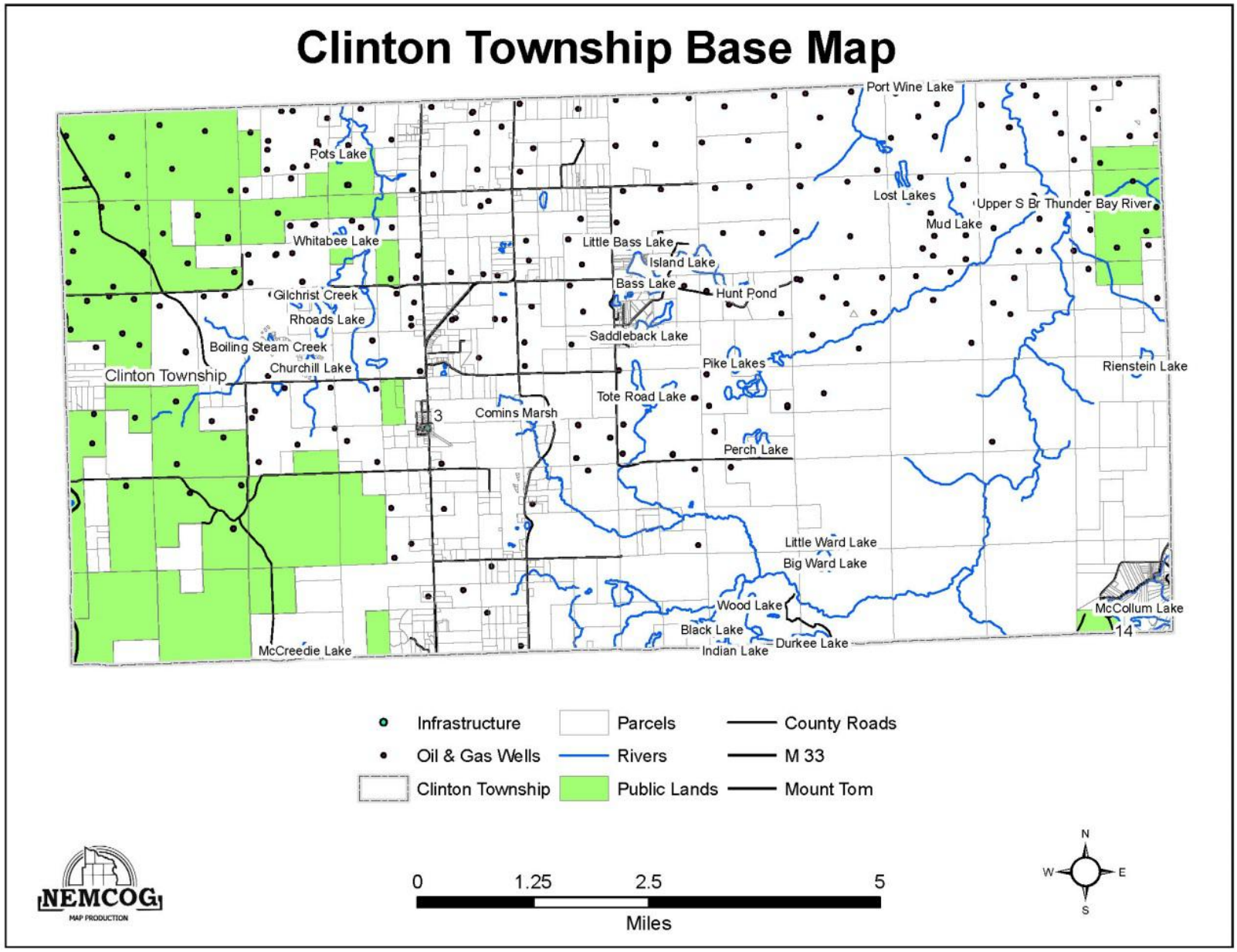


Figure 6-12 Clinton Township Base Map

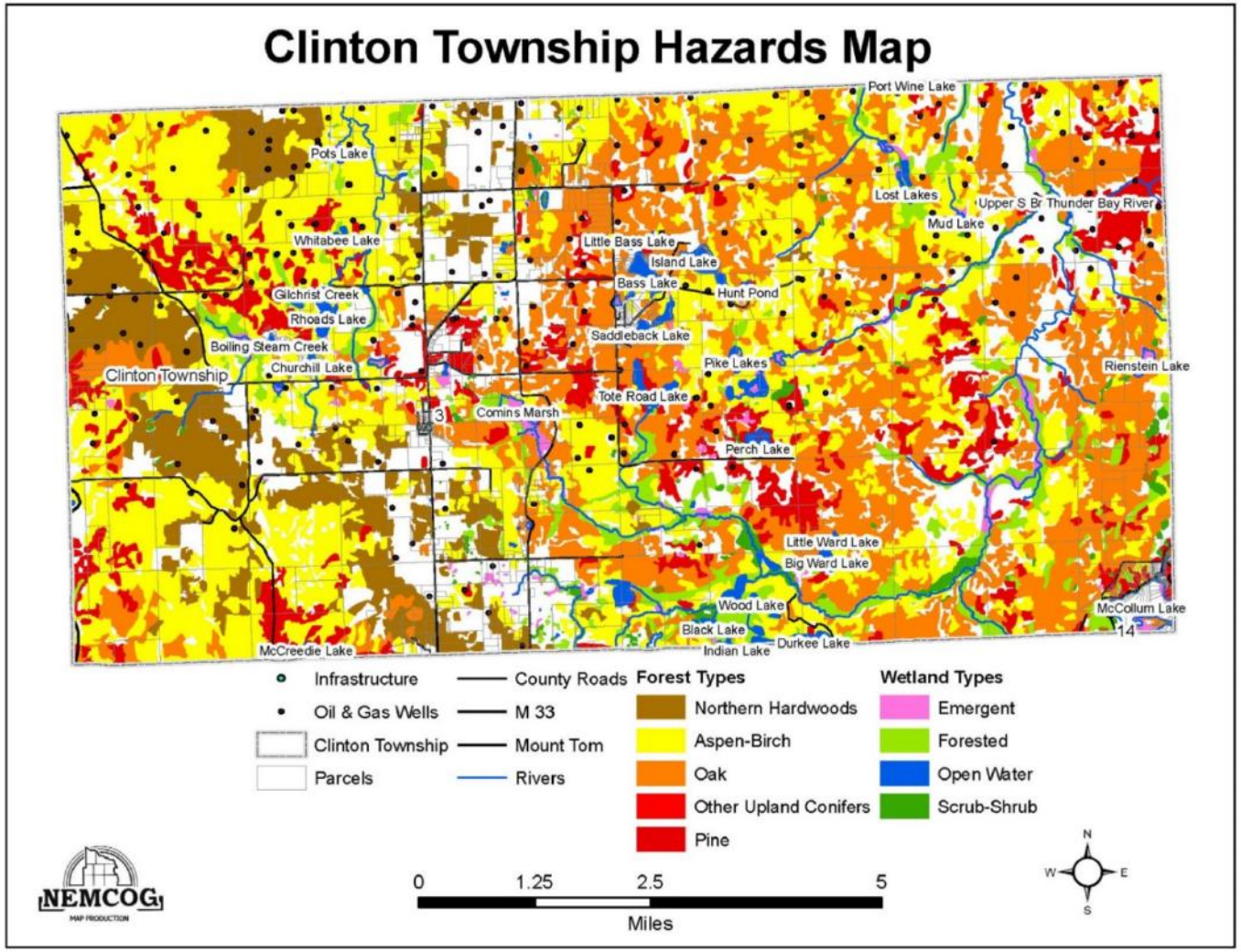


Figure 6-13 Clinton Township Hazards Map

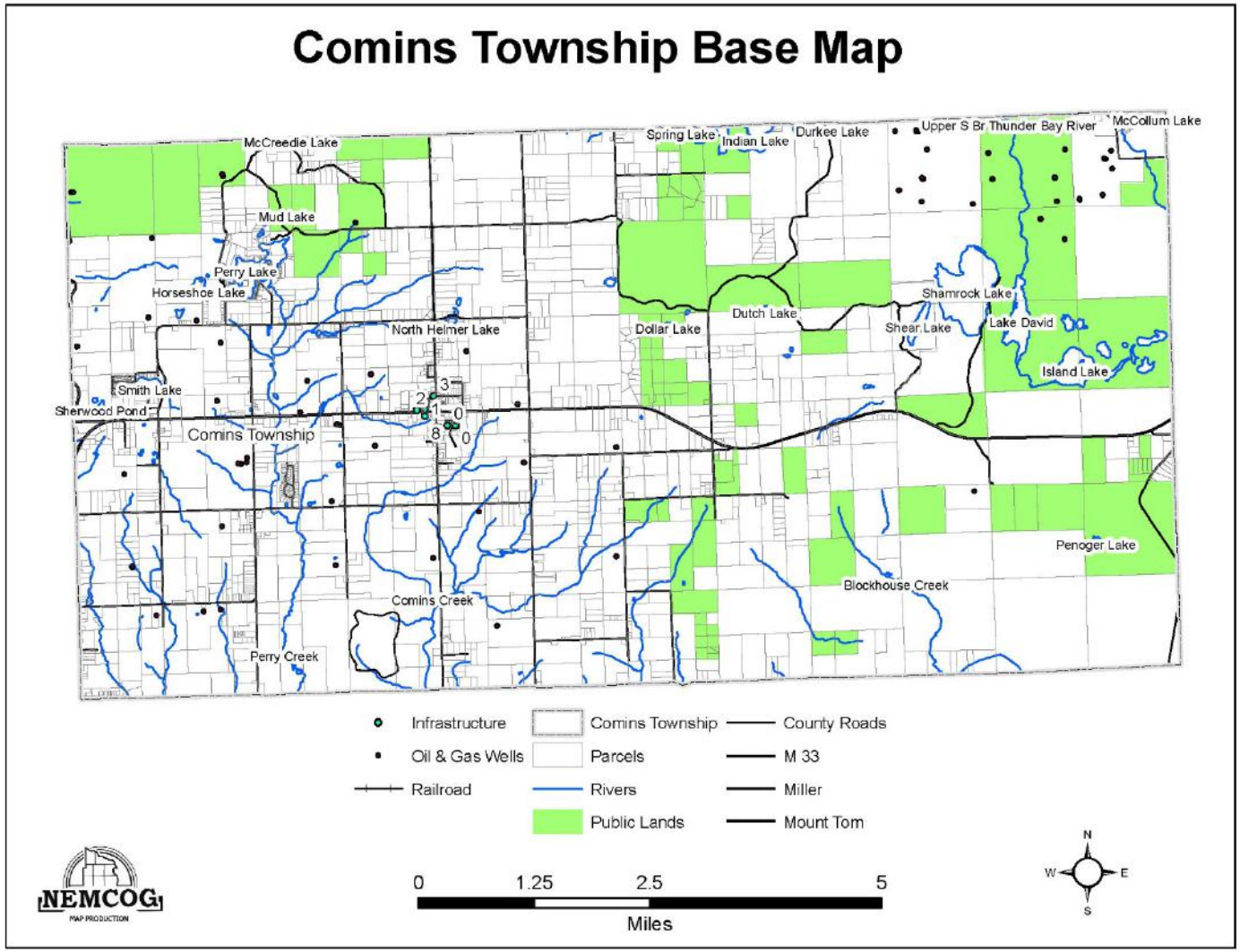


Figure 6-14 Comins Township Base Map

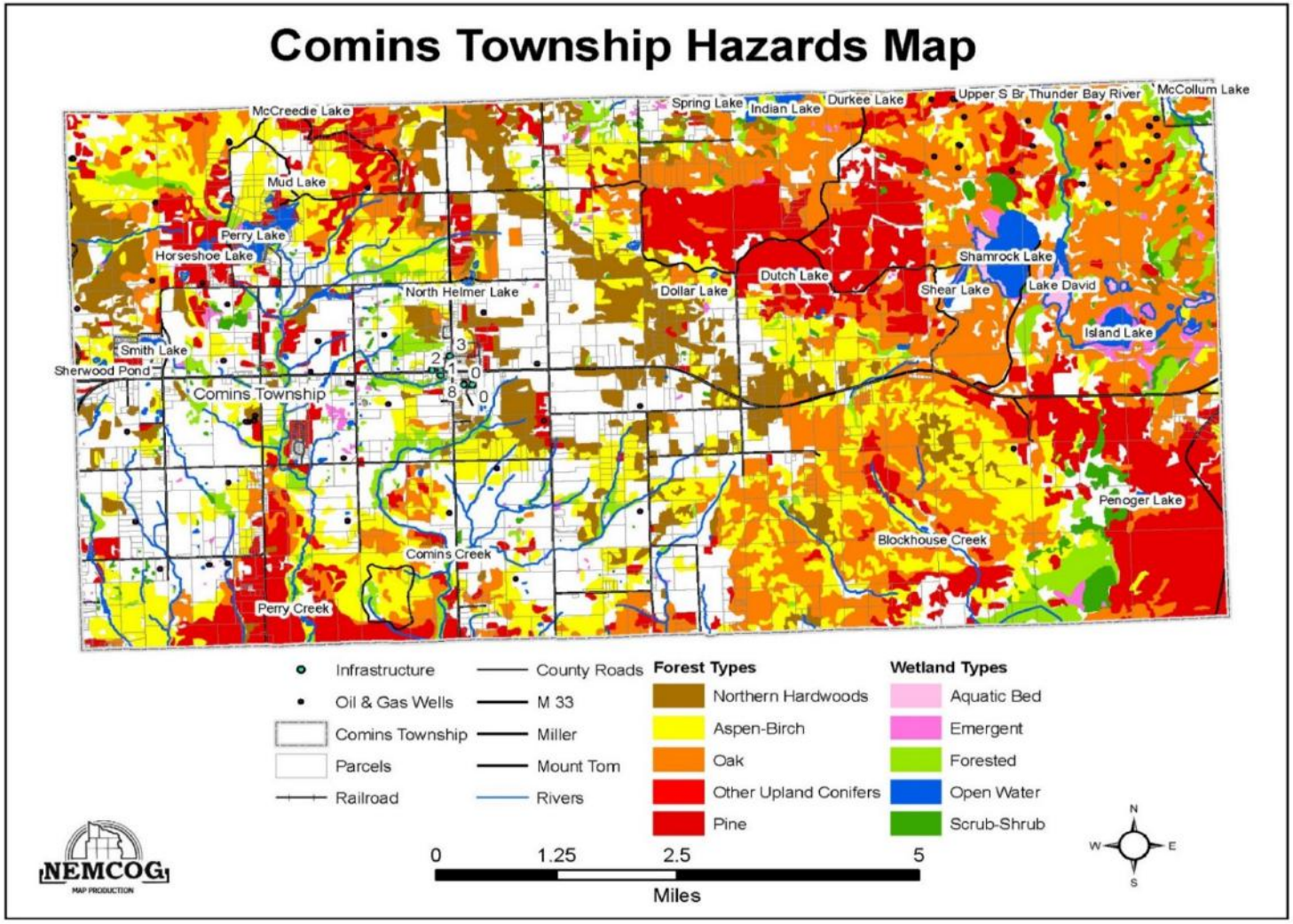


Figure 6-15 Comins Township Hazards Map

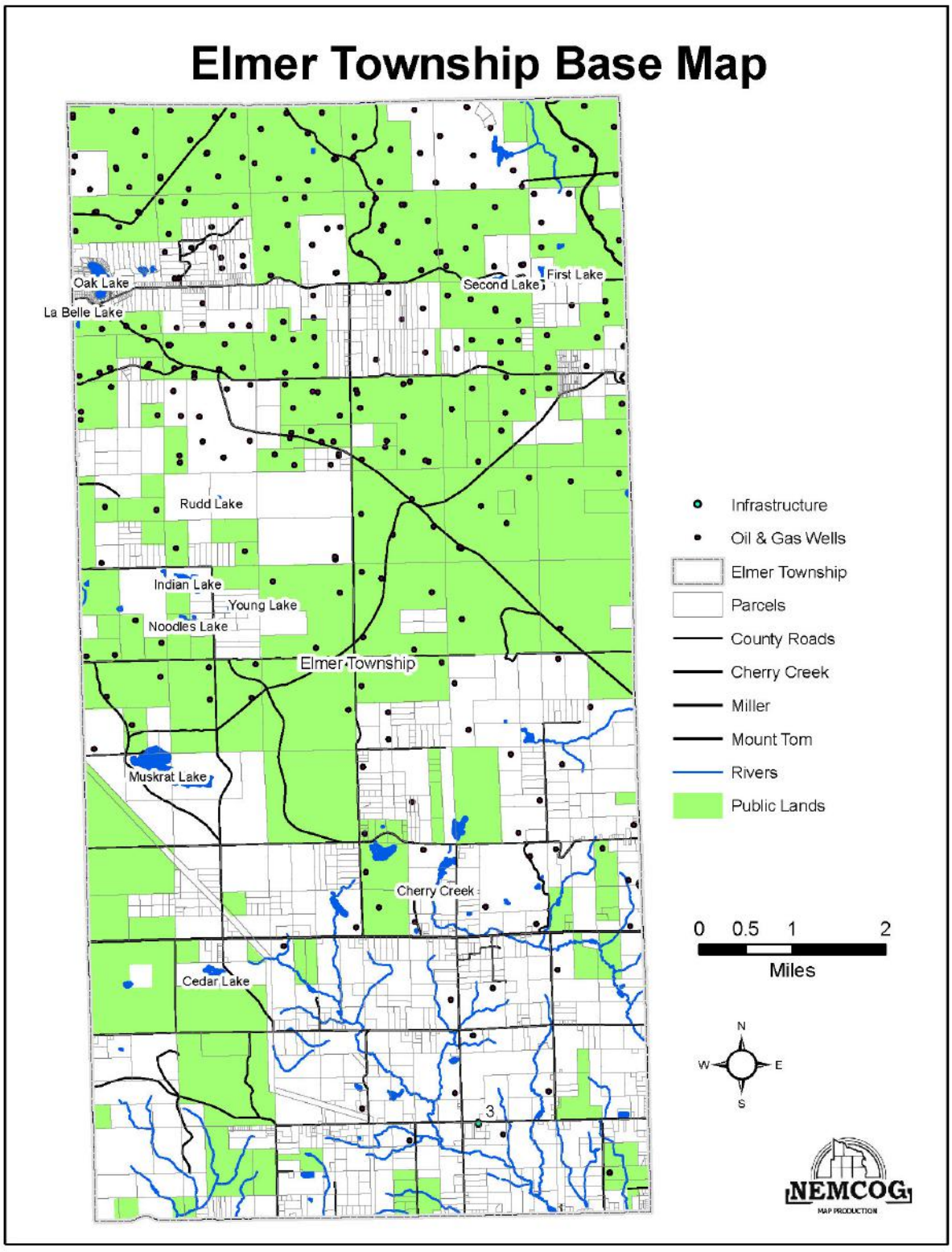


Figure 6-16 Elmer Township Base Map

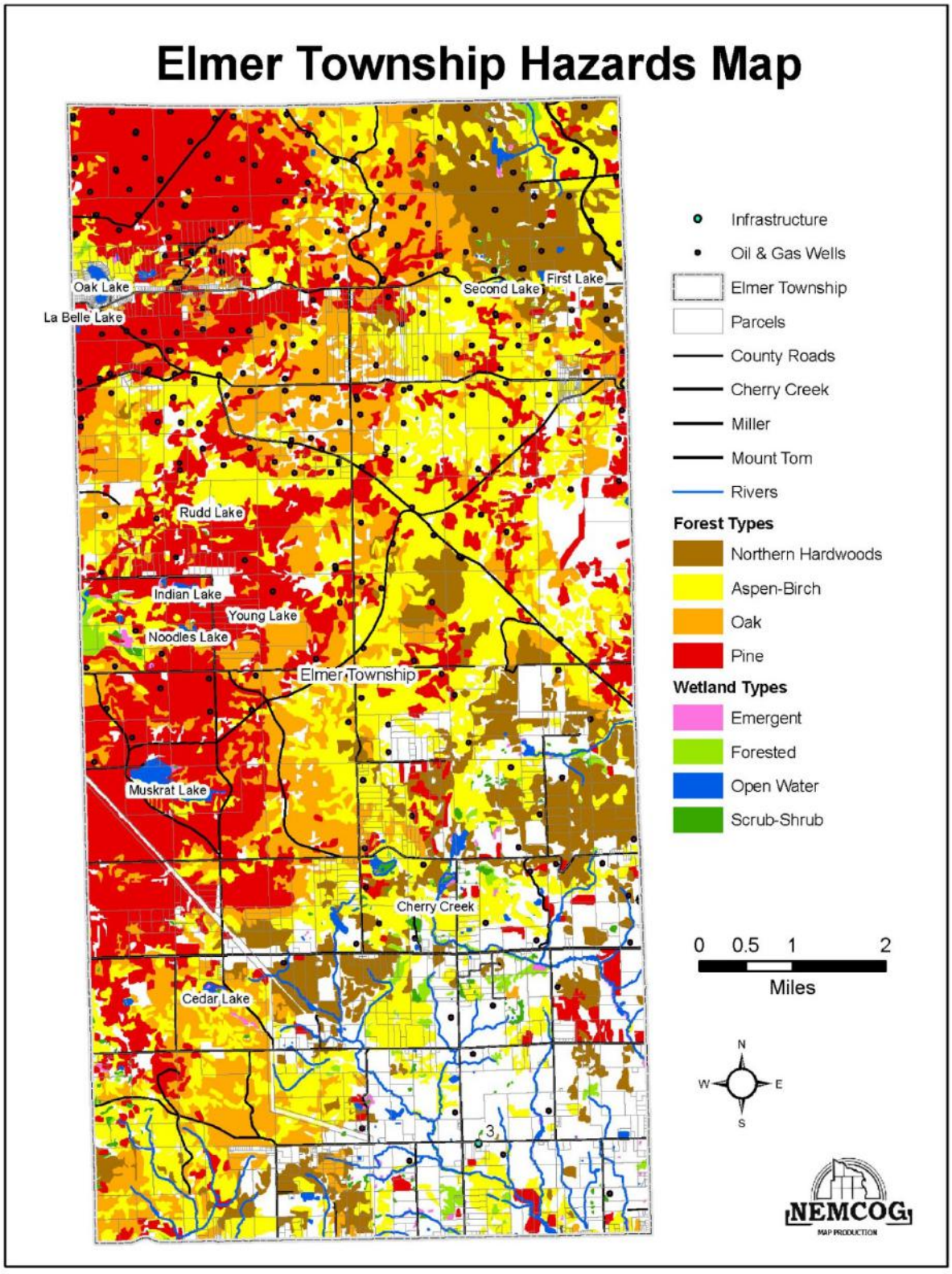


Figure 6-17 Elmer Township Hazards Map

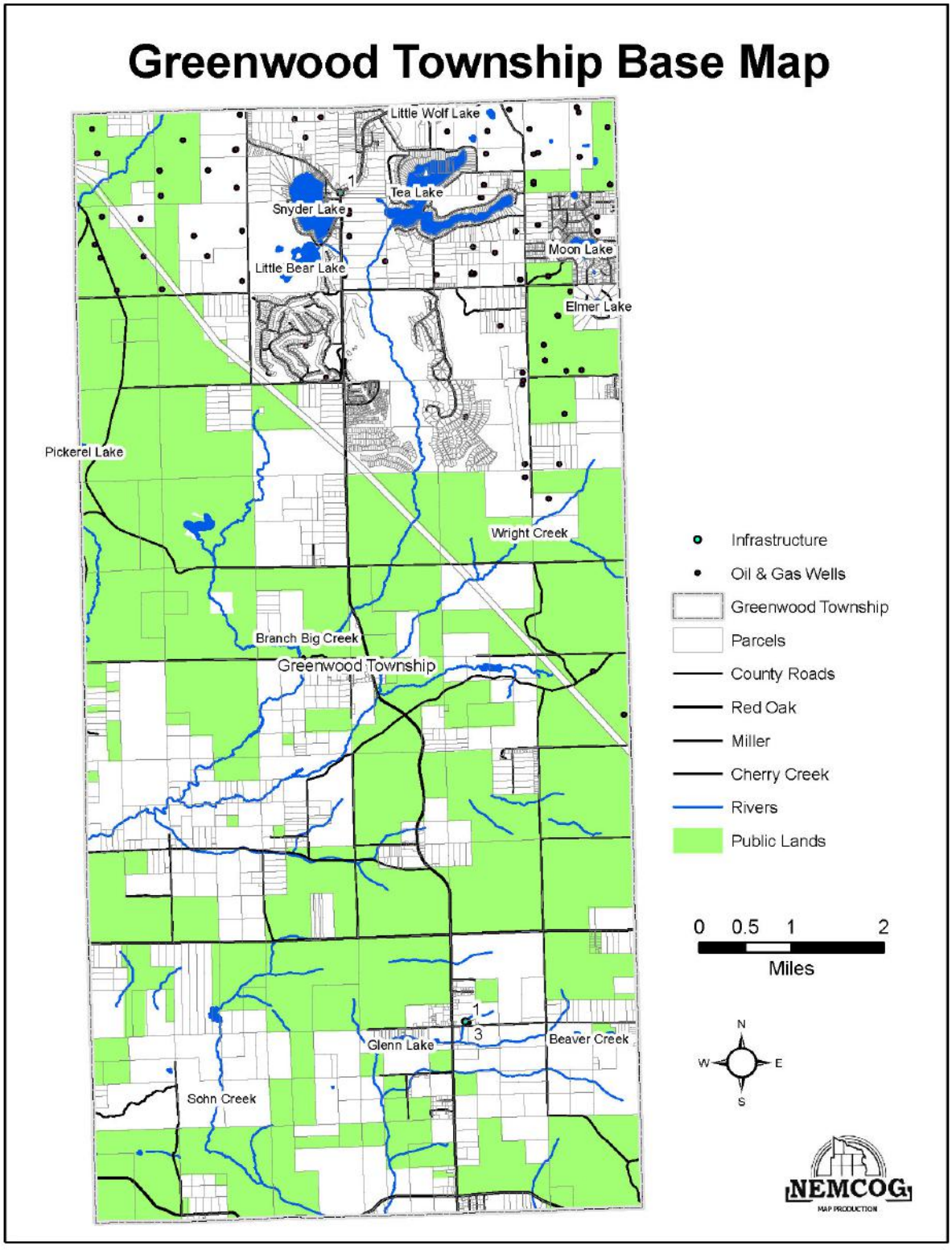


Figure 6-18 Greenwood Township Base Map

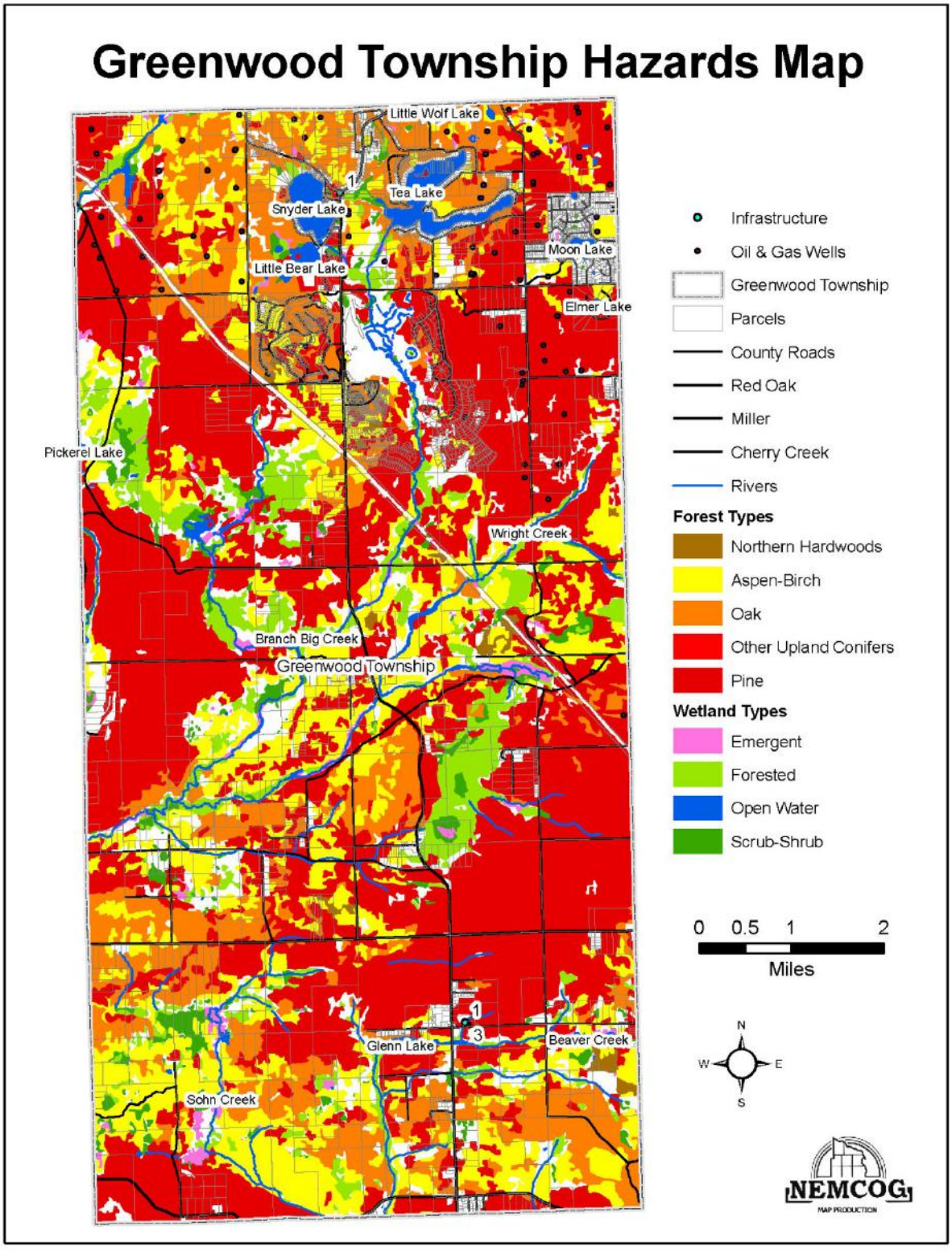


Figure 6-19 Greenwood Township Hazards Map

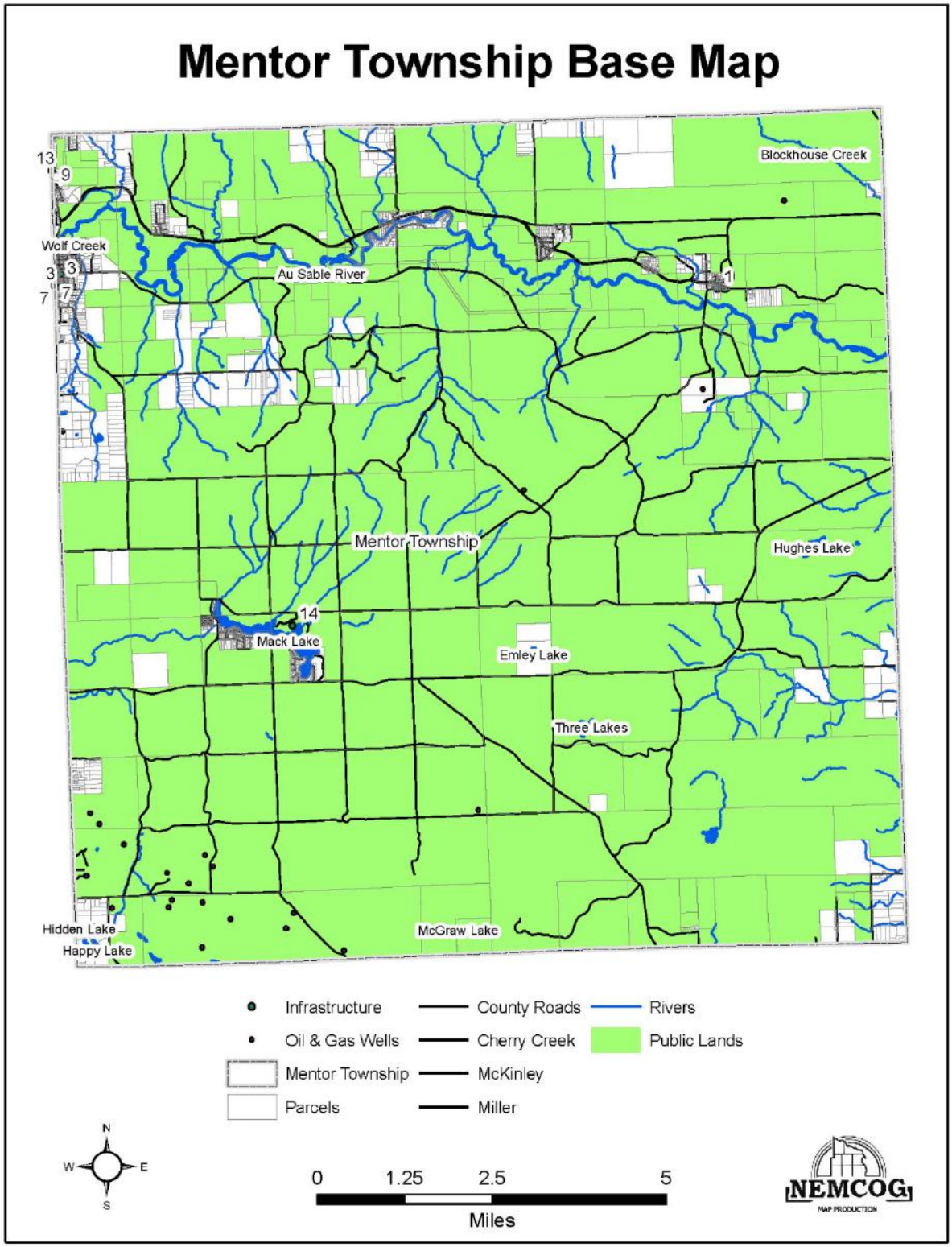


Figure 6-20 Mentor Township Base Map

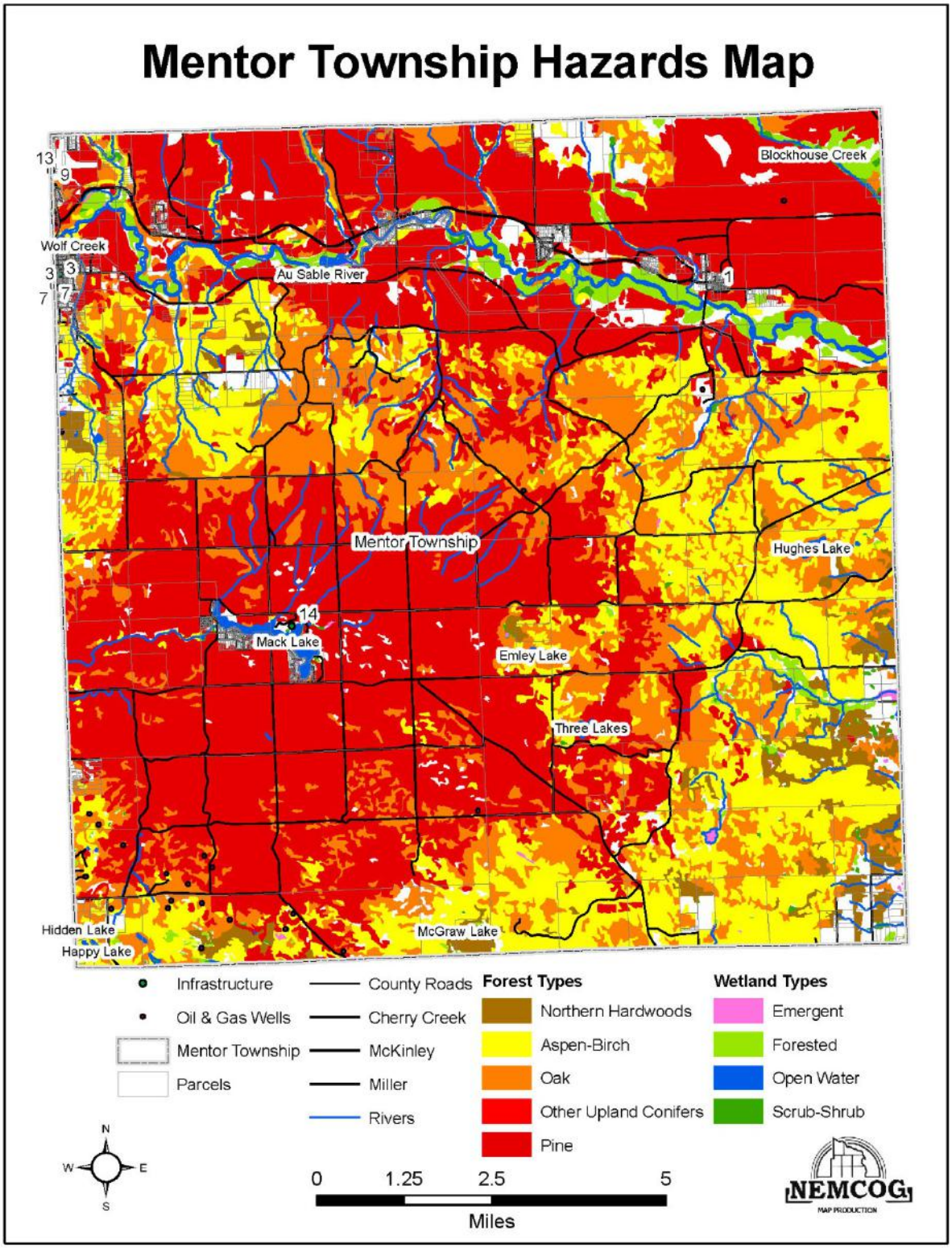


Figure 6-21 Mentor Township Hazards Map

Risk and Vulnerability Assessments

After identifying which hazards pose a risk in Oscoda County, the LPT ranked the hazards based on the Priority Risk Index to determine which hazards pose the greatest threat to the county (Table 6-8). Then, the LPT evaluated the ranked hazards based on their risk and vulnerabilities. It should be noted the sleet and ice storm events, and snowstorm hazard events are displayed as winter weather hazards in the Priority Risk Index. Even though dam failure and fixed site hazardous material accident are both analyzing the Mio Dam, both are displayed in the table in preparation for potential future fixed hazardous material sites.

To begin the hazard ranking process, the county's LPT selected evaluation criteria by determining which aspects were of most concern to the community. The LPT assigned a level of importance ranging from "Always Important to "Not Worth Considering" for each aspect. The following evaluation criteria were considered: likelihood of occurrence, capacity to cause physical damage, size of affected area, speed of onset, percent of population affected, population impact, economic impacts, duration of threat, seasonal risk pattern, environmental impact, predictability of the hazard, ability to mitigate, availability of warning systems, public awareness, and corollary effects. The LPT rated likelihood of occurrence, capacity to cause physical damage, economic impacts, population impact, ability to mitigate, and the availability of warning systems as "Always very important." The LPT rated size of affected area, duration of threat, and predictability of the hazard as "Usually important." Finally, the LPT rated speed of onset, seasonal risk pattern, environmental impact, public awareness, and corollary effects as "Sometimes important." After the rating process for the evaluation criteria, the LPT selected the following six evaluation criteria:

- **Likelihood of Occurrence:** The frequency a particular hazard event occurs. The more frequent the event occurs, the greater potential there will be damage and a negative impact on the community.
- **Capacity to Cause Physical Damage:** The destructive capacity of the hazard. While the destructive capacity of some hazard events (e.g. floods and tornadoes) is immediate and readily apparent, some hazards may have significant destructive capacity that is less obvious since it occurs over an extended period of time (e.g. extreme temperatures and drought).
- **Population Impact:** The number of casualties (injuries and deaths) that can be expected if a particular hazard event occurs. This criterion considers the population concentrations and age-specific populations.
- **Ability to Mitigate:** The relative ease a particular hazard event can be mitigated through the application of structural and/or non-structural mitigation strategies. The easier it is to mitigate a hazard event, the less likely the hazard event will pose a threat (e.g. loss of life and property damage) to the community in the future.
- **Availability of Warning Systems:** The relative ease at which the public can be warned of a hazard. This criterion addresses the overall warning system capability for a hazard and does not address the availability of warning systems in a community. For example, the public may be warned about a flood, but not warned about a structural fire. Hazards that have little or no availability of warning systems tend to have a greater hazard potential in a community.
- **Economic Impacts:** The monetary damages incurred from a hazard event that include public and private damages. Direct physical damages costs and indirect impact costs, such as lost business and tax revenue,

are included in this criterion. This criterion considers development, housing types, and agriculture presence.

Then, the LPT assigned relative weights to each evaluation criteria to express the criterion's level of important in analyzing the hazard. The relative weights were converted into percentages since the sum of the weights must equal 100%. After determining the impact each evaluation criterion has on each hazard, the LPT created evaluation scales for each evaluation criterion. The point values on the scales ranged between 1 and 10 and were assigned based on the criterion's relative severity and negative impacts. These scales can be found below. Finally, the LPT used a spreadsheet to rank the county's hazards based on the evaluation scales for each criterion (Table 6-8).

The following evaluation scales were used to evaluate each hazard:

Likelihood of Occurrence	
Excessive Occurrence (Occurs one or more times per year)	10 pts
High Occurrence (Occurs every 2-3 years)	7 pts
Medium Occurrence (Occurs every 5 years)	4 pts
Low Occurrence (Potential yearly occurrence)	1 pt
Unable to be Determined	0 pts

Capacity to Cause Physical Damage	
High Capacity	10 pts
Medium Capacity	7 pts
Low Capacity	4 pts
No Capacity	1 pt
Unable to be Determined	0 pts

Population Impact (Casualty Potential)	
75% to 100% of the population impacted	10 pts
50% to 74% of the population impacted	7 pts
25% to 49% of the population impacted	4 pts
1% to 24% of the population impacted	1 pt
No Population Impact	0 pts

Ability to Mitigate	
Easy to Mitigate (Variety of structural/non-structural measures)	10 pts
Possible to Mitigate (Some structural/non-structural measures)	7 pts
Difficult to Mitigate (Limited structural/non-structural measures)	4 pts
Impossible to Mitigate (Impossible to mitigate future events)	1 pt

Availability of Warning Systems	
Warning systems are in place and operational	10 pts
Some warning systems are in place and operational	7 pts
Warning systems are in place, but are not operational	4 pts
No warning systems are available	1 pt

Economic Impacts

Significant Impact (Over $500,000 in monetary damages incurred)	10 pts
Medium Impact ($300,001 to $500,000 in monetary damages incurred)	7 pts
Low Impact ($100,000 to $300,000 in monetary damages incurred)	4 pts
Minimal Impact (Less than $100,000 in monetary damages incurred)	1 pt
No Impact	0 pts

Risk and Vulnerability Assessment Summaries

The county's risk and vulnerability assessments can be found in Table 6-9. The county's risk was determined by the hazard's likelihood of occurrence, the county's ability to mitigate it, the hazard's capacity to cause physical damage, and the availability of warning systems in the county. The risk is classified as follows:

- **High Probability/High Impact:** The hazard will most likely happen and has a high potential to affect existing and future buildings and populations.
- **Low Probability/High Impact:** The hazard has a small chance of happening and has a high potential to affect existing and future buildings and populations.
- **High Probability/Low Impact:** The hazard will most likely happen and has a low potential to affect existing and future buildings and populations.
- **Low Probability/Low Impact:** The hazard has a small chance of happening and has a low potential to affect existing and future buildings and populations.

The county's vulnerability assessment was evaluated based on the county's population and economic impacts. The vulnerability is classified as follows:

- **Severe:** The hazard event will have severe impacts over a large geographic area or in densely populated areas and will have a serious financial impact on residents and businesses.
- **Noticeable:** The hazard event will have confined impacts and financial burdens on residents and businesses.
- **Minor:** The hazard event will have minimal impacts and financial burdens on residents and businesses.

Table 6-8 Oscoda County's Priority Risk Index								
		Evaluation Criteria						
Rank	Hazard	Likelihood of Occurrence (20%)	Capacity to Cause Physical Damage (20%)	Population Impact (Casualty Potential) (20%)	Ability to Mitigate (20%)	Availability of Warning Systems (10%)	Economic Impacts (10%)	Score
1	Wildfires	10	10	7	7	7	10	8.50
2	Winter Weather Hazards (ice and sleet storms, and snowstorms)	10	6	10	8	7	6	8.10
3	Severe Winds (Derecho)	10	6	6	5	1	5	6.00
4	Riverine and Urban Flooding	4	10	4	5	3	10	5.90
5	Public Health Emergency	1	1	10	9	5	10	5.70
6	Dam Failure	1	10	3	7	7	6	5.50
7	Infrastructure Failures	1	6	7	7	1	10	5.30
8	Structural Fire	1	10	4	6	1	8	5.10
9	Transportation Accidents (air, land, and water)	10	6	1	5	5	1	5.00
10	Transportation Hazardous Material Accident	1	10	1	5	7	7	4.80
11	Fixed Site Hazardous Material Accident	1	10	1	5	7	4	4.50
12	Oil and Gas Accidents (well and pipeline)	1	8	1	6	7	4	4.30
13	Scrap Tire Fire	1	6	1	10	1	5	4.20
14	Tornadoes	1	7	4	2	7	6	4.10
14	Drought	4	8	1	1	3	10	4.10
16	Extreme Temperature (Heat/Cold)	1	7	1	4	3	4	3.30
17	Hailstorms	1	7	4	1	3	1	3.00
18	Lightning	1	8	1	1	1	4	2.70

Table 6-9 Oscoda County's Risk and Vulnerability Assessment Summaries			
Rank	**Hazard**	**Risk Assessment**	**Vulnerability Assessment**
1	Wildfires	High Probability/High Impact	Severe
2	Winter Weather Hazards (ice and sleet storms, and snowstorms)	High Probability/Low Impact	Noticeable
3	Severe Winds (Derecho)	High Probability/Low Impact	Noticeable
4	Riverine and Urban Flooding	High Probability/High Impact	Noticeable
5	Public Health Emergency	High Probability/High Impact	Severe
6	Dam Failure	Low Probability/High Impact	Noticeable
7	Infrastructure Failures	Low Probability/High Impact	Noticeable
8	Structural Fires	Low Probability/Low Impact	Minor
9	Transportation Accidents (air, land, and water)	High Probability/Low Impact	Minor
10	Transportation Hazardous Material Accident	Low Probability/High Impact	Noticeable
11	Fixed Site Hazardous Material Accident	Low Probability/High Impact	Noticeable
12	Oil and Gas Accidents (well and pipeline)	Low Probability/High Impact	Noticeable
13	Scrap Tire Fire	Low Probability/High Impact	Noticeable
14	Tornadoes	Low Probability/High Impact	Noticeable
14	Drought	Low Probability/High Impact	Noticeable
16	Extreme Temperature (Heat/Cold)	Low Probability/High Impact	Noticeable
17	Hailstorms	High Probability/Low Impact	Noticeable
18	Lightning	Low Probability/Low Impact	Minor

Chapter 7 Goals and Objectives

Overview

The community goals and objectives for Oscoda County were developed through the analysis of the county's existing social and economic conditions, critical services and facilities, environmental conditions, existing land use, hazard analysis, community input, and vulnerability assessment. In 2019, the LPT reviewed the goals and objectives, and added a goal and its corresponding objectives regarding GIS datasets. The local communities are encouraged to incorporate the hazard mitigation goals and objectives into their other planning activities, such as their master plans and capital improvement plans.

Goals and Objectives

The following goals and objectives will be used to guide the hazard mitigation efforts within Oscoda County. The goals are broad in nature with slightly more specific objectives. Detailed action items organized by hazard can be found in Chapter 8: Mitigation Strategies and Priorities.

GOAL 1: Protect Public Health and Safety

Objectives

- Provide community wide hazard warning systems (natural, health and terrorism).
- Provide information and resources to increase hazard awareness and education.
- Maintain existing resources and provide necessary training.
- Identify and obtain necessary resources and equipment to prevent or minimize hazard effects.

GOAL 2: Minimize Damage to Public and Private Property

Objectives

- Adopt policies to make property less vulnerable.
- Apply proactive mitigation measures to prevent hazard damage.
- Obtain necessary equipment, resources and training to protect property if hazard occurs.
- Conduct training sessions and exercises to prepare for possible hazards.

GOAL 3: Maintain Essential Services

Objectives

- Identify, inspect, and maintain all critical infrastructure and facilities.
- Repair or replace critical infrastructure and facilities that are damaged or degraded.
- Protect critical infrastructure and facilities from hazard damage.
- Obtain necessary resources and equipment to ensure essential services are maintained in the event of a hazard.

GOAL 4: Guide Growth/Development

Objectives

- Protect and conserve natural resources.
- Develop hazard resistant growth policies.
- Discourage development in high hazard areas.
- Integrate hazard mitigation planning into land use planning.
- Encourage sustainable development.
-

GOAL 5: Build partnerships to support emergency response services and hazard mitigation activities on a regional basis

Objectives

- Continue to work cooperatively with agencies and communities in Oscoda County.
- Continue to work cooperatively with agencies and communities in northern Michigan.
- Develop regional grant applications for hazard mitigation implementation.
- Continue to participate in the Region 3 Homeland Security Board.

GOAL 6: Develop, update, and maintain geographic information system (GIS) data sets

Objectives

- Develop GIS data sets for usage by county officials, the emergency management office, and 911 staff.
- Evaluate data sets annually and update.

Chapter 8 Mitigation Strategies and Priorities

Overview

After determining Oscoda County's goals and objectives, hazard mitigation actions were developed based on the following categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. The mitigation action and implementation strategies were prioritized and evaluated to determine the effect they will have on the goals and objectives. During the prioritization process, each action was evaluated based on its social impact, technical feasibility, administrative potential, political impact, legal ramification, environmental impact, overall benefit, and cost effectiveness. The Oscoda County LPT, county, and local governments considered their budgets, available technical resources, and current visions to assess each action item's priority, and current and future progress.

Mitigation Action and Implementation Strategies

In the previous hazard mitigation plan, the mitigation actions and implementation strategies were categorized based on the hazard(s) they addressed (Appendix D). When the LPT reviewed the strategies, they moved many action items to the all-hazard mitigation table, one action item was deemed no longer relevant in the county (and will be removed from future plans), and many items were determined to be ongoing/long-term projects. The Fall 2020 FEMA review determined this categorization was not adequate since it did not provide a purpose for each mitigation action item. To rectify this issue, the mitigation actions and implementation strategies were re-categorized based on the categories used to develop the action items: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. Additionally, a line item was added under each action item to address which hazard(s) the action item mitigates.

Prevention Action and Implementation Strategies

The purpose of the prevention action and implementation strategies is to address the strategies related to government administrative or regulatory actions and processes that influence how land is developed and buildings are constructed. Also, public activities that reduce hazard losses are included in this category. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations. For each mitigation strategy in this category, the strategies are designed to reduce deaths and injuries, reduce structural damage and deterioration, prevent the interruption of businesses, prevent insurance losses, reduce capital costs for repairs, and reduce the degradation of cultural and natural resources.

1. Review and/or develop a Regional EMS Response Plan to supplement the county's mass casualty plan.

Priority Level: High
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, Medical
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Reviewing and updating the plan, dependent on available time and funding.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

2. Conduct annual reviews of the Emergency Action Plans and the Local Emergency Operations Plans to ensure consistency between plans.

Priority Level: High
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, County, Utility Companies, Landowners, Salvation Army
Progress/Status: Ongoing/Long term throughout the entire county. Annual reviews.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has changed since the dams are getting older.

3. Research and develop medical airlift plans.

Priority Level: High
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, County, State, Medical
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Major progress in implementing the strategy.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy is continually implemented.

4. Identify communities and neighborhoods for the development of Firewise demonstration projects.

Priority Level: High
Hazards Addressed: Wildfire
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, American Red Cross, MSU Extension, Local Fire Departments, U.S. Forest Service, Michigan Department of Natural Resources
Financial and Technical Resources: Federal Government, State
Progress/Status: Ongoing/Long term throughout the entire county. USFS constructed fuel breaks adjacent to vulnerable communities.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a high priority. The priority has not changed since the plan will be continually reviewed and implemented.

5. Develop and maintain emergency response plans for schools, campgrounds, sports complex, animal shelter, parks, community events, etc.

Priority Level: High
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, Salvation Army, Schools, Civic groups and churches
Financial and Technical Resources: County Emergency Management Office, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Ongoing updates to response plans.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

6. Develop a strategy to implement the Firewise program in at-risk communities.

Priority Level: High
Hazards Addressed: Wildfire
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Department, U.S. Forest Service, Michigan Department of Natural Resources, MSU Extension, American Red Cross
Financial and Technical Resources: Federal Government, State
Progress/Status: Ongoing/Long term throughout the entire county. Information distributed at events and schools. County funded additional Firewise work with a 2018 grant.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a high priority. The priority has not changed since the plan will be continually reviewed and implemented.

7. Work with power companies to inventory the condition of power line right of ways. Identify priority sections for branch and tree clearing from power lines to create and maintain a disaster-resistant landscape.

Priority Level: Medium

Hazards Addressed: Infrastructure Failures

Responsible Agencies: County Emergency Management Office, County Road Commission, Utility Companies, Landowners

Financial and Technical Resources: Federal Government, Landowners, Local Businesses

Progress/Status: Ongoing/Long term throughout the entire county. Progress made.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

8. Build the capabilities of the county GIS program to address hazards. Create and/or update datasets (e.g. parcels/ownership, location of all structures, driveways with ingress/egress conditions, roads, forest types, ownership types, floodplains, utilities (e.g. power lines, gas lines and water lines), wetlands, water features, bridges and culverts, and SARA III sites). Create maps to show the relationships between the county's assets and its hazards.

Priority Level: Medium

Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.

Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission, District Health Department, Salvation Army, U.S. Forest Service, Michigan Department of Natural Resources

Financial and Technical Resources: County, State, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, State, Federal Government, NEMCOG

Progress/Status: Ongoing/Long term throughout the entire county. Recent change in staff.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually reviewed and updated.

9. Promote and implement solutions to keep roads and driveways accessible to vehicles and fire equipment.

Priority Level: Medium

Hazards Addressed: Wildfire, Structural Fires, Scrap Tire Fire.

Responsible Agencies: County Emergency Management Office, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments, Landowners, County Road Commission

Financial and Technical Resources: State, Federal Government

Progress/Status: Ongoing/Long term throughout the entire county. During fires, icy areas are sanded and plowed, as needed.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

10. Develop a Community Wildfire Protection Plan.

Priority Level: Medium

Hazards Addressed: Wildfire

Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Department, U.S. Forest Service, Michigan Department of Natural Resources

Financial and Technical Resources: Federal Government, State

Progress/Status: Ongoing/Long term throughout the entire county. Annual meetings with the USFS, MDNR, and local fire departments.

Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a medium priority. The priority has not changed since the strategy will be implemented depending on funding.

11. Develop evacuation plans.

Priority Level: Medium

Hazards Addressed: Wildfire, Infrastructure Failures, Riverine and Urban Flooding, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Dam Failure, and Scrap Tire Fire.

Responsible Agencies: County Emergency Management Office, Salvation Army, Big Creek Township

Financial and Technical Resources: Federal Government, County Emergency Management Office

Progress/Status: Ongoing/Long term throughout the entire county. Part of the Fire Department Plan.

Previous Plans: This item has been retained from the 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

12. Strictly enforce open burning regulations.

Priority Level: Low

Hazards Addressed: Wildfire

Responsible Agencies: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Department, U.S. Forest Service, Michigan Department of Natural Resources, Salvation Army

Financial and Technical Resources: U.S. Forest Service, Michigan Department of Natural Resources

Progress/Status: Ongoing/Long term throughout the entire county.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy is implemented and continually monitored.

13. Develop and implement a program to provide a chipper for residents to dispose of woody debris.

Priority Level: Low

Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Tornadoes, Drought, and Lightning.

Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission, Local Fire Departments, Civic and Church groups, Insurance Companies, Local Businesses, Utility Companies

Financial and Technical Resources: Federal Government, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township

Progress/Status: Ongoing/Long term throughout the entire county. Minimal Progress.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has changed since this strategy has not been an issue (residents have procedures in place to handle their woody debris).

14. Demolish and clear vacant, condemned structures in populated areas.

Priority Level: Low

Hazards Addressed: Public Health Emergency, Structural Fire

Responsible Agencies: District Health Department, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township

Financial and Technical Resources: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township

Progress/Status: Ongoing/Long term throughout the entire county. System in place.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

15. Coordinate with health department and local communities to assure proper location, installation, cleaning, monitoring, and maintenance of septic tanks.

Priority Level: Low
Hazards Addressed: Infrastructure Failures, and Public Health Emergency.
Responsible Agencies: District Health Department, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Financial and Technical Resources: District Health Department, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. System in place.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

16. Regulate development in areas that would be flooded.

Priority Level: Low
Hazards Addressed: Riverine and Urban Flooding, and Dam Failure.
Responsible Agencies: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Financial and Technical Resources: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. No Progress/activity.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy is reviewed annually.

17. Encourage township leaders to prepare and/or maintain updated master plans that include a future land use vision, zoning ordinances, and capital improvement plans. Encourage township leaders to consider their future hazard mitigation needs during the preparation or update process.

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Financial and Technical Resources: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, NEMCOG
Progress/Status: Ongoing/Long term throughout the entire county. Communities update their master plans per state statutes.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually reviewed and updated.

18. Identify optimal staffing levels for county and community needs. Seek funding to meet optimal levels (e.g. police, fire, EMS, government staff, etc.).

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Financial and Technical Resources: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. Continual review of budget and staffing levels.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually reviewed and implemented.

19. Identify campgrounds, parks, and outdoor recreational facilities that need "safe areas."

Priority Level: Low
Hazards Addressed: Severe Wind (Derecho), Tornadoes, Extreme Temperatures (Extreme Heat and Extreme Cold), Lightning, and Hail.
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments, County Road Commission, Police, Civic Groups and Churches, State, Local Businesses, Salvation Army, U.S. Forest Service, Michigan Department of Natural Resources, Schools
Financial and Technical Resources: County, County Emergency Management Office, State, Federal Government, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. Plans in place for Mio and Fairview. Emergency Management Office and the Road Commission do not have portable/changeable message signs. Safe areas identified at fairgrounds. Other sites reviewed periodically.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually reviewed and implemented.

20. Develop and/or enforce ordinances that protect the entire community and respect individual rights.

Priority Level: Low

Hazards Addressed: Wildfire, Riverine and Urban Flooding, Structural Fires, Oil and Gas Accidents (well and pipeline), and Dam Failure.

Responsible Agencies: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township

Financial and Technical Resources: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, NEMCOG

Progress/Status: Ongoing/Long term throughout the entire county.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

Property Protection Action and Implementation Strategies

The purpose of the property protection action and implementation strategies is to address the strategies related to actions involved in the modification of existing buildings or structures to protect them from a hazard or remove them from a hazardous area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass. For each mitigation strategy in this category, the strategies are designed to reduce structural damage and deterioration, prevent the interruption of businesses, prevent insurance losses, and reduce capital costs for repairs.

1. Promote the creation of defensible space around structures in fire-prone areas.

Priority Level: Medium

Hazards Addressed: Wildfire

Responsible Agencies: County Emergency Management Office, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments, U.S. Forest Service, Michigan Department of Natural Resources, Insurance Companies, American Red Cross

Financial and Technical Resources: Federal Government

Progress/Status: Ongoing/Long term throughout the entire county. Information distributed at events.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

2. Encourage mobile home park developments to anchor manufactured homes and exterior structures (e.g. carports, porches, etc.).

Priority Level: Low
Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Tornadoes.
Responsible Agencies: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County, State
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. No mobile home parks have been developed since 2005. County is using State codes. Some townships are zoned, while others are not zoned.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

3. Encourage the installation of weather radios in new structures.

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Tornadoes, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, and Hail.
Responsible Agencies: State, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Financial and Technical Resources: State, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. No Progress/activity.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented. However, the strategy was re-worded since the county cannot amend the State's building codes.

4. Bury and protect utility lines, where feasible and cost effective.

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Extreme Temperatures (Extreme Heat and Extreme Cold), Lightning, Hail, and Transportation Accident.
Responsible Agencies: Utility Companies
Financial and Technical Resources: Utility Companies
Progress/Status: Ongoing/Long term throughout the entire county. As utility lines and phone lines are upgraded or new service is added, they are buried.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

Public Education and Awareness Action and Implementation Strategies

The purpose of the public education and awareness action and implementation strategies is to address the strategies related to actions that inform and educate citizens, elected officials, and property owners about hazards and the potential ways to mitigate them. Examples include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs. For each mitigation strategy in this category, the strategies are designed to reduce deaths and injuries, reduce structural damage and deterioration, prevent the interruption of businesses, prevent insurance losses, reduce capital costs for repairs, and reduce the degradation of cultural and natural resources.

1. Compile and maintain a list of homes and facilities with vulnerable residents (e.g. elderly, infirmed, and disabled individuals).

Priority Level: High

Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.

Responsible Agencies: County Emergency Management Office, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, State, District Health Department, Civic Groups and Churches, Medical, Salvation Army, National Weather Service, American Red Cross, Local Fire Departments

Financial and Technical Resources: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County, District Health Department, Federal Government, County Emergency Management Office, State

Progress/Status: Ongoing/Long term throughout the entire county. Progress made, EMS and County Departments issue cards. Coverage issues for alert devices. Council on Aging maintains a list of elderly residents.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has changed since the strategy is currently being reviewed and implemented.

2. Increase public awareness about the causes, symptoms, and protective actions for disease outbreaks and other potential public health emergencies. Encourage residents to receive immunizations against communicable diseases.

Priority Level: High

Hazards Addressed: Public Health Emergency

Responsible Agencies: District Health Department, Civic groups and churches, Medical, Schools, State, American Red Cross

Financial and Technical Resources: District Health Department, Federal Government

Progress/Status: Ongoing/Long term throughout the entire county. Marketing materials in place.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

3. Establish an outreach program to assist residents after hazard events and to assess the needs of at-risk residents during the hazard event (e.g. elderly, homebound, disabled, etc.).

Priority Level: High
Hazards Addressed: Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, State, District Health Department, Civic Groups and Churches, Medical, Salvation Army, National Weather Service, American Red Cross, Local Fire Departments
Financial and Technical Resources: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County, District Health Department, Federal Government, County Emergency Management Office, State, Civic groups and churches
Progress/Status: Ongoing/Long term throughout the entire county. Progress made, EMS and County Departments issue cards. Coverage issues for alert devices. Council on Aging maintains a list of elderly residents. Sheriff Office is working on creating an outreach program to assess the needs of residents during a hazard event.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has changed since the strategy is currently being reviewed and implemented.

4. Coordinate a countywide wildfire education program that includes the distribution of materials, school presentations, demonstration projects, and displays at community events and libraries.

Priority Level: High
Hazards Addressed: Wildfire
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Department, U.S. Forest Service, Michigan Department of Natural Resources, MSU Extension, American Red Cross
Financial and Technical Resources: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Federal Government, State, Local Fire Department
Progress/Status: Ongoing/Long term throughout the entire county. Information distributed at events and schools; school presentations; working on getting rope ladders for homes. Looking into setting up a procedure to send information in tax bill receipts and having insurance companies send information.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

5. Conduct workshops at community gatherings to encourage residents to develop a Family Disaster Plan, including the preparation of a Disaster Supplies Kit. Expand the public education program for all natural hazards that threaten the community, including distributing family emergency preparedness information, education and awareness programs in schools (e.g. classroom presentations and demonstrations, incorporating hazard preparedness information into curriculums, etc.), displays at community events, and displays and education materials at libraries.

Priority Level: High

Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Riverine and Urban Flooding, Structural Fires, Lightning, and Hail.

Responsible Agencies: County Emergency Management Office, District Health Department, Local Fire Departments, Civic Groups and Churches, U.S. Forest Service, Michigan Department of Natural Resources, Insurance Companies, American Red Cross, National Weather Service, Schools

Financial and Technical Resources: Federal Government, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Businesses, County, Civic Groups and Churches, American Red Cross, District Health Department

Progress/Status: Ongoing/Long term throughout the entire county. Information distributed at events. Annual weather watcher programs. USFS, MDNR and Fire departments do annual presentations for classes and civic groups.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

6. Develop a program to instruct residents about proper wildfire evacuation procedures.

Priority Level: Medium

Hazards Addressed: Wildfire

Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Department, U.S. Forest Service, Michigan Department of Natural Resources, State, Civic groups and churches, American Red Cross

Financial and Technical Resources: Federal Government, Local Fire Department, State, County, U.S. Forest Service, Michigan Department of Natural Resources, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township

Progress/Status: Ongoing/Long term throughout the entire county. Plan in development.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

7. Promote and provide information to the public about evacuation plans.

Priority Level: Medium
Hazards Addressed: Wildfire, Infrastructure Failures, Riverine and Urban Flooding, Oil and Gas Accidents (well and pipeline), Dam Failure, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, Salvation Army
Financial and Technical Resources: Federal Government, County Emergency Management Office
Progress/Status: Ongoing/Long term throughout the entire county. Part of the Fire Department Plan.
Previous Plans: This item has been retained from the 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

8. Improve public awareness about dam failures.

Priority Level: Medium
Hazards Addressed: Dam Failure
Responsible Agencies: County Emergency Management Office, Utility Companies, Salvation Army
Financial and Technical Resources: Federal Government, Landowners, County, Big Creek Township
Progress/Status: Ongoing/Long term throughout the entire county. Sirens in Mio.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy is reviewed annually.

9. Increase community support for free or reduced-expense clinics and school health services.

Priority Level: Medium
Hazards Addressed: Public Health Emergency
Responsible Agencies: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, District Health Department, Civic groups and churches, State, Medical
Financial and Technical Resources: District Health Department
Progress/Status: Ongoing/Long term throughout the entire county. Continuing to expand programs.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

10. Inform the public about pollution control and support pollution control, enforcement and cleanup. Support proper disposal of chemicals and scrap materials.

Priority Level: Medium
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, County, District Health Department, Schools, State, Local Businesses, Federal Government
Financial and Technical Resources: District Health Department
Progress/Status: Ongoing/Long term throughout the entire county. Educational materials available.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

11. Implement a community wildfire education program to provide information to residents, land managers, and communities.

Priority Level: Low
Hazards Addressed: Wildfire
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments, MSU Extension, American Red Cross, U.S. Forest Service, Michigan Department of Natural Resources
Financial and Technical Resources: State, Local Fire Departments, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Minimal Progress.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has changed since the strategy is implemented and will be continually reviewed.

12. Increase public awareness about radon dangers and prevention efforts to reduce radon concentrations in homes and buildings.

Priority Level: Low
Hazards addressed: Public Health Emergency
Responsible Agencies: District Health Department, State
Financial and Technical Resources: County Emergency Management Office, District Health Department
Progress/Status: Ongoing/Long term throughout the entire county. Press releases published to inform the public and free testing is available.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

13. Work with the State and real estate companies to develop disclosure laws that identify a home's location within a flood area.

Priority Level: Low
Hazards addressed: Dam Failure, Riverine and Urban Flooding
Responsible Agencies: County Emergency Management Office, Real Estate Companies, State
Financial and Technical Resources: State
Progress/Status: Ongoing/Long term throughout the entire county. No Progress.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The action item was modified from focusing only on the hospital to focusing on all affected areas.

14. Provide severe weather safety strategies and materials to driver education classes.

Priority Level: Low
Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Tornadoes, Riverine and Urban Flooding, and Hail.
Responsible Agencies: State, Schools, Local Businesses
Financial and Technical Resources: State, Police
Progress/Status: Ongoing/Long term throughout the entire county. Information provided to classes.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

15. Identify and inform people of "safe areas" during festivals and events, including the acquisition of portable/changeable message signs to provide information and directions.

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Lightning, and Hail.
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments, County Road Commission, Police, Civic Groups and Churches, State, Local Businesses, Salvation Army, U.S. Forest Service, Michigan Department of Natural Resources, Schools
Financial and Technical Resources: County, County Emergency Management Office, State, Federal Government, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. Plans in place for Mio and Fairview. Emergency Management Office and the Road Commission do not have portable/changeable message signs. Safe areas identified at fairgrounds. Other sites reviewed periodically.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually reviewed and implemented.

Natural Resource Protection Action and Implementation Strategies

The purpose of the natural resource protection action and implementation strategies is to address the strategies related to actions that minimize hazard losses and preserve or restore the functions of natural systems. Examples include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation. For each mitigation strategy in this category, the strategies are designed to reduce deaths and injuries, reduce structural damage and deterioration, prevent the interruption of businesses, prevent insurance losses, reduce capital costs for repairs, and reduce the degradation of cultural and natural resources.

1. Work with the Federal Emergency Management Agency (FEMA) to identify the location of floodplains.

Priority Level: Medium
Hazards addressed: Dam Failure, Riverine and Urban Flooding
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, State, County Road Commission, Federal Government
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. No Progress, county not mapped.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has changed since the strategy has become a focus with the current high water levels.

2. Manage wildfire fuel by thinning flammable vegetation, creating fuel breaks, and using fire-retardant materials and vegetation.

Priority Level: Medium
Hazards Addressed: Wildfire
Responsible Agencies: U.S. Forest Service, Michigan Department of Natural Resources, Landowners
Financial and Technical Resources: U.S. Forest Service, Michigan Department of Natural Resources, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. U.S. Forest Service created fuel breaks adjacent to high risk communities on public lands with stimulus funding.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually reviewed and implemented.

3. Seek support and funding to clean up environmental contamination sites.

Priority Level: Low
Hazards Addressed: Public Health Emergency, Infrastructure Failure, Oil and Gas Accident (well and pipeline), Transportation Hazardous Material Accidents, Fixed Site Hazardous Material Accidents, Scrap Tire Fires, Structure Fire, and Transportation (air, land, and water) Accident
Responsible Agencies: County, State, Local Businesses, Federal Government
Financial and Technical Resources: State, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Seeking funding.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

4. Monitor diseases that impact the fisheries and wildlife in the county.

Priority Level: Low
Hazards Addressed: Public Health Emergency
Responsible Agencies: County, State, Federal Government
Financial and Technical Resources: County, State, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Seeking funding.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

Emergency Services Action and Implementation Strategies

The purpose of the emergency services action and implementation strategies is to address the strategies related to actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities. For each mitigation strategy in this category, the strategies are designed to reduce deaths and injuries and reduce the interruption of businesses.

1. Acquire funding to install and maintain warning sirens in Luzerne (Big Creek Township), Comins and the fairgrounds (Clinton Township), and McKinley (Mentor Township). Determine operational status, including siren radius, for sirens in Mio (Elmer, Big Creek, and Mentor Townships) and Fairview (Comins Township).

Priority Level: High
Hazards Addressed: Severe Wind (Derecho), Tornadoes
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Mentor Township, Comins Township, Elmer Township
Financial and Technical Resources: State, Federal Government
Progress/Status: Ongoing/Long term in Luzerne, Comins, McKinley, and the fairgrounds in Comins.
Previous Plans: This item has been added to the 2021 hazard mitigation plan.

2. Continue to develop the Community Emergency Response Team (CERT) program to prepare for all hazard events in the county.

Priority Level: High
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, Local Fire Departments, County Road Commission, District Health Department, U.S. Forest Service, Michigan Department of Natural Resources, American Red Cross, Landowners
Financial and Technical Resources: County Emergency Management Office, Federal Government, District Health Department, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. Active Local Emergency Planning Committee (LEPC), Local Planning Team (LPT), Incident Management Team, and Community Emergency Response Team.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually reviewed and implemented.

3. Continue upgrading protocols in Central Dispatch.

Priority Level: High
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, Police, Medical, Local Fire Departments
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Actively upgrading procedures.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

4. Maintain a community public health system with sufficient disease monitoring and surveillance capabilities to protect the population from large-scale outbreaks.

Priority Level: High

Hazards Addressed: Public Health Emergency

Responsible Agencies: District Health Department, State, Medical, Federal Government
Financial and Technical Resources: District Health Department, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. System in place.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

5. Maintain and enhance training, equipment, and preparedness for local hazardous materials emergency response teams.

Priority Level: High

Hazards Addressed: Transportation Hazardous Material Accident, and Fixed Site Hazardous Material Accident

Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Department, Salvation Army
Financial and Technical Resources: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

6. Train, equip, and prepare search and rescue teams.

Priority Level: High

Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Extreme Temperatures (Extreme Heat and Extreme Cold), and Dam Failure.

Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Department, Salvation Army
Financial and Technical Resources: County, Federal Government, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

7. Provide more training for firefighters, police and first responders in handling school bus and commercial bus accidents.

Priority Level: High
Hazards Addressed: Transportation Hazardous Material Accidents, and Transportation Accident.
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission, Schools, Local Fire Department, Police, Medical
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Progress made.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

8. Provide training for airfield emergencies involving all county fire departments.

Priority Level: High
Hazards Addressed: Transportation Accident
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, State, Local Fire Departments, Police, Medical
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the county.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually reviewed and implemented.

9. Provide training, planning, and preparedness for mass casualty incidents involving all modes of transportation.

Priority Level: Medium
Hazards Addressed: Transportation Hazardous Material Accidents, and Transportation Accident
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

10. Purchase and maintain an adequate number of emergency power generators to supply back up power for critical facilities, emergency communications, healthcare, water needs, wastewater processing, and shelters.

Priority Level: Medium
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Salvation Army, Medical, Federal Government, Schools
Financial and Technical Resources: County, Federal Government, Local Businesses, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. Purchased portable generator in 2015, Generators need to be purchased for critical facilities and new courthouse/EOC.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy is continually being reviewed, inventoried, and acquired per funding availability.

11. Increase NOAA Weather Radio usage and coverage by subsidizing the purchase and distribution of radios to county residents, organizations and businesses. Use NOAA radios as a community emergency alert system to provide information about hazard events.

Priority Level: Medium
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, National Weather Service
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Need more radios for vulnerable populations. Radios were given to residents, special events, and critical sites (senior centers, campgrounds, etc.)
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

12. Conduct multi-agency, inter-county emergency management response exercises for fire suppression.

Priority Level: Medium
Hazards Addressed: Wildfire, Structural Fires, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office, Local Fire Departments, American Red Cross, Salvation Army, U.S. Forest Service, Michigan Department of Natural Resources
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

13. Improve agencies' capabilities to carry-out road closures and provide traffic control in accident areas.

Priority Level: Medium
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Riverine and Urban Flooding, Extreme Temperatures (Extreme Heat and Extreme Cold), Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Road Commission, Salvation Army
Financial and Technical Resources: Federal Government, County Road Commission
Progress/Status: Ongoing/Long term throughout the entire county. Procedures in place.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

14. Encourage strict highway speed enforcement for the trucking industry and during school transport times.

Priority Level: Medium
Hazards Addressed: Transportation Hazardous Material Accidents, Hail, and Transportation Accident.
Responsible Agencies: Police, County Emergency Management Office
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Constantly monitored by law enforcement. Coordination with Michigan State Police.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy is continually implemented.

15. Conduct an annual review of school buses and emergency exits, including new features.

Priority Level: Medium
Hazards Addressed: Transportation Hazardous Material Accidents, and Transportation Accident.
Responsible Agencies: State, Schools
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Annual reviews.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy is continually implemented.

16. Hold an annual meeting with the local industries to determine the type of products that are transported over the county's roadways. Provide the information to the local Hazmat Team and fire departments.

Priority Level: Medium
Hazards Addressed: Transportation Hazardous Material Accidents
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, State, Medical, Federal Government, Local Fire Departments, Police
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Minor Progress.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy is continually implemented.

17. Provide training exercises for pipeline or propane accidents.

Priority Level: Medium
Hazards Addressed: Oil and Gas Accidents (well and pipeline)
Responsible Agencies: County Emergency Management Office, State
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. In Progress.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy is continually implemented.

18. Improve warning systems for dam failures.

Priority Level: Medium
Hazards Addressed: Dam Failure
Responsible Agencies: County Emergency Management Office, Utility Companies, Salvation Army
Financial and Technical Resources: Federal Government, Landowners, County, Big Creek Township,
Progress/Status: Ongoing/Long term throughout the entire county. Sirens in Mio.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a medium priority. The priority has not changed since the strategy is reviewed annually.

19. Continue training and increase the use of weather spotters.

Priority Level: Medium
Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Tornadoes, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, and Hail.
Responsible Agencies: County Emergency Management Office, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, National Weather Service, Salvation Army
Financial and Technical Resources: National Weather Service
Progress/Status: Ongoing/Long term throughout the entire county. National Weather Service has summer and winter weather spotter annual training workshops.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has changed since the strategy has been implemented and is continually monitored.

20. Ensure the county and townships have adequate equipment, staff, and training to respond to hazards.

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission, Local Fire Departments, Salvation Army, Police
Financial and Technical Resources: Federal Government, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. Progress made.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy is continually reviewed and addressed depending on available funding.

21. Promote media broadcasts about fire weather and warnings.

Priority Level: Low
Hazards Addressed: Wildfire
Responsible Agencies: County Emergency Management Office, U.S. Forest Service, Michigan Department of Natural Resources, National Weather Service
Financial and Technical Resources: County Emergency Management Office, County, Local Fire Departments, U.S. Forest Service, Michigan Department of Natural Resources, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. System in place. MDNR and USFS media announcements. TV, internet, social media announcements.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

22. Ensure key gasoline stations have the capacity to pump gasoline during power outages.

Priority Level: Low
Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Extreme Temperatures (Extreme Heat and Extreme Cold), Lightning, Transportation Hazardous Material Accidents, Dam Failure, and Transportation Accident.
Responsible Agencies: County Emergency Management Office, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission, Salvation Army, Local Businesses
Financial and Technical Resources: Federal Government, Local Businesses
Progress/Status: Ongoing/Long term throughout the entire county. One gas station with small tanks. Road Commission gas tank is only available for emergency response.
Previous Plans: This item has been retained from the 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy is continually inventoried.

23. Prearrange shelters for stranded motorists and travelers.

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Structural Fires, Transportation Hazardous Material Accidents, Dam Failure, and Transportation Accident.
Responsible Agencies: County Emergency Management Office, Civic Groups and Churches, State, Salvation Army, American Red Cross
Financial and Technical Resources: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Civic Groups and Churches
Progress/Status: Ongoing/Long term throughout the entire county. Hotels in the area.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually reviewed.

24. Inventory current heavy equipment, wreckers and jaws units within 30 minutes of county locations.

Priority Level: Low
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Structural Fires, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: County Emergency Management Office
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Annual reviews.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy is continually implemented.

25. Continue management efforts for debris staging and storage areas after a hazard event.

Priority Level: Low
Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Riverine and Urban Flooding, Lightning, and Dam Failure.
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission
Financial and Technical Resources: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments
Progress/Status: Ongoing/Long term throughout the entire county. No progress/activity.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

26. Identify adequate water supplies and areas lacking adequate water supplies for firefighting. Develop a strategy to construct dry hydrants.

Priority Level: Low
Hazards Addressed: Wildfire, Structural Fires, and Scrap Tire Fire.
Responsible Agencies: County Road Commission, Local Fire Departments, U.S. Forest Service, Michigan Department of Natural Resources
Financial and Technical Resources: County, U.S. Forest Service, Michigan Department of Natural Resources, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Only Mio and Mentor Township have hydrants. Fire Departments have identified water sources.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

Structural Projects Action and Implementation Strategies

The purpose of the structural projects action and implementation strategies is to address the strategies related to actions involving the construction of structures to reduce the impact from a hazard. Examples include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms. For each mitigation strategy in this category, the strategies are designed to reduce deaths and injuries, reduce structural damage and deterioration, prevent the interruption of businesses, prevent insurance losses, reduce capital costs for repairs, and reduce the degradation of cultural and natural resources.

1. Inventory, upgrade, and establish redundancies in utility and communications systems.

Priority Level: High
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Riverine and Urban Flooding, Extreme Temperatures (Extreme Heat and Extreme Cold), Lightning, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Emergency Management Office, County, Local Fire Departments, Salvation Army, Utility Company
Financial and Technical Resources: Local Businesses, Federal Government, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county. Lack of systems due to the area's rural nature.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

2. Establish heating centers and shelters for vulnerable populations.

Priority Level: High
Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), and Dam Failure.
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Civic Groups and Churches, Salvation Army, American Red Cross
Financial and Technical Resources: County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, District Health Department, Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. Sites identified and reviewed periodically.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a high priority. The priority has not changed since the strategy will be continually implemented.

3. Improve critical road/stream crossings through site identification, obtaining support, and seeking funding.

Priority Level: Medium
Hazards Addressed: Wildfire, Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Infrastructure Failures, Tornadoes, Public Health Emergency, Riverine and Urban Flooding, Structural Fires, Extreme Temperatures (Extreme Heat and Extreme Cold), Drought, Lightning, Oil and Gas Accidents (well and pipeline), Transportation Hazardous Material Accidents, Hail, Dam Failure, Transportation Accident, and Scrap Tire Fire.
Responsible Agencies: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission, State, NEMCOG
Financial and Technical Resources: State, Federal Government, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township
Progress/Status: Ongoing/Long term throughout the entire county.
Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a medium priority. The priority has not changed since the strategy will be continually implemented.

4. Inventory problem sections of roadways and place snow fences or rows of trees/vegetation along critical roadways to limit the blowing and drifting of snow.

Priority Level: Low
Hazards Addressed: Winter Weather Hazards (ice and sleet storms, and snowstorms)
Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County Road Commission, Salvation Army
Financial and Technical Resources: Federal Government, State, County Road Commission
Progress/Status: Ongoing/Long term throughout the entire county. Road segments identified.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

5. Encourage mobile home park developments to install tornado/wind shelters.

Priority Level: Low
Hazards Addressed: Severe Wind (Derecho), and Tornadoes.
Responsible Agencies: Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, County, State
Financial and Technical Resources: Federal Government
Progress/Status: Ongoing/Long term throughout the entire county. No mobile home parks have been developed since 2005. County is using State codes. Some townships are zoned, while others are not zoned.
Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually implemented.

6. Construct safe areas and storm shelters in campgrounds, parks, and outdoor recreational facilities.

Priority Level: Low

Hazards Addressed: Severe Wind (Derecho), Winter Weather Hazards (ice and sleet storms, and snowstorms), Tornadoes, Lightning, and Hail.

Responsible Agencies: County Emergency Management Office, County, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township, Local Fire Departments, County Road Commission, Police, Civic Groups and Churches, State, Local Businesses, Salvation Army, U.S. Forest Service, Michigan Department of Natural Resources, Schools

Financial and Technical Resources: County, County Emergency Management Office, State, Federal Government, Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township

Progress/Status: Ongoing/Long term throughout the entire county. Plans in place for Mio and Fairview. Emergency Management Office and the Road Commission do not have portable/changeable message signs. Safe areas identified at fairgrounds. Other sites reviewed periodically.

Previous Plans: This item has been retained from the 2005 and 2014 plans, in which it was classified as a low priority. The priority has not changed since the strategy will be continually reviewed and implemented.

Removed Mitigation Action and Implementation Strategies from the 2021 Plan and all Future Plans

1. Conduct an exercise involving a 60 person passenger bus accident.

Priority Level: Medium

Responsible Agencies: County Emergency Management Office, County, **Big Creek Township, Clinton Township, Comins Township, Elmer Township, Greenwood Township, Mentor Township**, Police, Local Fire Departments, Schools, National Weather Service

Financial and Technical Resources: Federal Government

Progress/Status: Ongoing/Long term throughout the entire county.

Previous Plans: This item has been retained from the 2014 plan, in which it was classified as a low priority. The exercise has been completed.

Chapter 9 Plan Maintenance

Implementation, Monitoring, and Evaluation

The Oscoda County Board of Commissioners and the Oscoda County Emergency Management Coordinator are the primary entities responsible for implementing the Hazard Mitigation Plan. The County Board of Commissioners will need to evaluate funding and staffing required to implement the Oscoda County Hazard Mitigation Plan since the current resources, both staff and financial, may not accommodate the expanded role of the Oscoda County Emergency Management Office and the Oscoda County Local Planning Team. GIS data sets and maps will be updated and maintained by the local governments for future use in the implementation and monitoring of hazard mitigation activities.

The LPT meets on a regular basis to carry out its duties and has expanded its role to function as the Hazard Mitigation Committee (HMC). The HMC and Emergency Management Coordinator will be responsible for monitoring and implementing the mitigation plan. Staff support will be provided by the Oscoda County Emergency Management Office and will coordinate with the County Board of Commissioners. The Oscoda County Emergency Management Coordinator will provide program administration and project oversight.

The roles related to the HMC will need to be defined/re-defined by the committee. The HMC will develop a five year project list from the mitigation strategies identified in the Oscoda County Hazard Mitigation Plan, and will perform an annual review of the hazard mitigation plan to determine what projects have been accomplished and to add new projects to the five year action list. The HMC may also assist other agencies in completing projects, such as determining overall costs and funding sources, identifying the staff and agencies required to complete the project, and determining timelines. The HMC may also establish an annual work plan, support grant writing to seek funding to complete projects, address specific issues and circumstances arising from an event that caused a disaster declaration, evaluate the need for new projects and amend the hazard mitigation plan, review reports from agencies involved in implementing mitigation projects, prepare an annual mitigation activity report for the County Board of Commissioners, and function as a clearinghouse for mitigation grant applications. During the hazard mitigation plan update process, the Hazard Mitigation Committee will advertise and facilitate two public meetings to obtain input from the general public, businesses, townships, and agencies. A notice will be posted to advertise any meeting of the HMC where the committee will be reviewing and/or updating the mitigation plan.

Additionally, the HMC and the Oscoda County Emergency Management Office will be responsible for evaluating the effectiveness of the plan during the five year update or more often, if necessary. The evaluation will keep the hazard mitigation plan current and will include an assessment about whether the goals and objectives address current and expected conditions, the risks have changed in nature, magnitude or type, there are implementation issues, the current resources are appropriate for implementing the plan, there have been favorable outcomes, and other agencies and stakeholders have participated as expected. Additional emergency management staff time will be required to assist the HMC in completing its duties.

Local governments, county departments, and local, state and federal agencies will have the ability to propose projects and sponsor projects identified in the hazard mitigation plan. The HMC will coordinate and support plan implementation and allow the committee to monitor the plan's progress, determine timelines, and evaluate the plan for revisions.

Partnerships with the following agencies and organizations will strengthen the County's hazard mitigation program to efficiently leverage available resources:

- Oscoda County Departments
- Big Creek Township
- Clinton Township
- Comins Township
- Elmer Township
- Greenwood Township
- Mentor Township
- Township Fire Departments
- Oscoda County Conservation District
- Oscoda County Road Commission
- Northeast Michigan Council of Governments
- Michigan Department of Natural Resources
- Michigan Department of Environment, Great Lakes, and Energy
- U.S. Forest Service
- Michigan State University Extension
- Michigan Department of Agricultural
- Natural Resource Conservation Service
- District Health Department
- Huron Pines
- American Red Cross
- Insurance Companies
- Real Estate Companies
- Local Businesses
- Civic Groups and Churches
- Michigan State Police
- Planning Commissions
- Zoning Administrators
- Housing Commission
- NEMSCA

Integration

Oscoda County, all townships in Oscoda County, and local and state agencies will consider integrating information from the hazard mitigation plan into their comprehensive and operations plans. When the County acquires funding to update its master plan, it will consider incorporating appropriate hazard mitigation information into the plan. Three of the six townships (Comins, Greenwood, and Mentor Townships) administer zoning. As part of the education and outreach aspect of the hazard mitigation effort, the other townships will be encouraged to adopt zoning regulations to minimize the effect of hazards.

Five Year Plan Review and Update

The Stafford Act, as amended by the Disaster Mitigation Act of 2000, requires the Oscoda County Hazard Mitigation Plan to be updated, adopted, and re-submitted for Federal Emergency Management Agency (FEMA) approval every five years. The plan will be reviewed by the Hazard Mitigation Committee every five years in alignment with federal regulations. The update will include determining changes in the county, such as changes in development, an increase in exposure to hazards, an increase or decrease in the communities' capability to address hazards, addition and/or removal of mitigation actions and strategies, reviewing goals, and a change in federal or state legislation. Upon plan review and update completion, the plan will be sent to the State Hazard Mitigation Officer at the Michigan State Police for final review and approval in coordination with FEMA. When the plan has received an "approved pending adoption" status from FEMA, the County Board of Commissioners can review, approve, and

adopt the plan. In order to properly update the plan, Oscoda County will need to seek funding from appropriate state and federal agencies.

Continued Public Involvement

Oscoda County is committed to keeping the public involved in the implementation and update of the Hazard Mitigation Plan. Copies of the plan will be available at the county libraries, county clerk's office, and all township offices, and will be posted on the community websites and/or regional planning agency website. The Emergency Management Office will be responsible for keeping a record of public comments on the plan.

This page intentionally left blank.

Appendix A
Regional Public Participation Survey

The survey results for individuals residing in or near Oscoda County are included within this appendix and are represented with graphs, tables, and dated comments. The results for the entire regional survey can be viewed at:
http://www.discovernortheastmichigan.org/downloads/regional_survey_results.pdf.

Three respondents indicated they lived within or near Oscoda County and 66.67% indicated they have not received information about how to make their household safer from natural, technological, or human-related hazards. The respondent who had received information indicated it came from the insurance company. The majority of respondents indicated the internet and newspaper were the most effective ways to distribute information, followed by television, mail, and public workshops/meetings. About 66.67% of respondents indicated they have not experienced a hazard event in the last five years.

Natural Hazards

Respondents are very concerned or somewhat concerned about the following hazards:

- Wildfires, and windstorm/high winds: 100%
- Extreme cold events, extreme heat events, snow/ice storms, and tornadoes:66.67%

Respondents were split evenly on their concern level for drought (somewhat concerned, neutral, and not very concerned). Additionally, the majority of respondents were neutral about flooding and thunderstorms.

Respondents feel Oscoda County is best prepared to handle thunderstorms (66.67%). Respondents feel the county is least prepared to handle extreme heat events (66.67%), tornadoes (100%), and wildfires (66.67%). Approximately 66.67% of respondents were unsure how prepared the county was to handle drought, and floods. Additionally, respondents were evenly split (best prepared, least prepared, or unsure) in how prepared the county was to handle extreme cold events, snow/ice storms, and windstorms/high winds.

Technological Hazards

Respondents are very concerned or somewhat concerned about the following hazards:

- Hazardous Material Spill, oil and gas accident, road accidents, structural fires, and terrorism/sabotage: 100%
- Communications failure, dam failure, power failure: 66.67%

Respondents are not very concerned or not concerned about the following hazards:

- Railroad accidents, water transportation accidents, and Water or Wastewater Treatment System Failure: 66.67%

Respondents are evenly split on their concern level for the following hazards:

- Air transportation accidents: 33.33% are somewhat concerned, 33.33% are neutral, and 33.33% are not very concerned

Approximately 66.67% of respondents feel Oscoda County is best prepared to handle power failures, road accidents, and structural fires. All respondents feel Oscoda County is least prepared to handle communications failures and terrorism/sabotage, while 66.67% feel the county is least prepared to handle air transportation accidents, hazardous material spills, oil and gas accidents, railroad accidents, water transportation accidents, and water or wastewater treatment system failures.

Human-Related Hazards

Respondents are very concerned or somewhat concerned about the following hazard:

- Chemical or biological attacks: 66.67%

Respondents are evenly split on their concern level for the following hazard:

- Cyber-attacks: 33.33% are very concerned, 33.33% are neutral, and 33.33% are not very concerned

All respondents feel the county is least prepared to handle chemical or biological attacks, and cyber-attacks.

Community Assets

Respondents ranked the following community assets from the most vulnerable to the least vulnerable to the hazard impacts:

1. Cultural/Historic (damage or loss of libraries, museums, fairgrounds, etc.)
2. Infrastructure (damage or loss of bridges, utilities, schools, etc.)
3. Economic (business closures, job losses, etc.) and Environmental (damage or loss of forests, waterways, etc.)
4. Human (death/injuries) and Governance (ability to maintain order and/or provide public amenities and services)

Regulatory Approaches

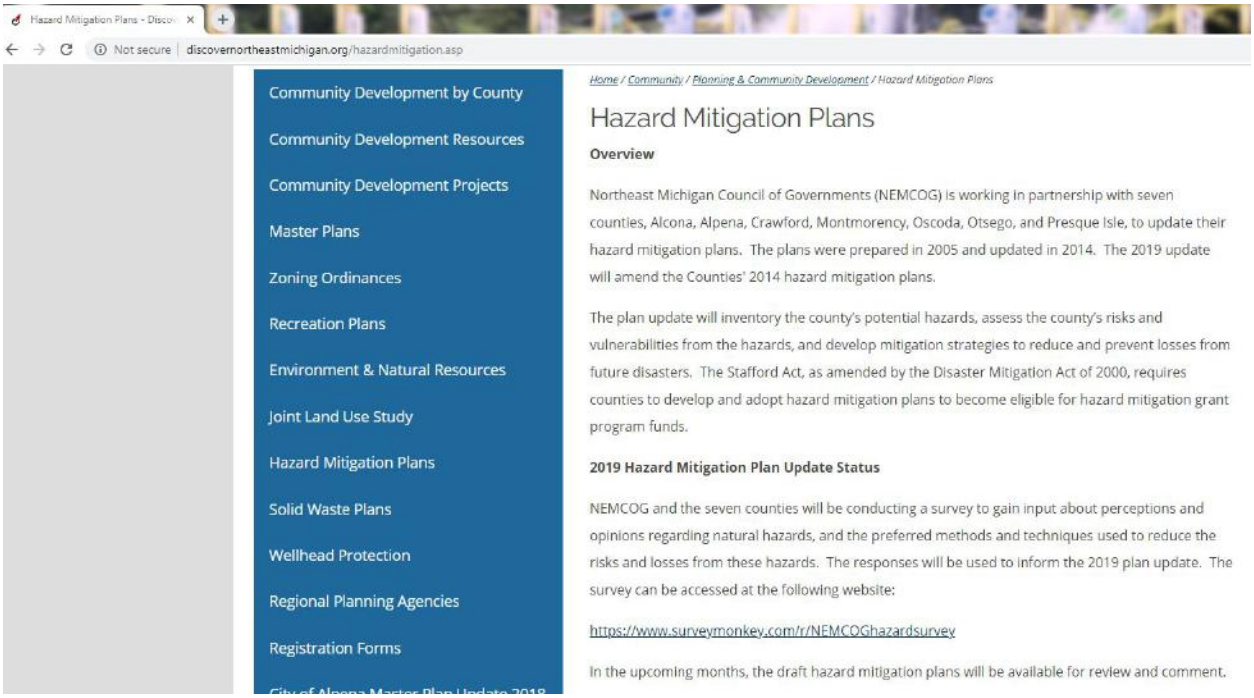
Respondents supported the following approaches to reduce risk and loss associated with disasters:

- Making their home more disaster-resilient (66.67%)
- Taking steps to safeguard the local economy following a disaster (100%)
- Creating an inventory of at-risk buildings and infrastructure (66.67%)
- Improving the disaster preparedness of local schools (100%)
- Disclosing natural hazard risk on real estate transactions (66.67%)
- Policies to prohibit development in areas subject to natural hazards (100%)
- Non-regulatory approaches (100%)
- Protecting historical or cultural structures (66.67%)
- The use of tax dollars to reduce risk and losses from natural disasters (33.33%)
- Regulatory approaches (33.33%)

Respondents recommended increasing public outreach and education efforts.

Appendix B
Planning Process Supporting Documents

Regional Public Participation Survey Publicity



Meeting Agendas, Minutes, and Sign-in Sheets

Oscoda County
Local Emergency Planning Committee (LEPC) & Local Planning Team (LPT)

Commissioner's Mtg Rm 105 Court St Mio, MI 48647

MEMBERS/ Reps from

A Representative from each agency : (LEPC Chair & Fire) Duane Roddy ; (BOC) Kyle Yoder; (Communications/RACES) Don Hosmer ; (EMC/Secretary) Elizabeth (Buffy)Carr ; (EMS) Bob Hunter; (Law Enforcement/Co) Kevin Grace or Ed Pok; (LE/State) ; (Hospitals) ; (Human Services) John Eurich; (Local Government) Rodd Layman (also Fire & Rd Comm); (Public Works) Steve Dufour; (Public Health) Cori Upper ; (Red +) Al Bickford or Carol Rabineau; (Schools) Paul Ciske or

Agenda for: Wed, April 17, 2019 @ 1pm

Call To Order
Introductions/Public Comment
Approval of or additions to today's Agenda & Previous Minutes

Correspondence
Old Business:

a. 18/19 HMEP Grant status update – Carr
b. Review 1, or more, SARA Tier I &/or II plan(s): – Carr/Roddy
c. HazMat County Budget Section (Note we really need to start utilizingthis for training & exercise as it counts as HMEP matching 7 our time as match at LEPC meetings keeps falling short of the $1,000 match; so we are short-changing ourselves as a county.): Roddy
d. Hoskins or other contaminated site updates: Roddy
e. Airport Updates: Yoder
f. PFAS Updates: Upper
New Business:

Meeting schedule for 2018/2019 (based upon State fiscal yr/HMEP) 1pm on: Oct 17,18; Jan, 23,19; April 17,19; July 17,19
Adjourn LEPC
- -

--- Local Planning Team ---

Representatives as above:
Guests:
Introductions
Approval of Agenda & Previous Minutes
Standing Reports
Red + - Rabineau or Bickford
Amateur Radio – Hosmer
HCC Planning Board – Upper
CERT – Upper or Carr

Emergency Management Report: - Carr
1. Hazard Mitigation Plan Update: Planning Grant Awarded to us in conjunction with NEMCOG. Contact person is Diane Rekowski 989-705-3734 drekowski@nemcog.org (Note: make sure it is LPT NOT LEPC time used for match & make sure Resolution of Adoption wording, when it is time for that , is Local Planning Team, NOT the LEPC, which is specifically for HazMat topics)

2. Homeland Security Grant Reports - Carr
FY16
Via LETPA $10,890 800mHz radios at Sheriff Dept Approved & Purchased
Reimbursement Request submitted

FY16 CERT Funds for VRC Kits & Weather Radios fronted by other counties
~ $10,000 Disaster Recovery Kit (Regional) AAF fully approved this week
R3CCP Conference Oct 21 & 22, 2017 COMPLETE: funds fronted by other counties
No 2018 Conference due to International EMC Conference in MI in Oct paired with MEMA Planning a March 2019 Conference will begin in Nov.

FY17

~ $27,281.13 (increased from original $26,745) Court Building Security Improvements: portable metal detector, wands, chip reader doors, & possible entryway addition (with any portion being optional) for Courthouse Annex (where the Courts are) AAF submitted Approved at Region State approval pending

FY18 $27,304.30 HAM Radio HF Antenna Improvements with remaining Court Bdg Scurity Improvements Approved at the Region Awaiting FY18 Grant Guidance to be able to complete AAF

Existing Priorities:
Generator for new EOC
Sirens for Fairgrounds, Comins, & Luzerne, & McKinley
IP Video Cameras at new County Building & schools
800mHz radios on school buses
$?) was it IP video cameras or computer related upgrades at Sheriff Dept (Dan or Kevin?)
Other additions?

FY17 & 18 CCP $ for Disaster Recovery Kits for Mio & Fairview Schools
$ CCP Conference

Review an EAG Annex (see attachment) : those about to expire; Animals In Disaster Longterm completion goal, & See attached Annex(es) with email …ongoing– Carr

Meetings: following LEPC on: (1pm) as above
Adjournment

Minutes for OSCODA COUNTY LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)

Then OSCODA COUNTY LOCAL PLANNING TEAM (LPT)

For: 1pm April 17, 2019

MEMBERS/ Reps from

A representative from (usual rep noted): (LEPC Chair & Big Ck Twp) Duane Roddy ; (BOC) Kyle Yoder; (Communications/RACES) Don Hosmer; (EMC/Secretary) Elizabeth (Buffy)Carr ; (Law Enforcement/Co) Kevin Grace; (Local Gov't Clinton Twp) Rodd Layman; (Local Gov't McKinley) ; Steve Dufour (Public Health) Cori Upper ; Al Bickford; Jill Roark(Red +)

Guests: Christina McEmber & Nico Tucker both of NEMCOG & Jack Roark of Red +

Called To Order by Chair, Duane Roddy, at 1:03pm
Introductions were made
No public comment answered the call for same.
MOTION by Cori Upper 2nd by Kevin Grace to Approve Agenda & Minutes of January 2019
MOTION CARRIED
–Old Business-

- Review a 302 Site Plan or SARA Title III – Plans for Riverside # 12539; Brietburn #18705, 12538, & 12537; & Gosling sites #'d 6326, 20847, 20853, 20855, 20857, 20607,20854, 20856, 20853, 20859, & 19951 were reviewed.
- Budget related business – It has been note we really need to have the county host trainings from that HazMat budget to meet our HMEP match & take full benefit of both the grant & that dept's budget. Duane Roddy reported that he had spoken with the instructor in Lansing. It is still being scheduled to have a class here. He & Kevin Grace submitted a plan with Roscommon, including information that Roscommon is in Region 7 & we are in Region 3.
- PFAS – Cori Upper reported that there was no real new information at this time.

– Reports-

* HMEP 18/19: Buffy Carr reported that our application & info for the 1st 2 rounds was submitted, & our end of year report will be due in October, or possibly Sept (before the end of the State's fiscal year), like last year, depending upon who is overseeing that dept at the State at that time.

* Contaminated Sites Update: if new info: Duane Roddy reported the possibility of solar energy at the old Hoskins site, & that somebody looked at purchasing the old gas station site in Luzerne, but as usual that last fell through due to the contamination.

* Airport: no report

No New Business answered the call for same.

Meeting Schedule: 1pm on Oct 17, 18; Jan 23,19; April 17,19; July 17, 19
MOTION by Kevin Grace to Adjourn LEPC @ 1:11pm

_ _-

Present: same as above

Call Local Planning Team was Called to Order by Chair, Kevin Grace, @ 1:11pm
No Public Comment answered the call for same.
MOTION Duane Roddy to approve Agenda, & January Minutes 2nd Cori Upper
MOTION CARRIED
-Reports-

RACES: Hosmer reported that he attended the Aux Com Conference & he is building liasons to the south. Carr recommended that he make contact with Stan Darmofal He has spoken to Stan before. Carr believes that to be a solid contact & she has good relations with their ARES/RACES. She recommends he maintains & builds that, especially as it is the largest, & most active, such group in Region 3, & quite likely the State. Don had discussed a new wy to recruit

Red + : Bickford reminded us all that he is transitioning out of his position with LPT & LEPC, due to extended duties as a Red + volunteer. Jack & Jill will be filling the position. Together, the three of them, reported that in northeast MI Red + is down to 4 trailers. 1 went that we did have went to Traverse City; 1 is in Alpena; Gaylord, & Rogers City, which is within ed +'s northern MI Region. Within our cross-section of their district & our part of Region 3/District 3 Emergency Management there is only the 1 in West Branch. Arenac has one , which is the next Red + Region to the South, & within Region 3.

HCC: Cori Upper reported that there is an SNS Closed Pod Regional Exercise for longterm Care Facilities. It is limited to participation of active Healthcare Coalition participants only. June 20 at either SVSU or Delta College Carr added that Family Physical Therapy in Mio is filed as a facility & therefore had to establish an EAG. She met with Becky, after directing her to Rob Kelly, & they have a good start on their Plan. They will give a copy of the completed Plan to Oscoda County Emergency Management. Carr also gave the facility a NOAA Weather Radio.

Emergency Management: Carr reported that we have been asked to meet elsewhere from here on out. She voiced concerns echoed by others in the group that with this being the EOC, access is critically important, & that it eases facilitating the meetings, with easy access to the EOC Closet, the office, & Tier II Reports. Kyle offered to discuss this further, & felt there was real merit to allowing the LEPC & LPT to continue to hold their back-to-back meetings in this location.

Hazard Mitigation Plan Update: Planning Grant Awarded to us in conjunction with NEMCOG. Contact person is Christina 989-705-3734 e: make sure it is LPT NOT LEPC time used for match & make sure Resolution of Adoption wording, when it is time for that , is Local Planning Team, NOT the LEPC, which is specifically for HazMat topics)

Training & Exercises: Wellspring Evac Ttx July 24,2019 AAR submitted FS next year Date TBD?

Dam Extrication Do a new Ttx FS , equipment (?) date?

Please, be sure to log in & participate in monthly or quarterly (as issued) micims Drills to maintain your access & keep sharp on how to use the site

Homeland Security Grant Update

FY16
Via LETPA $10,890 800's for Sheriff Dept Approved, purchased, & submitted for reimbursement

FY16CCP
$ about 2,700 R3CCP Conference Reimbursements Reimbursed
$3,272.45 Disaster Recovery Kits AAF approved at Region & State Acquiring final Quotes for Purchase Request

FY17
$27,281.13 Portable Metal detector, Wands, chip reader doors, lights, & Entryway Addition (any piece being optional) for Courthouse Annex (Where Court is) AAF Approved at Region Awaiting EHP approval

FY18
$27,304.30 HAM Radio Reception/horizontal antenna Improvements with Rest of Courthouse (Annex Bdg) Security Improvements Approved at Region Awaiting FY18 Grant Guidance to prepare AAF

Priorities List: 1) Generator for the new Courthouse Construction/EOC 2) Warning Sirens for Luzerne, Comins, McKinley, & Fairgrounds) ~$99,000 3) The HF antenna that has been on our wish list for many many years $1,200 ;
Ice rescue equipment (Dave Stencil requested) $
IP Cameras at new courthouse, & schools $
Possibly 800mHz Radios for buses & schools $
$ Ip Video Cameras for new Courthouse with EOC
FY17 & 18CCP $ likely via CCP Disaster bucket Kits for remaining classrooms at Mio & Fairview Schools & also for vulnerable populations
Also CCP Conference

EAG Review An Annex - .Animals In Disaster longterm goal to complete, Public Works was reviewed

Next meeting dates: 1pm on Wednesdays: **as above**

Motion to Adjourn LPT made by Cori Upper & no objections were made.
Minutes recorded by Elizabeth (Buffy) Carr, LVT, EMC

Oscoda LPT Sign in sheet for Hazard Mitigation Plan Update Grant Matching

4/17/19

signature	printed name	organization
	Elizabeth Carr	Em Mgmt
Duane Roddy	DUANE RODDY	LEPC
Kevin R Grace		oscoda Co. sheriff
Cori Lepper	Cori Lepper	District Health Dept. No.
	Christina McEmber	NEMCOG
	Nico Tucker	NEMCOG
	AL BICKFORD	RED +
Jill Roark	Jill Roark	Red Cross
Jack Roark	JACK ROARK	Red Cross
	FRANK WYREMBELSKI	LUZERNE FIRE DEPT.
Jessica Leski	Jessica Leski	mdoc parole/probation
		Oscoda Co ARES/RACES
	Kyle Yoder	Commissioner Chair

Northeast Michigan Council of Governments
80 Livingston Blvd Suite U-108 | PO Box 457 | Gaylord, MI 49734 | Voice: 989.705.3730 | Fax: 989.705.3729 | nemcog.org

MINUTES
OF THE
NORTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
BOARD OF DIRECTORS' MEETING

April 18, 2019

University Center
Gaylord, MI

Call to Order

The Northeast Michigan Council of Governments (NEMCOG) Board of Directors Meeting was called to order by Robert Heilman, Board President, at 10:02 a.m.

A quorum was declared.

Roll Call

Board Members Present:	Dan Gauthier, Dave Karschnick, John Wallace, James Kargol, Kyle Yoder, Robert Pallarito, Carl Altman, Adam Poll, Marisue Moreau, Robert Heilman, Doug Baum, Dave Post, Bill Wishart and Norman Brecheisen
Staff Present:	Diane Rekowski, Theresa Huff and Karen Cole

Approval of Minutes

R. Heilman presented the Minutes of the March 21, 2019 meeting. R. Pallarito moved, seconded J. Wallace to approve the minutes as presented. Yes all, motion carried.

Financial Report

K. Cole reviewed the March, 2019 financial statements. D. Baum moved, seconded by A. Poll to receive and file the March, 2019 Financial Report as presented. Yes all, motion carried.
K. Cole informed the Board that the FY2018 Audit is still in progress and expects one more meeting with the auditors.

Presentation: Lindsey Miller, MEDC

Lindsey introduced herself to the board as MI Economic Development Corporation's (MEDC's) Community Assistance Team (CAT) staff for the NEMCOG region. She also covers the three counties below (Roscommon, Ogemaw and Iosco) and three counties in the Upper Peninsula. Information on Community Assistance programs offered by MEDC was then reviewed along questions taken from the Board.

President's Report

Regional Project Review: R. Heilman stated there were (6) Federal Grant projects for regional review; (0) Other projects for regional review and (1) public notice. D. Baum moved, seconded by M. Moreau to approve all the Projects as presented. Yes all, motion carried.

MI Association of Regions (MAR): D. Rekowski informed the Board that funding for the Regional Prosperity Initiative (RPI) was not included in the Governor's Budget. MAR is working with Legislators to restore funding.

Director's Report

RPI: D. Rekowski updated the Board on the RPI Mini-grant program. 34 Mini-Grant applications were received. Program is very popular within the Region. The Resolution the NEMCOG Board approved last meeting has been sent to the Region's Representatives. Meetings have been organized to discuss in detail the success of the RPI in the region. The resolution will be sent to the board members for possible action from local boards.

Small Business Development Center (SBDC) Update: D. Rekowski will be meeting with Marisue Moreau, SBDC and Kirtland Community Colleges to discuss possible collaboration to ensure small business counseling services continue in the region. May be a good topic that the new Executive Committee for the RPI Council could explore.

Staff Program Highlight: Hazard Mitigation

Christina McEmber was introduced to the board as a new staff member at NEMCOG. She gave a brief status update of the Hazard Mitigation process, includes 7 counties and is in the early stage of planning and meeting with Emergency Managers in the region.

Coming Events: D. Rekowski provided a handout of coming events including May 1, 2019, Solid Waste/Sustainable Materials Workshop in Hillman, MSUE- Opportunity Zones Workshop, May 13th, Munetrix, May 16 NEMCOG Board meeting and Coastal Resiliency Workshop, May 21st at NOAA.

Committee Reports

RPI Committee: D. Baum stated there was not a meeting last month; too many members were out of town due to Spring Break.

Previous Business

None

New Business

None

County Updates

Alcona Co.: Sheriff is retiring May 1st. The Under Sheriff will fill the Sheriff's position. Have a new Emergency Manager. Union staff got a wage increase, now having to look at non-union staff wage increase.

Alpena Co.: New jail at $12 million, funded by a millage. New Airport Terminal moving along fast.

Cheboygan Co.: New jail expansion is complete. Jail increased from 80 to 105 beds. Meijer is a possibility as a review of a 425 agreement is underway

City of Alpena: Finishing first CRP grant. Lots of interest in rental rehab program.

City of Gaylord: Approved Elmer's for street construction projects this summer. Pilot program-55 town houses behind Family Fare. Project on East Side of town will have 228 apartments coming in. T-Mobile is opening a store. Will be ripping out Shell Station/Schnapps and Hopps parking lot. Lucky's will be going in by Meijer's and south Townline.

City of Grayling: Approved Construction Manager to work with Architect on the Hub project. Working on site plan review. Arauco had their grand opening this week. Board will tour in the fall. Arauco is a 520,000 square foot facility with full technology. Northern Michigan Law Enforcement Training Group is still having problems with the Camp Grayling and they no longer have an office on the base. Blake Davis was hired for marketing and scheduling the training with area police departments.

Emmet Co.: City of Petoskey Pit/Hole has been sold and there are plans to construct a building at the site.

Livingston Township: Approved right of way with Consumers to increase lines to grow facilities.

MI Works!: Career Fairs are going on. The next one will be in Alpena next Tuesday. 3 have been completed. Have done well, except low number in Mackinaw. Career Quest is fast approaching. 1,600 students, 4 quadrants with several employers. Have VIPs, can stop by, let Marisue know. Volunteers are welcome. If anyone wants to volunteer, let Marisue know.

Mackinaw City: Lawsuit back to ZBA. "Suer" back to Circuit Court. 3 businesses in town have had their roofs collapse due to the heavy snow and have been condemned. Straits pretty much free of ice.

Oscoda Co.: Court house update – meeting with contractor for estimate and design for the build. Hope to start in near future. Interested in learning more about Dark Skies. Oscoda County dismissed from State Law Suite. Having some road issues near airport to residents who leave near there.

Otsego Co.: Approved second round of Recycling RFP. Had issues with 1st round with American Waste vs. Emmet County. Goes to board for approval next week. Otsego County transit having funding issues. Will go to vote in August for a significant millage.

Presque Isle Co.: It's fairly quiet, looking for bids for jail roof. RFP has been released for the sale of the Onaway Airport.

Village of Hillman: A test well for water was completed and didn't go very well, back to the drawing board. Redoing plumbing to see if that'll help. Doing storm drain work, gearing up for summer. Dark Skies event last week, did very well. Hillman Community Radio website has a Dark Skies section and there are several amazing photos displayed. Hillman Airport 5k Run and Walk on July 6th. Will have planes and restaurants there.

Public Comment
None

Adjournment
The meeting was adjourned at 11:45 a.m. The next Board Meeting will be held on May 16, 2019 at the University Center in Gaylord.

Minutes for OSCODA COUNTY LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)

OSCODA COUNTY LOCAL PLANNING TEAM (LPT)

For: July 17, 2019
MEMBERS/ Reps from
A representative from (usual rep noted): (LEPC Chair & Big Ck Twp) Duane Roddy ; (BOC) Kyle Yoder; (Communications/RACES) Don Hosmer; (EMC/Secretary) Elizabeth (Buffy)Carr ; (EMS) Bob Hunter ;(Public Health) Cori Upper ; (Red +) Al Bickford
Guest: Jack& Jill Roark (Red +) ; Mike Bowers (incoming EMC); & Christine McEmber (NEMCOG)

Call To Order at 1:06 pm by Duane Roddy
Introductions were made
No answer was made for the call for PUBLIC COMMENT 2nd Don

MOTION by Cori to approve Agenda & April Minutes
Motion Carried

–Old Business-

- Review a 302 Site Plan or SARA Title III – Cooper Standard Tier !! Reports for Site #16676 & #15122 were reviewed
-
- Budget related business- The reminder Note that we really need to have the county host trainings from that HazMat budget to meet our HMEP match & take full benefit of both the grant & that dept's budget was read aloud by Roddy. He presented info & discussion was held that the billing has been corrected for the Haz Mat Incident with MI Bark Truck hitting the Fairview Food Market, & is in Treasurer, Bill Kendall's hands. A-1 , the clean-up, has billed the MI Bark's insurance company. The Fire Association has a meeting tonight & the Incident will be a topic at that meeting.
-
- PFAS – Info presented by Upper that there was a PFAS meeting in the City of Oscoda. Residents there are frustrated at the rate of clean-up with the Airforce, being the responsible party. Facts that are in previous Minutes were discussed & presented further. Every municipal system & school system in MI had their water tested in DHD#2, only Whittemore Schools was positive for PFAS.

– Reports-

* HMEP 18/19: Per Carr the full Grant Agreement has been submitted. Report expected to be due in October. Noted that last year, the new administrator for that at the State (EMHSD) made it due before the end of the Fiscal year that the Report pertained to.

* Contaminated Sites Update: if new info: Info presented by Roddy to update Mike re: Hoskins & the old gas station/laundromat site in Luzerne. Kyle contributed info regarding State funds becoming available via townships for buildings in similar situations as that one in Luzerne.

* Airport: Info presented by Kyle Yoder that lettering was replaced on a fuel tank. Jackie Bondar & Chuck Varner met with another regarding some building projects there. Discussion was had regarding the 2 filter system on the fuel tank.

-New Business –

No new business answered that call

Meeting Schedule: 1pm (3rd Wed quarterly) on Oct 16
Motion to Adjourn by Al Bickford at 1:30pm

-_ _-

Representatives as above were present

Call Local Planning Team was called to Order by VC Cori Upper

No Public Comment answered the call for same

MOTION by Roddy to approve Agenda, & April Minutes 2nd by Don
Motion Carried

*Presentation of Emergency Coordinator Award from Region 3 RACES/ ARES was made to Don Hosmer by Carr

-Reports-

RACES: Hosmer reported that he was at the recent EC Regional meeting & contact made regarding Monday's Search Incident

Red + : Bickford reported on specific items delivered by Red Cross to the Search Incident. Timing of requests vs local vendors ability to prepare it was a large problem. Red Cross would like their volunteers to issue the food at Incidents directly to the recipients, & want some media coverage to relate to that. This particular Incident was very tightly managed by MSP, which prevented those options from being possible. They would like to the Red Cross Trailer from this region to Mio TriPoint Church of God, which is one of the local designated shelters, & has the space to accommodate it.

HCC: Cori Upper presented that they recently held a Closed POD Exercise. He explained that to those who were not familiar.

Hazard Mitigation Plan Update: Presentation of materials to update & some that they updated based upon available information made by Christina McEmber (989-705-3733) After today our in-kind match will be down to about $2,500. Materials were reviewed & updates were recommended. Christine recorded those.

Training & Exercises: Evacuation Full Scale at The Villa WB is complete, including submission of AAR to the State. Carr & some Oscoda Co personnel participated, including Cori.

Dam Extrication – Carr emailed Scott Knight, Dale Nichols (& separately William Glaab, grant/equipment guy), cc'ing Bob Hunter & fwd to Mike Bowers, & the fellow from Midland/Region 3 RRT Confined Space Team, to arrange a fresh orientation at Mio Hydroelectric Dam & workshop, or Tabletop. They have not responded. She will pass Mike Scott's contact info to get that arranged to occur before the end of Sept/the State's fiscal year.

She & Mike will be participating in the Active Shooter & VRC Full Scale at Tawas High School as Evaluators on August 7.

Reminder remains in the agenda to ***Please, be sure to log in & participate in monthly or quarterly (as issued) micims Drills to maintain your access & keep sharp on how to use the site***

Homeland Security Grant Update

FY16
Via LETPA $10,890 800's for Sheriff Dept Approved, purchased, & submitted for reimbursement

FY16CCP
$ about 2,700 R3CCP Conference Reimbursements Reimbursed
$3,272.45 Disaster Recovery Kits AAF approved at Region & State Acquiring final Quotes for Purchase Request

FY17
$27,281.13 Portable Metal detector, Wands, chip reader doors, lights, & Entryway Addition (any piece being optional) for Courthouse Annex (Where Court is) AAF Approved at Region Awaiting EHP approval
Kyle added that he has an upcoming meeting with the Judge & Prosecutor regarding this & related projects, in part to prioritize the items on the approved AAF for their order of being purchased, as the total costs exceed the allocation. Per Carr some will be deferred to the related FY18 Project.

FY18

$27,304.30 HAM Radio Reception/horizontal antenna Improvements with Rest of Courthouse (Annex Bdg) Security Improvements Approved at Region Awaiting FY18 Grant Guidance to prepare AAF

Priorities List: 1) Generator for the new Courthouse Construction/EOC 2) Warning Sirens for Luzerne, Comins, McKinley, & Fairgrounds) ~$99,000 3) The HF antenna that has been on our wish list for many many years $1,200 ; Ice rescue equipment (Dave Stencil requested) $
IP Cameras at new courthouse, & schools $
Possibly 800mHz Radios for buses & schools $
$ Ip Video Cameras for new Courthouse with EOC
FY17 & 18CCP $ likely via CCP Disaster bucket Kits for remaining classrooms at Mio & Fairview Schools & also for vulnerable populations
Also CCP Conference

EAG Review An Annex - .Animals In Disaster longterm goal to complete, Communications Plan Discussion was held & a Carr recommended to remove names & use positions instead with a reference to the EOC Call List for the phone numbers. Consensus was made to do that. No motions were made

Next meeting dates: 1pm on Wednesdays: **as above**

Jack extended a thank you to Buffy & also to Mike for the excellent job done at the Incident for Missing 2yr old Monday & Tuesday. Buffy further thanked Mike as well.

Cori extended a thank you & fond farewell from the group to Buffy, & that she will be missed. Cori additionally welcomed Mike on the group's behalf, & extended that they are looking forward to working with him.

MOTION by Duane to Adjourn LPT at 3:01pm

Minutes recorded by
Elizabeth (Buffy) Carr, LVT, EMC

Northeast Michigan Council of Governments
80 Livingston Blvd, Suite U-108
PO Box 457
Gaylord, MI 49734
Direct: 989-705-3730 Fax: 989-705-3729
www.discovernortheastmichigan.org

1:30 pm – 3:00pm

Sign in Sheet

Project Name:	**Hazard Mitigation**
Project Number:	**340**
County:	**Oscoda County; LPT Meeting**

Date	Name and Title	Agency/Jurisdiction/Organization	Hourly Rate	Signature: I verify the hourly rate associated with my name is accurate.
7/17/2019	Jackie Roark	Red Cross	—	Jackie Roark
7/17/2019	Jill Roark	Red Cross	—	Jill Roark
7/17/2019	AK BICKFORD	RED CROSS		
7/17/2019	Bob Hunter	Oscoda County EMS		Bob Hunter
7/17/2019	Kyle Yoder	OSCODA COUNTY BOC		Kyle Yoder
7/17/2019	Cori Upper	District Health Dept No. 2		Cori Upper
7/17/2019	DUANE RODDY	LEPC		Duane Roddy
7/17/2019	— (Buffy Carr	Em Mgmt		
7/17/2019	Michael J Hosmer	EMC		
7/17/2019	DONALD HOSMER	ARES/RACES		D. Hosmer

Appendix B

Oscoda County Public Meeting Minutes for November 26, 2019

Present: Michael Bowers, Kyle Yoder, Annette Chalmers, Charlie Senske, and Christina McEmber.

Michael Bowers called the meeting to order at 6:30 pm. No public was present at the meeting. Those present are part of the LPT or have attended previous plan update meetings. Comments and suggestions about the plan were discussed. None of those at the meeting had received any comments or suggestions about the plan. Next steps were discussed: the draft plan will be submitted to the State and FEMA for approval pending adoption. Then, the plan will be submitted to the County's Board of Commissioners and local jurisdictions for adoption. The meeting was closed at 6:40 pm.

Submitted by Christina McEmber

Oscoda County
18:30 - Complete
Hazard Mitigation Public Meeting 11-26-19

Michael J Bowers	
Christina McEmber	
Kyle Yoder	
Annette Chalmers	
Charlie Senske	

DISCOVER Northeast Michigan EAST OF EXPECTED

Northeast Michigan Council of Governments
80 Livingston Blvd Suite U-108 | PO Box 457 | Gaylord, MI 49734 | Voice: 989.705.3730 | Fax: 989.705.3729 | nemcog.org

MINUTES
OF THE
NORTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
BOARD OF DIRECTORS' MEETING

December 19, 2019

University Center
Gaylord, MI

Call to Order
The Northeast Michigan Council of Governments (NEMCOG) Board of Directors Meeting was called to order by Robert Heilman, President, at 10:00 a.m.

Roll Call

Board Members Present:	Dan Gauthier, Dave Karschnick, Daryl Peterson, Kyle Yoder, Robert Pallarito, Carl Altman, Adam Poll, Marisue Moreau, Robert Heilman, Bruno Wojcik, Scott McLennan, Doug Baum, Dave Post and Norm Brecheisen
Staff Present:	Diane Rekowski, Theresa Huff, Karen Cole, Steve Schnell, Nico Tucker, Christina McEmber and Denise Cline (by videoconference)
Public Present:	None

Approval of Minutes
R. Heilman presented the Minutes of the October 17, 2019 meeting. C. Altman moved, seconded by D. Karschnick to approve the minutes as presented. Yes all, motion carried.

Financial Report
K. Cole reviewed the November, 2019 financial statements. C. Altman moved, seconded by D. Post to receive and file the November, 2019 Financial Report as presented. Yes all, motion carried.

K. Cole stated that the FY19 Audit is going very well, expectations this year should be better than last year.

Special Presentation: Tom Stephenson/Connect Michigan
T. Stephenson gave an update on the broadband status and progress within the region. Also provided an overview of the new tool for Internet Service Providers, NE MI's Vertical Asset Inventory developed to help improve high-speed internet access in Northeast Michigan.

President's Report

Regional Project Review: R. Heilman stated there were (0) Federal Grant project for regional review; (0) other projects for regional review and (2) public notices.

MI Association of Regions (MAR): D. Rekowski reported that MAR is in the strategic planning process with the Final Plan expected in January.

Director's Report

D. Rekowski – EDA has invited NEMCOG to submit a three (3) year grant proposal, has a short deadline. The proposal requires a resolution of Financial Commitment for NEMCOG's Regional Economic Development Planning Grant and also a resolution for Contract Signatory.

D. Baum moved to waive the reading of the Resolution for Financial Commitment for NEMCOG's Regional Economic Development Planning Grant, seconded by D. Karschnick. Yes all, motion carried. B. Wojcik moved to approve the resolution, seconded by D. Karschnick, A roll call vote was taken. Yes all, motion carried.

A. Poll moved to waive the reading of the Resolution for Contract Signatory, seconded by R. Pallarito. Yes all, motion carried. D. Baum moved to approve the resolution, seconded by B. Wojcik, A roll call vote was taken. Yes all, motion carried.

Staff Updates:

S. Schnell: Project Updates were provided on the following: Northeast Regions Entrepreneurial Network, new website, currently waiting for URL; YouTube video: Rising Tide of Food and Farming in Northeast Michigan, created to promote small Agriculture; YouTube video: Youth Entrepreneurial-ship; Census 2020 and Local Area Unemployment Statistics for Northeast Lower Michigan Region for 2018 and 2019.

C. McEmber: Provided a status of County Hazard Mitigation Plan updates and explained the process for approval.

N. Tucker: Updated the Board on the Rural Task Force, Road Projects and Integrated Asset Management Plans.

D. Cline: Updated the Board on the following: writing/revising 14 Zoning Ordinances; presented an example of a recent interactive Zoning Ordinance; involved with Master Plans; Camp Grayling/Alpena JMTC Joint Land Use Study; Redevelopment Ready Communities; US23 Heritage Route; Up North Trails; US23 Byways brochures and atlases.

Committee Reports

Finance Committee: None

RPI Collaborative: D. Baum stated that RPI was not funded for2020. The Regional Prosperity Collaborative will continue to meet on Regional Economic and Community Development and oversee the RPI and Comprehensive Economic Development Strategy (CEDS). Funding for projects will continue to be pursued.

Previous Business
None

New Business
None

Public Comment
None

County Updates

Alcona Co.: Busy with year-end; adopted 2020 budget; committees are working on broadband. Brownfield project is going on, has been delayed a little.

Alpena Co.: Alpena County will have a grand opening ceremony for the renovated airport in May 2020. Jail project is progressing, should be enclosed by Mid-February, work is running 3-4 weeks behind. No Circuit Judge yet. 911 Center received $800,000 in new equipment.

City of Alpena: Greg Sundin has retired and Rachel Smolinski was hired as the new city manager. The Yearend resulted in black!

City of Grayling: No report.

Livingston Township: No report.

MI Works!: Unemployment is at an all-time low. Anything less than 4% is considered full employment. Governor reinstated funds that were removed for at- risk youth program, Going Pro, etc. Effective January 1, 2020, Medicaid recipients work requirement begins at 80 hours a month. MI Works is partnering with Health Agencies to assist with the program.

Montmorency County: County negotiation's meeting with the Union ended shortly and will need mediation services. Hired a new board secretary and waiting for the Governor to appoint a new Circuit Court Judge, in replacement for Judge Mack. Budget is completed; with about a $2,000 fund balance. Working on bonding and health insurance changes and promoting the census.

Oscoda Co.: Government building nearly completed; will be moving staff in January. Will be open to the public by February.

Otsego Co.: Finished budget; will amend after they get word from Governor. Had some renovations this past fall to the County building that have been completed. Jail is the next project. 1/6/2020 will have a presentation from the Consultants on the Jail Study.

Presque Isle Co.: Electrical Inspector is retiring. Considering sharing Plumbing Inspector with Montmorency County. Onaway received funding for a trail head and will also use a place for the Farmers Market. Presque Isle County sold the Onaway Airport to Presque Isle Electric & Gas for $1.00, now dealing with tax abatement issues.

Rogers City: Lake Huron shoreline and trail have experienced severe damage from high water issues. Rogers City will receive Redevelopment Ready Community Certification status in the 1st quarter of 2020. Pension liability issues have been resolved.

Village of Hillman: Dealing with housing shortage and the high cost of building.

Village of Mackinaw City: Experiencing some high water issues. Damage has occurred around Mackinac Island. Some others are experiencing flooding.

Adjournment

The meeting was adjourned at 11:30 a.m. The next Board Meeting will be held on Thursday, January 16, 2020 at the University Center in Gaylord.

Public Notice for the availability of the draft plan for review and the public meeting

LOCAL NEWS

WATER

Continued from Page 1A

Company.

"Based on the results of the bids, members of the board need to discuss the options associated with Phase II of the Water Main Extension," stated Superintendent Dave Schaeffer.

ROWE provided three alternatives for the board to consider, based on the lowest verified bid received for Phase II, he explained.

Alternative one continues Phase II as originally planned, but would require a minimum of $573,000 in additional funding, Schaeffer reported. "ROWE recommends applying for a $700,000 USDA [U.S. Department of Agriculture] Rural Development loan to cover the funding shortfall plus standard construction contingency."

Alternative two reduces the length of Phase II, and would require more than $88,000 in additional funding, Schaeffer went on.

"ROWE recommends using Water Fund 591 remaining fund balance to cover the funding shortfall if more State or Federal Funds are not available," he noted.

The third alternative would run the water main extension down until it stops at Phelan Creek.

"So that is to provide at least the water main extension to all of the potential customers, down to Phelan Creek," Schaeffer said.

Trustees voted to approve the lowest verified bid, which came from Elmer's Crane and Dozer, Inc. Bids were also submitted by Rohde Bros. Excavating and John Henry Excavating.

Alternative one from Elmer's would involve 121 water services, with the work costing $1,753,649. The second option, entailing 91 water services, has a bid amount of $1,268,880, and would end approximately 2,000 feet south of Phelan Creek. The third alternative amounts to $1,379,417.

According to those from ROWE, the total funding required for alternative one is $1,998,649, the total funding required for alternative two is $1,513,880 and the total for alternative three is $1,994,417.

It has also been noted that the remaining total special appropriations/grants available is $599,698, while the total remaining funding available is $1,539,698.

Trustees opted for alternative three, which ROWE representatives state will require no additional funding at this time.

Those from the company added that, if more money is needed to complete this, it should come from the township water fund.

ROWE also gave a reminder that the township has already purchased all the necessary meter pits and meters for this project, in the amount of $98,014 (or about $743 per address), for the individual water services. These will be installed at each address along the project route.

Clerk John Nordeen said this topic was discussed at length during the board's pre-meeting work session on Friday, as it is a complicated issue, given the projected shortfalls.

Trustee William Palmer said that, in the battle against the contamination problems, the township does not have the resources or the ability to deal with the actual contamination itself.

"So our prime goal is to extend water lines and get municipal water to people that are in the concerned areas," he explained.

"While we would like to be able to pay for the people's hook-ups – like we were able to do in Phase I because of monies received from the state – I think it's more important to extend the water lines, so that they're available for people to hook up to," Palmer went on.

He added that, depending on what happens with the state's budget, there may be some additional money available this spring to go toward the hook-ups.

"But, at this point, I don't like the idea of going into debt on only the second phase," he said, noting that these efforts entail a total of eight phases.

Palmer said that if the township starts declaring debt at this point, he fears that they may have substantial financial difficulties by the time Phase VIII rolls around.

"And maybe not even be able to provide the water lines," he continued, saying he would prefer that the water lines be extended and that the township not pay for the hook-ups, at least not at this point.

Palmer also reiterated that the meter pits have already purchased, which he said would typically be part of the owner's obligation.

"I just think it's important that we get these lines extending as quickly and as completely as we can," he remarked.

Palmer made the two aforementioned motions related to this project, each of which passed in a 5-0 vote of the board. Trustees Martin Guyeski and Jim Baier were not in attendance.

In separate matters, officials also acted on the following:

- Approved the $26,560 purchase of a 2020 F-250 4x4 from Gorno Ford, to be used by the township's utility department. Three bid specs were sent out, with no return from Signature Ford, and a bid of $30,530 from Zubek Motors.

Schaeffer noted that this purchase is in line with the 2019 capital improvement plan, with half the amount coming from the sewer fund, and the other from the water fund.

- Appointed Tony Johnson to the alternate seat on the Oscoda Township Economic Improvement Committee.
- Agreed to spend $5,520 to retrofit the recently purchased cruiser for the township police department.

FURTAW

Continued from Page 9A

benefit or a detriment.

In terms of the existing township hall, Weed said if everything were to be consolidated onto this property, the township would essentially have to eliminate the community center because there is not enough room for it.

Nordeen asked if it would be possible to omit the library from the existing township building, rather than the community center. He noted that, with the recent sale of the Oscoda Community Center, this is the only one of the operations at hand which isn't currently available to those in the township, so this is a priority for him.

Weed said this is, in fact, an option and there could be configurations to specify. He just listed the community center as an example.

Nordeen said that, in order to make a decision on whether this will go forward, he is also interested in knowing the estimated cost to operate a building of this size.

He said one thing that's appealing to him about the consolidation is making things more cost-effective and efficient, so it would be ideal if the board can compare the historic costs of running several different buildings to the costs at one, centralized facility.

Nordeen said he assumes that the expense of operating a consolidated building would be less but, if it happens to be more, then he doesn't know if combining the services into one building is such a great idea.

Following the board member remarks, the floor was open to public comments and the audience first heard from resident Lary Holland.

He said the township recently hired an economic development coordinator, who should have some say so in how this project may unfold. "I would certainly like to hear his thoughts on where this is going to be built, or split or changed.

"One of the things that I've seen over the years here, is that we always do just enough," Holland continued. "We don't do more than enough; we don't do enough to think about the future."

For example, he asked what would happen if 1,200 families moved into the community and Furtaw Field is selected as the site, which is only slightly above the minimum space required. "Where the other spaces happen to be double the amount of space. When you start to factor in economic development, some of those places that have double the amount of space also could have some additional facilities come into play that basically makes it so that we could have additional commerce happen in those areas," he said.

Holland also commented that the current location may be the best option. "And consolidation is necessary, but how much consolidation is necessary?" he asked. "Mr. Nordeen, your question is very valid. We need to know that."

Dawn Barber also approached the podium, and claimed that everyone loves the current location of the library and senior center. She is also of the opinion that a community center should not be attached with the police/fire departments.

"We need it because it's a part of our history," she said of Furtaw Field. "And for you to build on it and take away that, would hurt this community for years to come."

Barber is the one behind the petitions that have been circulating around town, against the idea of establishing a municipal center on Furtaw Field. She shared that her whole idea was to see how far this would go in the community, and it's been overwhelming how the people have come together on this, because they all have attachments to Furtaw Field.

She contends that it doesn't make sense to consolidate everything, and that the current township building should be built onto, giving the police and fire departments the space they need, while also keeping the town offices in the walking district.

John Miner also spoke, and said that he believes Furtaw Field should remain as a community event center/park.

"The consolidation for the departments, I totally agree with that. Do you need a new facility? Yes, but Furtaw Field is not the place," he expressed.

He also said he doesn't think the park, community center and library need to all be in the same facility, but that he would recommend a separate public safety facility. "We very much need that."

Jeff Hansen provided comments, as well, saying that the presentation was good but that it seems as though not everything was taken into consideration.

He said one thing which is very important to him is expansion in the future. "We modernize our facilities, we build a brand new facility – 10 years down the road, they're going to need larger facilities. The Family Fare gives you everything. You've got a lot of room there for future expansion; future modernization of the police and fire departments."

Regina Davis, who owns a business near Five Channels Dam, said there were a lot of customers from southern Michigan, as well as out of state, who came to the area this year because of the Paul Bunyan/Furtaw Field element.

She said she is not in support of Furtaw being utilized for a municipal center, because it will affect her and a lot of other "mom and pop" businesses on M-65.

"You've got four places that you have presented to us – two of them are not for sale. I don't understand why it was even brought up," Davis observed.

She implored officials to find another way to work this out, that doesn't involve taking away Furtaw Field.

Notice of Availability of Draft Hazard Mitigation Plan and Public Meeting for Input on the Draft Hazard Mitigation Plan

Oscoda County is in the process of updating its Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000. There will be a public meeting following the public review period on November 26, 2019. The meeting will be at, Oscoda County EMS meeting room, 235 S. Court St Mio MI 48647 at 6:30 PM. Public comments are requested either in person or by representative at the public meeting, or at 105 S. Court St P.O.Box 399 Mio MI. 48647 or by email at cmcember@nemcog.org. The draft plan is available for review on Oscoda County's website and NEMCOG's website.

PUBLIC HEARING

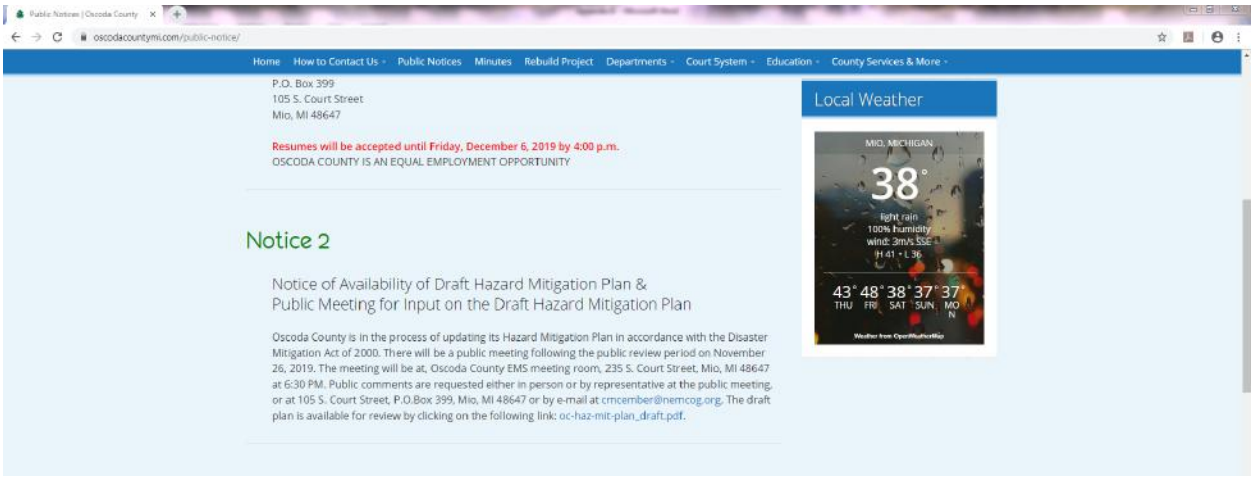
The Iosco County Board of Commissioners will hold a public hearing on December 4, 2019 at 9:45 a.m. in the Board of Commissioners Meeting Room located at 422 Lake Street, County Building, Room 120, Tawas City, MI for the purpose of reviewing the proposed 2020 General and Non-General Fund Budgets. **"The property tax millage rate proposed to be levied to support the proposed budget will be a subject of this hearing".**

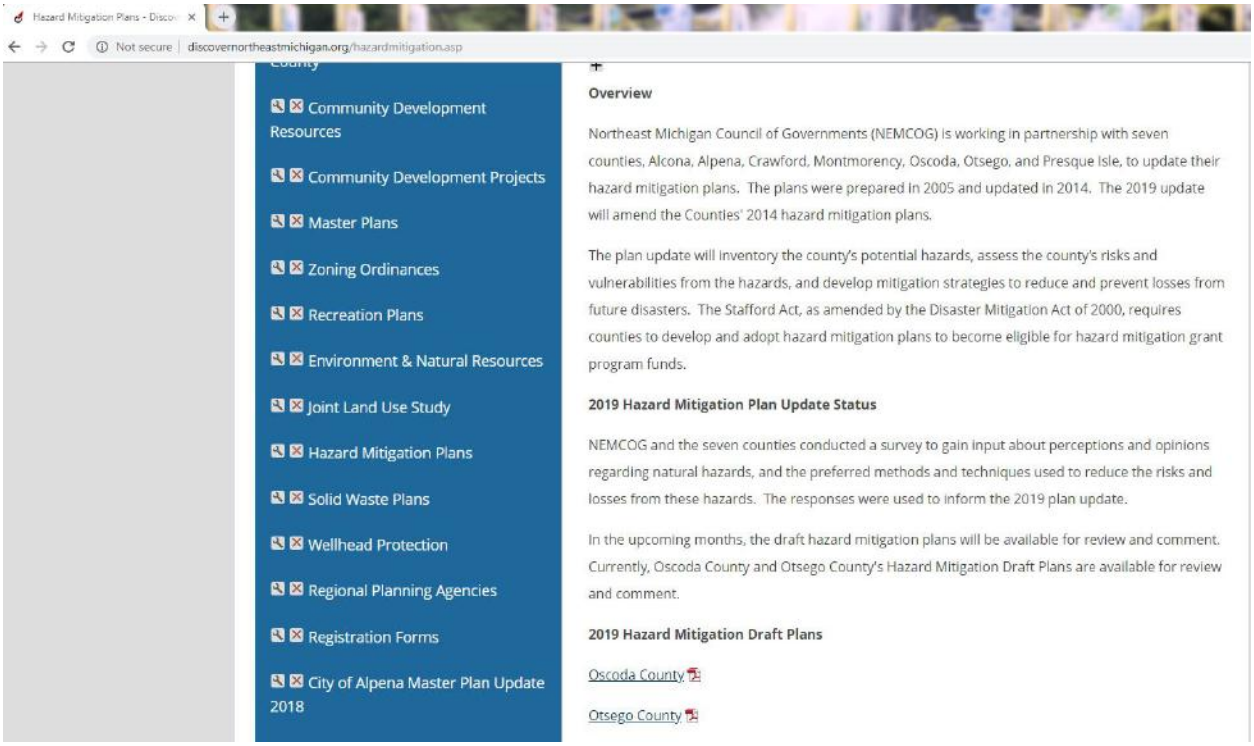
The proposed budgets will be available for inspection at the Iosco County Clerk's office.

Leaf & Brush Disposal
Charter Township of Oscoda

Oscoda Township residents will be provided the opportunity to dispose of leaves and brush at the former WAFB DRMO near the corner of F-41 and Rea Rd. Weather permitting the site will be open from **10:00 a.m. until 4:00 p.m. every Saturday of the month beginning October 12, 2019 and ending November 23, 2019.** All leaves must be removed from bags or other containers and such bags or containers must be removed from the disposal site.

An attendant will be on duty to assist residents. Your cooperation in not bringing other materials to this site will be appreciated. The charge shall be fifty cents (.50¢) per bag and eight dollars ($8.00) per pickup truck or trailer. Increased charges shall apply for larger trucks or larger trailers.


oscodacountymi.com/public-notice/
Home
How to Contact Us
Public Notices
Minutes
Rebuild Project
Departments
Court System
Education
County Services & More
P.O. Box 399
105 S. Court Street
Mio, MI 48647
Resumes will be accepted until Friday, December 6, 2019 by 4:00 p.m.
OSCODA COUNTY IS AN EQUAL EMPLOYMENT OPPORTUNITY
Local Weather
MIO, MICHIGAN
38°
light rain
100% humidity
wind: 3m/s SSE
H 41 • L 36
43° THU
48° FRI
38° SAT
37° SUN
37° MO
Notice 2
Notice of Availability of Draft Hazard Mitigation Plan &
Public Meeting for Input on the Draft Hazard Mitigation Plan
Oscoda County is in the process of updating its Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000. There will be a public meeting following the public review period on November 26, 2019. The meeting will be at, Oscoda County EMS meeting room, 235 S. Court Street, Mio, MI 48647 at 6:30 PM. Public comments are requested either in person or by representative at the public meeting, or at 105 S. Court Street, P.O.Box 399, Mio, MI 48647 or by e-mail at cmcember@nemcog.org. The draft plan is available for review by clicking on the following link: oc-haz-mit-plan_draft.pdf.


Not secure
discovernortheastmichigan.org/hazardmitigation.asp
Community Development Resources
Community Development Projects
Master Plans
Zoning Ordinances
Recreation Plans
Environment & Natural Resources
Joint Land Use Study
Hazard Mitigation Plans
Solid Waste Plans
Wellhead Protection
Regional Planning Agencies
Registration Forms
City of Alpena Master Plan Update 2018
Overview
Northeast Michigan Council of Governments (NEMCOG) is working in partnership with seven counties, Alcona, Alpena, Crawford, Montmorency, Oscoda, Otsego, and Presque Isle, to update their hazard mitigation plans. The plans were prepared in 2005 and updated in 2014. The 2019 update will amend the Counties' 2014 hazard mitigation plans.
The plan update will inventory the county's potential hazards, assess the county's risks and vulnerabilities from the hazards, and develop mitigation strategies to reduce and prevent losses from future disasters. The Stafford Act, as amended by the Disaster Mitigation Act of 2000, requires counties to develop and adopt hazard mitigation plans to become eligible for hazard mitigation grant program funds.
2019 Hazard Mitigation Plan Update Status
NEMCOG and the seven counties conducted a survey to gain input about perceptions and opinions regarding natural hazards, and the preferred methods and techniques used to reduce the risks and losses from these hazards. The responses were used to inform the 2019 plan update.
In the upcoming months, the draft hazard mitigation plans will be available for review and comment. Currently, Oscoda County and Otsego County's Hazard Mitigation Draft Plans are available for review and comment.
2019 Hazard Mitigation Draft Plans
Oscoda County
Otsego County

Appendix C
Adoption Resolutions

The adoption resolutions for Oscoda County and the local jurisdictions are included in this appendix.

Insert Adoption Resolutions

Appendix D

Previous Plans' Mitigation Actions and Strategies

The following tables present the mitigation actions and strategies that were included in the 2014 hazard mitigation plan. Updated inclusion and priority information can be found in Chapter 9: Mitigation Strategies and Priorities.

Mitigation Actions & Implementation Strategies **A. Multi-Hazard Actions, #1**	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Enhance and expand a public education program for all natural hazards that threaten the community.	High	A. J. O.	B. C. T	Countywide	Distribution of information at county fair and other events. Weather Service weather watcher programs each year	Ongoing	Ongoing
2. Conduct workshops at community gatherings to encourage residents to develop a Family Disaster Plan which includes the preparation of a Disaster Supplies Kit.	High	A. I. J. K. N.	B. C. H. I. N. T	Countywide	Weather Service weather watcher programs each year. Distribution of information at county fair and other events. Raffled kits.	2006	Ongoing
3. Continue to develop Emergency Response Team program to help prepare for all hazard events in the county.	High	A. D. E. H. I. J.	A. H. T	Countywide	Active Local Emergency Planning Committee, Local Planning Team, Incident Management Team and Regional Response Team.	Ongoing	Ongoing
4. Work with power companies to inventory condition of power line right-of-ways, and identify priority sections to clear branches and trees from power lines. The end goal is to create and maintain a disaster-resistant landscape in public rights-of-way.	Med	A. E. P. U.	M. T	Countywide	Progress made	2007	Ongoing
5. Enhance and expand an all hazards education and awareness program in schools, which includes classroom presentations and incorporating wildfire and weather hazard preparedness into school curriculums.	Med	A. D. J. O. R.	B. C. T	Countywide	Progress made, yearly presentations, FFA and science classes provide information	2006	Ongoing
6. Distribute family emergency preparedness information relating to all natural hazards affecting the County.	Med	A. D. H. I. J. N.	B. C..H. T	Countywide	Information provided at county fair, schools, and National Weather Service weather watchers workshops.	Ongoing	Ongoing
7. Organize outreach program to vulnerable populations during and after hazard events, including wildfires, extreme winter and summer weather events, periods of extreme temperatures, public health emergencies, and other hazards that can impact the community.	Med	A. D. H. I. J. N. O. V.	B. C. I	Countywide	Progress made, Council on Aging maintains a list of elderly. USFS, MDNR and Fire Departments do presentations to schools	2007	Ongoing
9. Build the capabilities of the county GIS program to function as a tool to address multiple hazards. This effort would require the creation/updating of datasets such as parcels/ownership, location of all structures, driveways with ingress/egress conditions, roads, forest types, ownership types, floodplains, utilities (power lines, gas lines and water lines), wetlands, water features, bridges and culverts, (SARA III sites)	Med	A. B. C. E. F. H. J. V.	B. C. Q. T	Countywide	Completed parcel mapping, no other progress made	Ongoing	Ongoing

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies **A. Multi-Hazard Actions, #2**	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
10. Increase usage of NOAA Weather Radio by subsidizing purchase and distribution of radios to county residents, organizations and businesses. Use NOAA radios as a community emergency alert system to information on hazard events.	Med	A.	T	Countywide	Progress made- received grant to distribute radios to critical sites such as senior's centers, and campground. Radios given to individuals and special events	Ongoing	Ongoing
11. Ensure that the County and individual communities have adequate equipment, staff, and training to respond to transportation-related accidents specific to their needs.	Low	B. C. D. E. V.	N/A	Countywide	Progress made	2010	Ongoing
12. Enforce a balanced system of ordinances that protect the community as-a-whole while respecting the rights of individuals.	Low	C	N/A	Local jurisdictions	Progress made	2012	Ongoing
13. identify optimal staffing levels for County and community needs – seek funding to meet optimal levels	Low	B. C.	N/A	Countywide	Ongoing	2012	Ongoing
14. Acquire portable/changeable message signs to direct crowds and provide information.	Low	A. E.	N/A	Countywide	No activity	2007	2014
15. Individual communities should prepare future land use plans and capital improvement programs to plan for their future needs.	Low	B. C.	N/A	All Townships	Communities are updating master plans per state statutes	Ongoing	Ongoing
16. Communities will acquire and maintain an adequate level of emergency power generators to supply emergency water needs, wastewater processing, emergency communications, emergency health care, and shelters.	Med	A. B. C.	B. C. T	Countywide	Purchased portable generator, generators purchased for critical facilities	2015	2015
17. Communities will work with the Federal Emergency Management Agency (FEMA) to identify flood plains.	Low	A. B. C. E. T.	N/A	Countywide	No activity	2015	2015
18. Encourage key gasoline stations have the capacity to pump gasoline during power outages.	Low	A. C. E. M. V.	N/A	Countywide	Minor progress	2010	2015
19. Develop plans to identify and inform persons of "Safe Areas" during festivals/events. (include signs and directions to shelters)	Low	A. B. C. D. E. M. N. V.	N/A	Mio and Fairview	Progress made, working on effort	2015	2015
20. Where feasible and cost effective (more densely populated areas) bury and protect power and utility lines.	Low	A. C. P.	N/A	Countywide	Phone lines are being upgraded and buried	2015	2015

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies B. Wildfire Actions, #1	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Coordinate countywide wildfire education program: distribution of materials via direct mailings, school presentations, demonstration projects, displays at community events, displays and education materials at community libraries.	High	A. B. C. D. I. J. G. R.	B. C. Q. T	Countywide	Information distributed at county fair, other events and schools	Ongoing	Ongoing
2. Develop and implement strategy to introduce "Firewise" program in at-risk communities.	High	A. B. C. D. I. J. G.	Q. T	Countywide	Information distributed at county fair, other events and schools	Ongoing	Ongoing
3. Identify communities or neighborhoods to develop "Firewise" demonstration projects.	High	A. B. C. D. I. J. G.	Q. T	Countywide	Major progress made, USFS constructed fuelbreaks adjacent to vulnerable communities	Ongoing	Ongoing
4. Distribute wildfire education materials to homeowners and businesses through tax bill receipts.	High	A. C. D. J. K. P.	D. Q. T	Countywide	No activity	2007	Ongoing
5. Develop Community Wildfire Protection Plan	Med			Countywide	No progress will consider this cycle	New	2015
6. Promote creation of defensible space around structures in fire-prone wildland areas.	Med	A. C. D. I. J. K.	T	Countywide	Information distributed and county fair and other events	2007	Ongoing
7. Community Chipper Days – Organize a program to provide a chipper for properly disposing of woody debris, in conjunction with composting programs and spring clean-up days.	Med	A. B. C. D. K. M. N. P.	B. C. T	Countywide	USFS opens old barrow pits for residents to use as disposal sites for woody debris	2010	2016
8. Implement community wildland fire education program utilizing the Student Conservation Association – Fire Education Corps, to provide land managers and communities with tools and information designed to reduce the negative impact of wildland fires on individuals living in the wildland urban interface.	Med	A. B. C. D. I. J. G.	D. Q. T	Countywide	Removed	2010	2015

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies B. Wildfire Actions, #2	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
9. Conduct multi-agency, inter-county emergency management response exercises for fire suppression.	Med	A. D. I. J. V.	T	Countywide	Conducted	2008	Ongoing
10. Develop a program to instruct residents on proper procedures for wildfire evacuation	Med	A. B. C. D. J. N. I.	B. C. D. Q. T	Countywide	Progress made	2008	Ongoing
11. Promote and implement fuel management by thinning of flammable vegetation, creation of fuel breaks, use of fire-retardant materials/vegetation and selective thinning....	Med	J. U.	Q. T	Countywide	Through stimulus funding the USFS created fuelbreaks adjacent to high risk communities on public lands	2007	Ongoing
12. Promote and implement solutions for keeping roads and driveways accessible to vehicles and fire equipment.	Med	A. C. D. E. U.	Q. T	Local Jurisdictions	Minor Progress	2007	Ongoing
13. Promote media broadcasts of fire weather and fire warnings	Low	A. O. J.	N/A	Countywide	MDNR and USFS media announcements	2010	Ongoing
14. Identify adequate water supplies for emergency firefighting, areas lacking adequate water supplies and develop strategy to construct dry hydrants.	Low	D. E. J.	N/A	Countywide	Progress made and ongoing	Ongoing	Ongoing
15. Work with insurance companies to provide wildfire safety information to area residents.	Low	K.	N/A	Countywide	No progress	2015	2015
16. Enforcement of open burning regulations	Low	B. C. D. J. V.	N/A	Countywide	Ongoing progress	2011	Ongoing

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies **C. Summer Weather Hazards Actions**	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Increase usage of NOAA Weather Radio by subsidizing purchase and distribution of radios to county residents, organizations and businesses	High	A. O.	T	Countywide	Progress made- received grant to distribute radios to critical sites such as senior's centers, schools and campgrounds. Radios given to individuals and special events	Ongoing	Ongoing
2. Continue training and increased use of weather spotters.	High	A. C. O. V.	O	Countywide	National Weather Service sponsors weather watchers workshops	Ongoing	Ongoing
3. Maintain a listing of homes and facilities with vulnerable residents such as elderly, infirmed and disabled individuals. Establish outreach procedures for assisting residents after severe summer storm events	High	A. C. H. N. Q. S.	B. C. H. T	Countywide	Progress made	Ongoing	Ongoing
4. Develop or update emergency response plans for schools, campgrounds, fairgrounds, parks, community events and marinas	High	A. N. R. V.	A. T	Countywide	Updates ongoing	Ongoing	Ongoing
5. Identify campgrounds, fairgrounds, parks, and outdoor recreational facilities that lack and need "Safe Areas." Where necessary construct safe areas and storm shelters.	Med	A. B. C. J. M. R.	A. T	Countywide	Progress made sites identified at county fairgrounds. Other sites will be reviewed periodically	2010	2015
6. Amend building codes to require installation of weather radios in new structures, similar to smoke detectors	Low	Q.	N/A	Countywide	No activity	2015	2015
7. Require new mobile home parks to have tornado/wind shelters	Low	Q.	N/A	Countywide	No mobile home parks have been developed since 2005	2015	2015
8. Continue pre-planning efforts for debris management staging and storage areas	Low	A. B. C. E.	N/A	Countywide	No activity	2015	2015
9. Amend building codes to require anchoring of manufactured homes and exterior structures such as carports and porches	Low	Q.	N/A	Countywide	Progress made	2015	2015
10. Include safety strategies for severe weather events in driver education classes and materials	Low	M. Q. R.	N/A	Countywide	Information provided	2015	2015

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies D. Winter Weather Hazards	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Establish heating centers/shelters for vulnerable populations	High	A. B. C. I. N. V.	B, C, H, T	Countywide	Sites identified and being reviewed periodically	Ongoing	Ongoing
2. Compile a listing of homes and facilities with vulnerable residents such as elderly, infirmed and disabled individuals; and establish outreach procedures for assisting residents after severe winter storm events	High	A. C. H. N. Q. V.	A, H, T	Countywide	Minor progress made	2008	2015
3. Prearrange for shelters for stranded motorists/travelers.	Low	A. N. Q. V.	B, C, I, N	Countywide	Minor progress	2015	2015
4. Complete and inventory problem sections of roads. Place snow fences or "living snow fences" (rows of trees or vegetation) to limit blowing and drifting of snow over critical roadway segments	Low	E. V.	N/A	Countywide	Ongoing, progress made	2015	2015

Mitigation Actions & Implementation Strategies E. Infrastructure Failures	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Establish redundancies in utility and communications systems, especially "lifeline" systems	High	A. B. C. D. P. V.	M.T	Countywide	Progress made and ongoing	Ongoing	Ongoing
2. Identify sites, obtain support and seek funding to improve critical road/stream crossings	Med	C. E. F. Q.	B. C. Q. T	Countywide	Progress made and ongoing	2010	Ongoing
3. Purchase and/or maintain generators for backup power at critical facilities	Med	A, B, C, R, S, T, V.	B. C. T	Countywide	Purchased generators for facilities and portable generator	2010	Ongoing
4. Establish and improve programs/networks for contacting elderly or homebound persons during periods of infrastructure failure, to assess whether they have unmet needs	Med	A. B. I. N. V.	N. T	Countywide	Progress made	2010	2016
5. Protect electrical and communications systems from lightning strikes by completing an inventory of protection systems and where necessary upgrade systems.	Med	A. B. C. F.	B. C. T	Countywide	Progress made	2012	Ongoing

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies **F. Public Health Emergencies**	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Encourage residents to receive immunizations against communicable diseases	High	H. I. N. Q. S.	H. T	Countywide	Progress made and ongoing	Ongoing	Ongoing
2. Maintain a community public health system with sufficient disease monitoring and surveillance capabilities to adequately protect the population from large-scale outbreaks	High	H. Q. S. T.	H. T	Countywide	In place	2007	Ongoing
3. Increase public awareness of the causes, symptoms, and protective actions for disease outbreaks and other potential public health emergencies	High	H. N. R. S.	H. T	Countywide	Progress made and continue to work on activity	2007	Ongoing
4. Inform public and support pollution control, enforcement and cleanup; proper disposal of chemicals and scrap materials	Med	A. B. H. M. Q. R. T.	H. T	Countywide	In place and ongoing	2010	Ongoing
5. Expand community support of free or reduced-expense clinics and school health services	Med	B. C. H. N. Q. S.	H	Countywide	Continuing to expand programs	2010	Ongoing
6. Increase public awareness of radon dangers and the prevention efforts that can be taken to reduce concentrations of radon in homes and buildings	Low	H. Q.	A, H	Countywide	In place and ongoing	2012	Ongoing
7. Demolish and clear vacant condemned structures in populated areas to prevent rodent infestations	Low	C. B. H.	B, C	Countywide	Progress made and Ongoing	2015	Ongoing
8. Coordinate with health department and local communities to assure proper location, installation, cleaning, monitoring, and maintenance of septic tanks	Low	C. H.	C, H	Countywide	Progress made and Ongoing	2015	Ongoing
9. Seek support and funding to clean up sites of environmental contamination	Low	B. M. Q. T.	Q, T	Countywide	Progress made and Ongoing	2012	Ongoing
~~Install chemical spill containment system for Mio stormwater conveyance system~~	~~High~~	~~C. B.~~	~~B, C, H, Q~~	~~Mio~~	~~Completed~~	~~2007~~	~~Completed~~

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies G. Dam Failures	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Ensure consistency of dam Emergency Action Plan (EAP) with the local Emergency Operations Plan (EOP) by conducting annual reviews.	High	A. B. P. V.	T	Countywide	Yearly and ongoing	Ongoing	Ongoing
2. Maintain and improve public awareness and warning systems	Med	A. P. V.	B, C, T, U	Countywide	In place and ongoing	2010	Ongoing
3. Regulate development in the dam's hydraulic shadow (where flooding would occur if there was a severe dam failure).	Low	C	C	Countywide	No activity	2015	Ongoing
4. Real estate disclosure laws that identify a home's location within a dam's hydraulic shadow	Low	L. Q.	Q	Countywide	No progress	2015	2015

Mitigation Actions & Implementation Strategies H. Hazardous Material Transportation Incidents	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Provide for trained, equipped, and prepared search and rescue teams	High	A. B. C. D. V.	B, C, T	Countywide	Major progress and ongoing	NEW	Ongoing
2. Maintain and enhance trained, equipped and prepared local hazardous materials emergency response teams	High	A. B. C. D. V.	B, C, T	Countywide	Progress and ongoing	NEW	Ongoing
3. Increase coverage and use of NOAA Weather Radio (which can provide notification to the community during any period of emergency, including large scale hazardous material incidents)	Med	A.	T	Countywide	Major progress and ongoing	NEW	Ongoing
4. Develop evacuation plans and community awareness of them	Med	A. V.	A. T	Countywide	Progress and ongoing	NEW	2017
5. Improve capability of agencies to carry-out road closures and to provide traffic control in accident areas	Med	E. V.	E. T	Countywide	Completed and ongoing	NEW	Ongoing

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	

Mitigation Actions & Implementation Strategies **J. Transportation Accident**	Priority	Responsible Agency	Funding Sources	Application	Progress	Original Status	New Status
1. Review and/or develop Regional EMS response plan to assist county's mass casualty plan.	High	A,S	T	Countywide	Ongoing	NEW	A.S.A.P.
2. Provide more training for fireman, police and first responders to school bus and commercial bus accidents.	High	A.B.C.D.E.R	T	Countywide	Progress made and ongoing	NEW	A.S.A.P.
4. Meet with local industries from surrounding counties to determine type of products transported over county highways, and provide local HAZMAT team and fire agencies with this information.	Medium	A,C,D,Q,S,T,V	T	Regional	Minor Progress	NEW	Mid-term
5. Provide training, planning, and preparedness for mass-casualty incidents involving all modes of public transportation.	Medium	A,B,C,D	T	Countywide	Ongoing	NEW	Short-term
6. Exercise a 60-person accident involving a passenger bus.	Medium	A,B,C,D,R,O,V	T	Countywide	Completed in multi-county training	NEW	Mid-term
7. Provide exercise for pipeline or propane accidents.	Medium	Q	T	Countywide	Completed in 2012	NEW	Ongoing
8. Encourage strict enforcement of trucking industry highway speed	Low	W	T	Countywide	Ongoing	NEW	Short-term
9. Continue upgrade protocols in Central Dispatch.	High	A,D,S,W	T	Countywide	Ongoing	NEW	Ongoing
10. Provide more training for airfield emergencies involving all county fire departments.	High	A,B,C,D,Q,S,V	T	Countywide	Training to be held in 2014	NEW	Ongoing
11. Research and develop medical airlift plans.	High	A.B.Q.S	T	Countywide	Major progress	NEW	Mid-term
12. Inventory current heavy equipment, wreckers and jaws units within 30 minutes of county locations.	Low	A	T	Countywide	Completed and ongoing	NEW	Ongoing
13. Encourage strict highway speed enforcement during school transport times.	Medium	A,W,	T	Countywide	Ongoing	NEW	Ongoing
14. Promote and conduct annual review of school buses and emergency exits, plus new features.	Medium	R,Q	T	Countywide	Ongoing	NEW	Ongoing

A. County Emergency Management Office	**G.** MSU Extension	**M.** Local Businesses	**S.** Medical
B. County	**H.** District Health Dept.	**N.** Civic Gr.& Churches	**T.** Federal Government
C. Local Units of Gov.	**I.** American Red Cross	**O.** National Weather Service	**U.** landowners
D. Local Fire Dept.	**J.** USFS & MDNR	**P.** Utility Company	**V.** Salvation Army
E. County Road Commission	**K.** Insurance Companies	**Q.** State	**W.** Police
F. NEMCOG	**L.** Real Estate Co.	**R.** Schools	