

Welcome!

- Using your **3 sticky notes**, please write down the **top 3 natural hazards or hazard impacts** that concern you in Missaukee County
 - Use 1 sticky note per hazard
 - Place your sticky notes on the wall

Extreme Heat or Cold	Wildfire
Drought	Pandemic
Large Snowstorm/Ice Storm/Blizzard	Dam Failure
Severe Thunderstorm	Road or Bridge Failure
High Winds	Electrical /Communications Grid Failure
Tornado	Pandemic
Hail	Invasive Species (Terrestrial or Aquatic)
Flooding	Wildlife/Zoonotic Diseases

Missaukee County Natural Hazard Mitigation Plan Community Meeting

May 25, 2022



**Networks
Northwest**

Talent / Business / Community



Introductions

- Networks Northwest - Community Planners

- Jennifer Neal, AICP

- Stephanie Loria

- Community Partners

- Linda Hartshorne-Shafer, Planning and Emergency Management Director

- Missaukee County's Local Planning Team (LPT)



Agenda

- Thank you for joining us!
- We will be discussing the following:
 - Purpose of the Natural Hazard Mitigation Plan
 - Your Priority Hazard Concerns
 - Your Community Vulnerabilities
 - Site Specific Hazard Concerns

Purpose

Hazard Mitigation Planning

“The effort to reduce loss of life and property by lessening the impact of disasters”

[Subscribe](#) [Latest Issues](#) **SCIENTIFIC AMERICAN.** [Cart 0](#) [Sign In](#)

Billion-Dollar Disasters Shattered U.S. Record in 2020

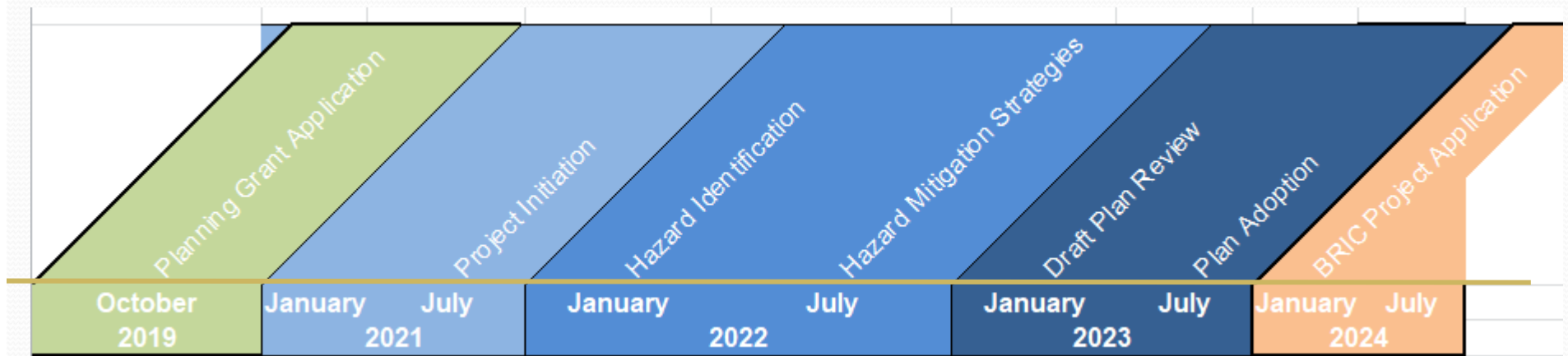
The 22 events that each caused at least \$1 billion in damage show the increasing costs of climate change

By Thomas Frank, E&E News on January 11, 2021



An aerial view of flood waters from Hurricane Delta surrounding structures destroyed by Hurricane Laura on October 10, 2020 in Creole, Louisiana. Credit: Mario Tama Getty Images

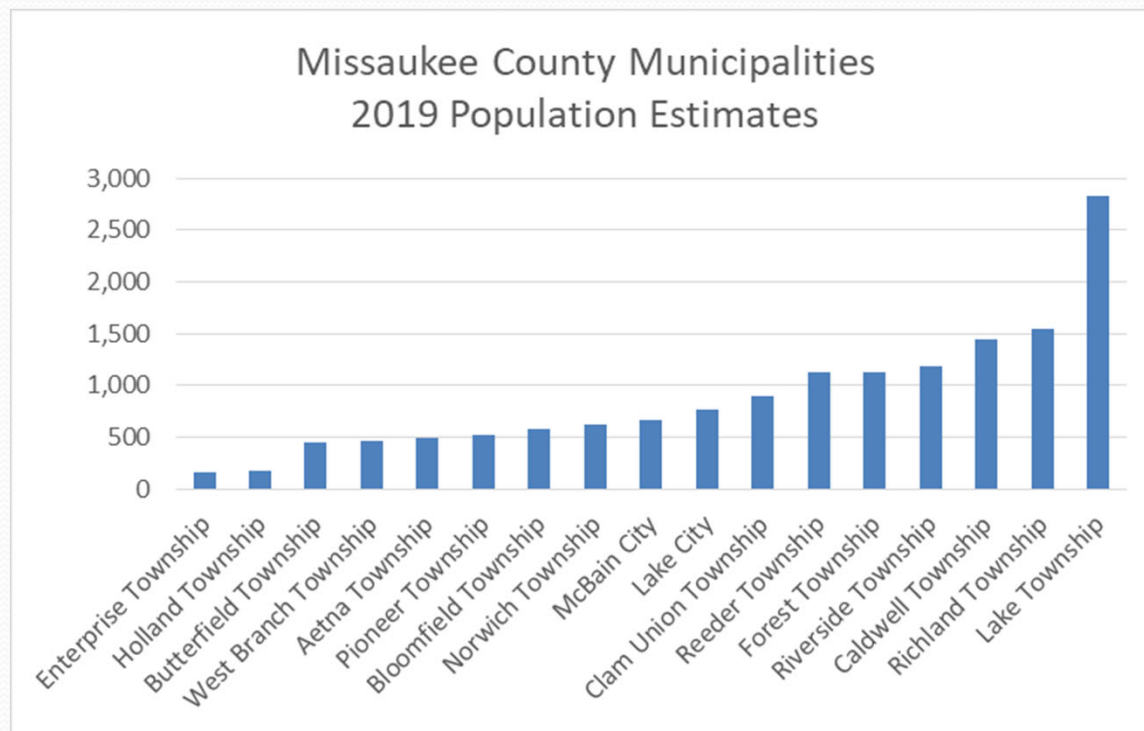
Timeline (2021-2024)



2020 FEMA Grant Awards

Building Resilient Infrastructure & Communities (BRIC) Funding Program

- \$700 million available for FY 2020
- Awards for “economically disadvantaged rural communities”
 - 3,000 or fewer individuals – see local jurisdiction population below





2020 FEMA Grant Awards

Building Resilient Infrastructure & Communities (BRIC) Funding Program

- Income not to exceed 80% of the national per capita income
- In 2019, US per capita income was \$34,103. 80% = \$27,282
- Missaukee County per capita income in 2019: \$23,838
- 77% of economically disadvantaged rural community BRIC applications were awarded



2020 FEMA Grant Awards

Building Resilient Infrastructure and Communities (BRIC) Funding Program

● Awards for Wildfire Mitigation

- To ensure states, local communities, tribes and territories have what they need to respond wildfires and have capacity to address mitigation, there is a renewed focus on building the capability to take advantage of mitigation funding offered by FEMA.
- One project that FEMA selected represents an innovative systems methodology to reduce the risk of catastrophic wildfires. The methodology works simultaneously at large wildland and neighborhood scales to build more resilient communities.
- The total project cost is \$49.3 million. FEMA estimates that 4,103 structures will opt into the defensible program that provides cost-share to property owners to implement defensible space and ignition resistant construction activities.
- The project would also fund hazardous fuels reduction activities across 5,410 acres within three proposed project areas. The number of structures protected by hazardous fuels reduction activities is estimated to be 6,498.



Potential Hazard Events

- Severe thunderstorms (can produce hail, lightning, high winds, flooding, seiche, etc.)
- Hail
- High Winds / Derecho
- Lightning
- Tornado
- Winter Storm (can produce ice, sleet, heavy snowfall, high winds...)
- Extreme temperatures (heat/cold)
- Drought
- Wildfire
- Excessive Precipitation causing riverine or urban flooding
- Dam Failure
- Invasive species (*can cause damage to forests, crops, native species, etc.*)
- Public health emergency (i.e., *pandemic; contaminated water supply*)
- Wildlife or zoonotic diseases (i.e., Bovine TB, Avian Influenza, Swine Flu)

Priority Areas and Strategies from 2015 HM Plan

Table 2: Priority Areas for Missaukee County

Natural Hazards Mitigation Priority Areas
<p>Priority Area 1: (County) Potential of severe thunderstorms and high winds and severe winter storms throughout the County, also the concern regarding festivals and power outages.</p> <p>Mitigation Strategies: <i>Thunderstorms, High winds, Tornado, Snow and Ice</i></p>
<p>Priority Area 2: (Bloomfield, Holland, and Reeder Townships) Potential wildfire/urban interface area.</p> <p>Mitigation Strategies: <i>Wildfire</i></p>
<p>Priority Area 3: (Clam Union, Enterprise, and Norwich townships) Potential of Dam failures and flooding causing key public infrastructure (roads/bridge) failures.</p> <p>Mitigation Strategies: <i>Flood/Flash Flooding</i></p>

Presidential and Governor Declared Emergencies/Disasters

Date of Declaration	Type of Incident	Affected Area	Type of Declaration/Federal ID #
March 2020	COVID-19; COVID-19 Pandemic	Statewide & National	State of Emergency; National Emergency (3455); Governor and Presidential Declared Major Disaster (4494)
1/29/2019	Extreme Cold	Statewide	Governor Declared Emergency
5/7/2014	Severe weather, flooding, wind damage from April - May 2014	Newaygo, Osceola, Isabella, Mecosta, Missaukee , Muskegon, Roscommon and Wexford Counties	Governor Declared Disaster
6/6/2008 – 7/13/2008	Severe Storms, Tornadoes and Flooding	Allegan, Barry, Eaton, Ingham, Lake, Manistee, Mason, Missaukee , Osceola, Ottawa, and Wexford Counties	Governor Declared Major Disaster and Presidential Declared Major Disaster (1777)
9/4/2005 and 9/7/2005	Hurricane (Katrina) Evacuation	Statewide - Declared due to the emergency conditions in MI, resulting from the influx of evacuees from states impacted by Hurricane Katrina beginning on August 29, 2005.	Governor Declared Disaster and Presidential Declared Emergency (3225)
1/26-27/1978	Blizzard, Snowstorm	Statewide	Presidential Declared Emergency (3057); Governor Declared Disaster
3/2/1977	Drought	44 Counties, including Antrim, Benzie, Charlevoix, Emmet, Grand Traverse, Kalkaska, Leelanau, Manistee, Missaukee , Otsego, Roscommon and Wexford.	Presidential Declared Emergency (3035)

Historic Natural Hazard Events

- Sources: NOAA Storm Database and records of Presidential- and Governor-Declared Emergencies or Disasters

Frequency	Natural Hazard	# of Events	Time Interval/ Year Event Recorded
1	Thunderstorm with Wind/ High Wind Event	27/4	1993-2021
2	Extreme Winter Weather*	28	1978; 1997-2019
3	Hail	24	1993-2018
4	Tornado (Fo to F2)	7	1955, 1964, 1980, 1983, 1994 (2), 1998
5	Flood/Flash Flood	4	2004, 2008, 2012, 2014
6	Lightning	3	2000, 2003, 2005
7	Heat/Extreme Heat	2	2001, 2018
	Drought	2	1977, 2001
8	Pandemic	1	2020



Missaukee County Community Survey

(10/4/21 to 1/18/2022)

Q9. What type of **natural hazard events** are likely to **have the largest impact** on your community, for example fire, flood, drought, illness outbreak, etc.?

1. Fire (Wildfire)
2. Pandemic/Illness Outbreak
3. Severe Storms/Tornado/High Winds
4. Flooding
5. Severe Winter Weather (snowstorm, ice event)
6. Drought and Power loss/Utility interruption/Storm damage



Missaukee County Community Survey

Q10. Does your community have **concerns about infrastructure** (dams, bridges, utilities, etc.) and the potential for a hazardous event in the future?

Utilities (11)

- **Aging power grid/ utility transmission lines** are undersized and experiencing stress due to inadequate load carrying capacity
- **Poor powerline maintenance** (tree trimming) by utilities leading to power failures
- **Above ground wiring** in the majority of the area
- Many **local businesses** (farms and retail) have experienced **significant expense due to [electrical] upgrades** required to provide adequate electrical service to their facilities.
- **Pipelines and oilfield pump locations**
- Decent **internet connection** for agri-businesses; availability of high-speed internet for students learning from home.
- **Lack of natural gas service** to outlying users who would benefit greatly by having it available.

Missaukee County Community Survey

Q10. Does your community have concerns about infrastructure (dams, bridges, utilities, etc.) and the potential for a hazardous event in the future?

Aging bridges / low bridges (10)

- *Forward Road bridge*
- *At least one older bridge in a somewhat remote area due to be closed*

The Road Commission is aware of these and will apply for funding to repair

Dams (3)

- The dam at the Falmouth pond will require extensive repair and/or maintenance at some point in the future
- Reedsburg Dam

The MDNR recently reconstructed the Reedsburg Dam in 2021

Roads (2)

- Some areas are not accessible for fire apparatus and ambulances due to decayed roads
- With infrastructure aging and the cost of replacement, & roads are always an issue

Flooding (1) Muskegon River

Woodland Fires (1)

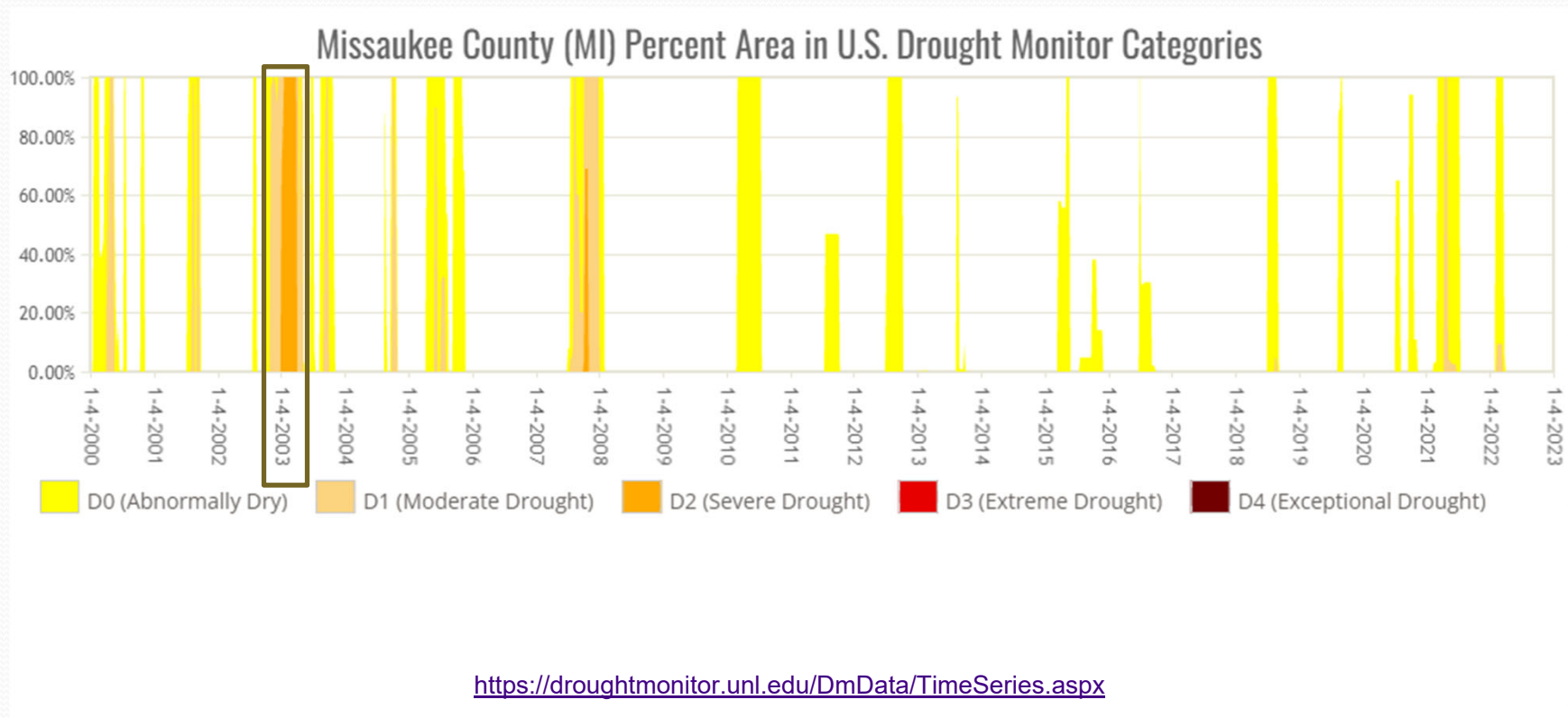


Drought

- Definition: 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.
- There has been 1 major drought - in 1977 (Presidential Declared Emergency) and 1 recorded as a major weather event with NOAA in 2001
- According to the Community Survey results:
 - Drought was mentioned the least amount of times as a major natural hazard that would have the largest impact on the community

Historic Drought Risk

April 2000-April 2022





Drought – Key Issues

Agricultural Production Losses

The primary direct economic impact of drought in the agricultural sector is crop failure and pasture losses. These costs are often passed on to consumers through increased prices and/or they may be offset through government disaster assistance programs. Indirect impacts of drought in the sector can include reduced supplies to downstream industries, such as food processors, and reduced demand for inputs, such as fertilizer and farm labor. The non-market impacts of production losses include mental health strain on farmers.

Pests and Diseases


Drought, coupled with high temperatures, may expand the distribution and incidence of pests and diseases that affect crops, forage, and livestock.

Decreased Water Availability for Agriculture

The depletion of water availability in soils causes significant declines in crops and livestock productivity. In addition, surface and groundwater supplies may decline during drought, affecting water availability and increasing costs to access water for crop or forage irrigation and watering livestock. With a return to normal precipitation, soil moisture typically recovers long before surface and groundwater supplies are replenished.

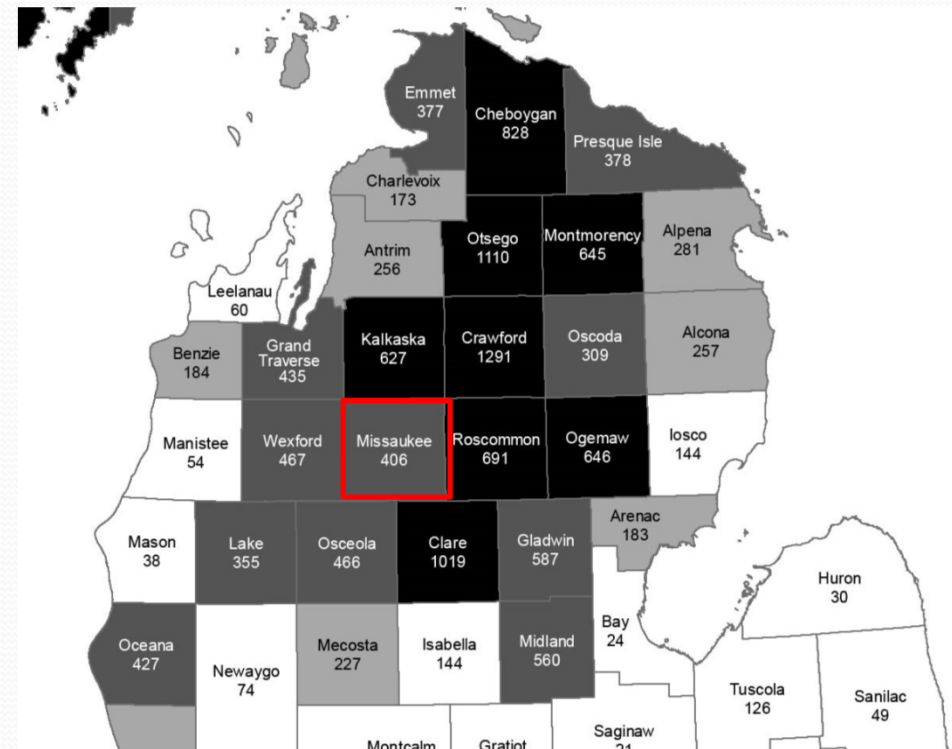
Specialty Crops

Most specialty crops (such as fruits, vegetables, tree nuts, and medicinal herbs) are more vulnerable to drought than field crops and have a higher value per unit of land/water. They may therefore represent a higher risk for experiencing economic loss in drought if the crop water demand exceeds water supply.

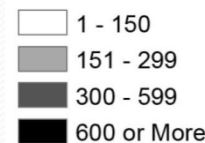


Wildfire

- A wildfire is an **unplanned, uncontrolled fire** in grassland, brushland, or forested areas.
- **406 wildfires** occurred on lands under MDNR jurisdiction within Missaukee County from **1981-2018**, resulting in **1,884.9 acres burned**. This is equal to **49.6 acres burned and 10.7 wildfires per year** on MDNR lands.
- **Community survey results: Wildfire is the #1 natural hazard event** that would have the largest impact on Missaukee County





Number of Wildfires




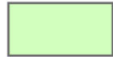




Produced by:
Michigan State Police
Emergency Management and Homeland Security Division
January 2019

Wildfire Risk

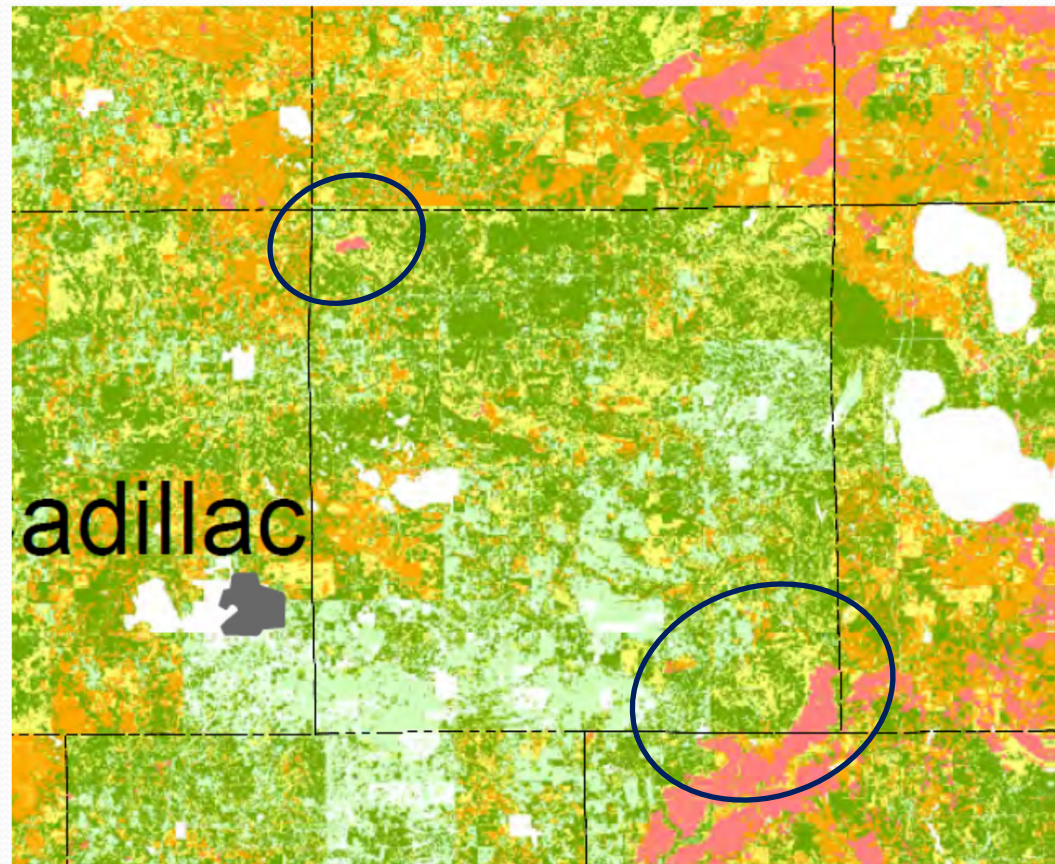
Legend

-  Cities
-  County Boundaries

Fire Risk w/ Dry Soils

-  No Risk
-  Low Risk
-  Moderate Risk
-  High Risk
-  Very High Risk
-  Extreme Risk

Data includes Land Cover Type, Canopy Cover, Township Scaled Fire Risk, and Dry Soil types from SSURGO Soils data.



Source: Wildfire Risk Map - MDNR Forest Resources Division



Small Group Discussions

- In groups of 5-6, discuss each natural hazard and how it affects your community
 - **Choose 1 person in your group to be the recorder;** this person will write each person's responses and will report key findings to the whole group
 - What is the potential for this hazard to affect your **population, infrastructure, environment or economy?**
 - Please answer this question for the following hazards
 - Extreme heat, drought
 - Severe Thunderstorm – wind, tornado, hail, lightning
 - Winter Weather – wind, ice, heavy snow, extreme cold
 - Spend **5-7 minutes** on each hazard



Vulnerabilities in Your Community

People

Economy

**Built
Environment**

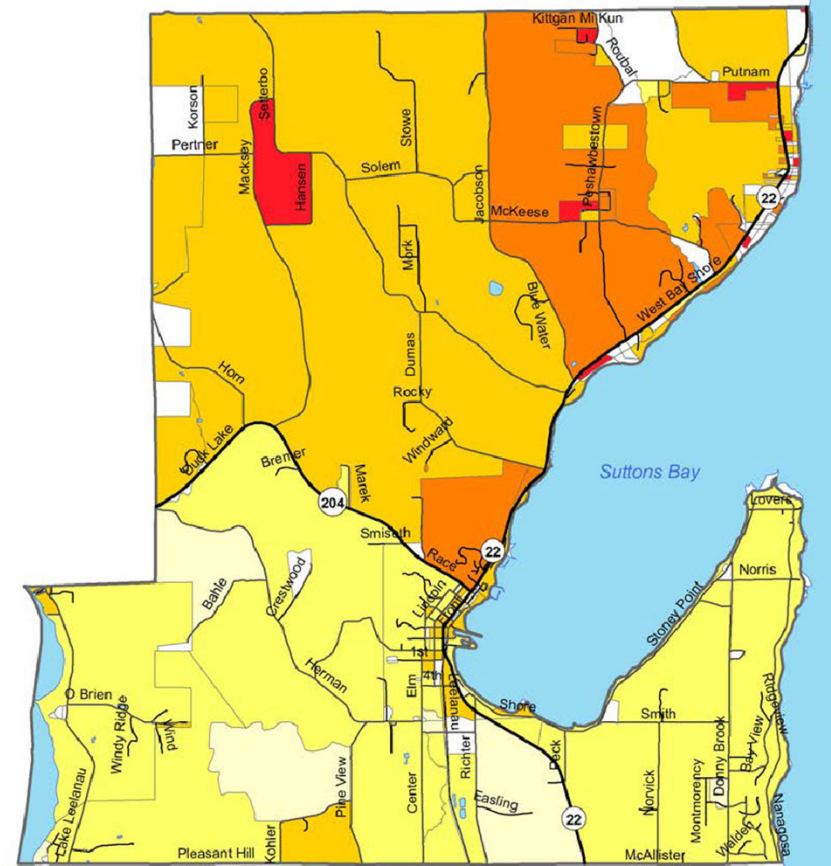
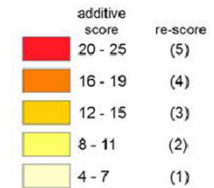
**Natural
Environment**

Vulnerable Populations

LIAA's NW MI Coastal Resilience Atlas – Heat Vulnerability Assessment

- Vulnerability = Exposure to the hazard (tree canopy and impervious surface) + Sensitivity
- Population Characteristics of Sensitivity:
 - Persons > age 65
 - Persons living alone
 - Minority (non-white) persons
 - Persons living below the poverty threshold
 - People > age 25 with less than a high school education
 - Disability status (i.e., ambulatory difficulty, mental disability)

Map 6
Relative Sensitivity of Population to
Extreme Heat Events





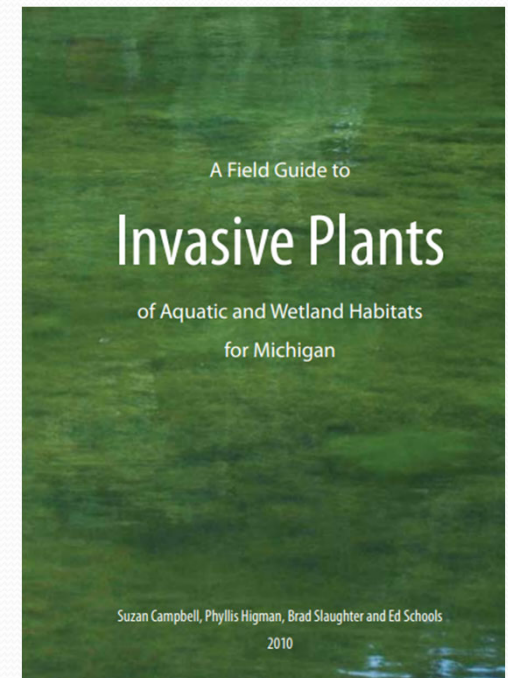
Full Group Discussion

Vulnerable Populations -

- Who are your primary vulnerable populations?
- Where are they located?
- What mechanisms are in place to aid these populations in the event of a natural hazard?

Invasive Species

- An invasive is a species that is **non-native to the ecosystem** under consideration AND whose introduction causes or is likely to **cause economic or environmental harm, or harm to human health**.
- Invasive species can be **plants, animals and other organisms (e.g., microbes)**, and be categorized as **aquatic or terrestrial**
- Only a small fraction of non-native plants are invasive





Full Group Discussion

Invasive Species –

- What are your **greatest concerns** pertaining to **invasive species**?
 - Impacts to forests, rivers, inland lakes, agriculture, etc.



Full Group Discussion

Pandemic Experiences –

- From a hazard mitigation perspective, what **lessons did the community learn** from the pandemic?
- What **shortcomings** did the community experience in its ability to mitigate the effects of the pandemic?\
- What **successes** did the community have?

County Wetlands

Map Legend

Change what items you see on the map by using the checkboxes

Wetland Data

☐ Wetland (Hydric) Soils

☐ National Wetlands Inventory 2005

Potential Wetland Restoration ☐

☐ Highest Potential - Hydric and Presettlement
Wetland Overlay

☐ High Potential - Hydric Soils Only

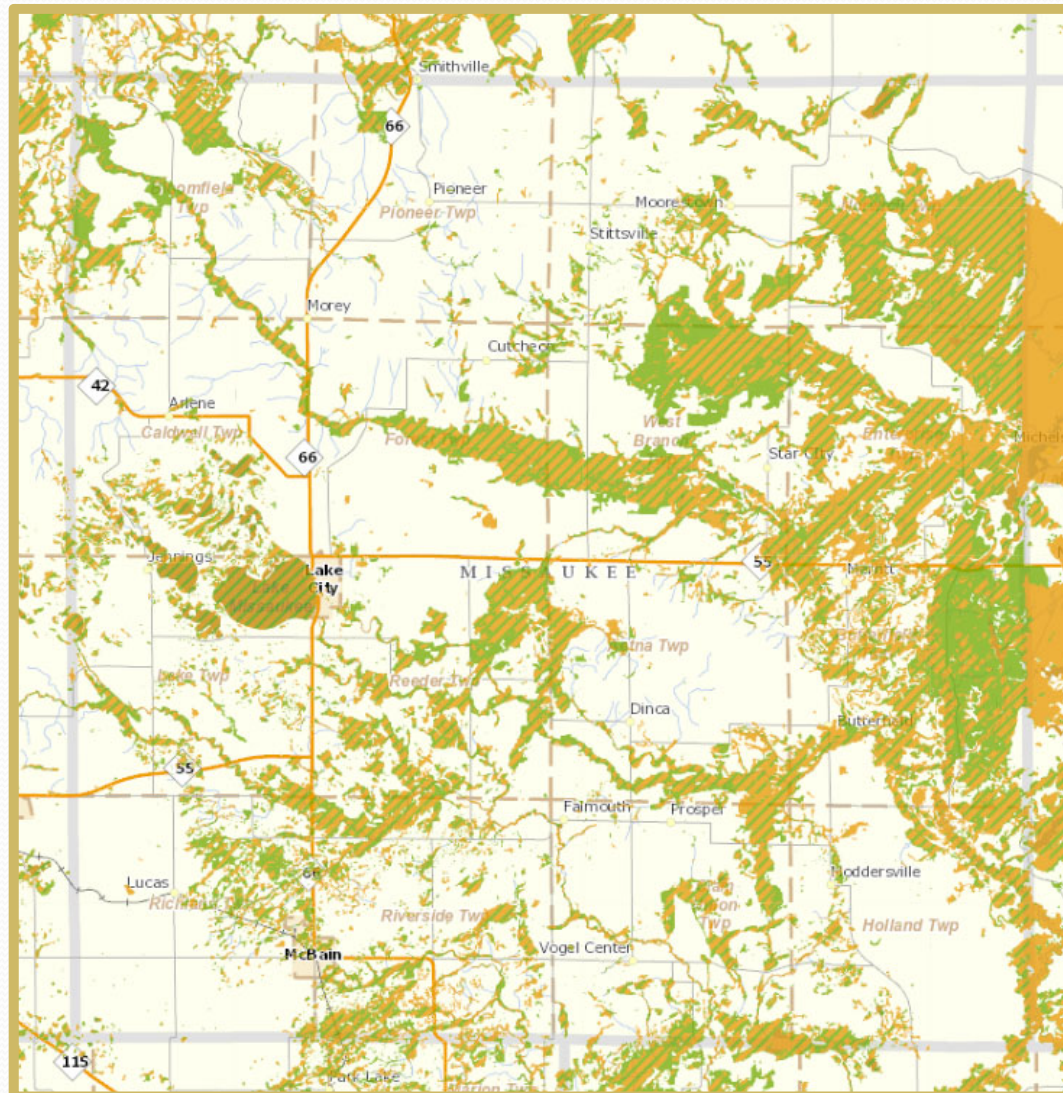
☐ Moderate Potential - Presettlement Wetlands
Only

Part 303 Final Wetlands Inventory ☒

☒ Wetlands as identified on NWI and MIRIS maps

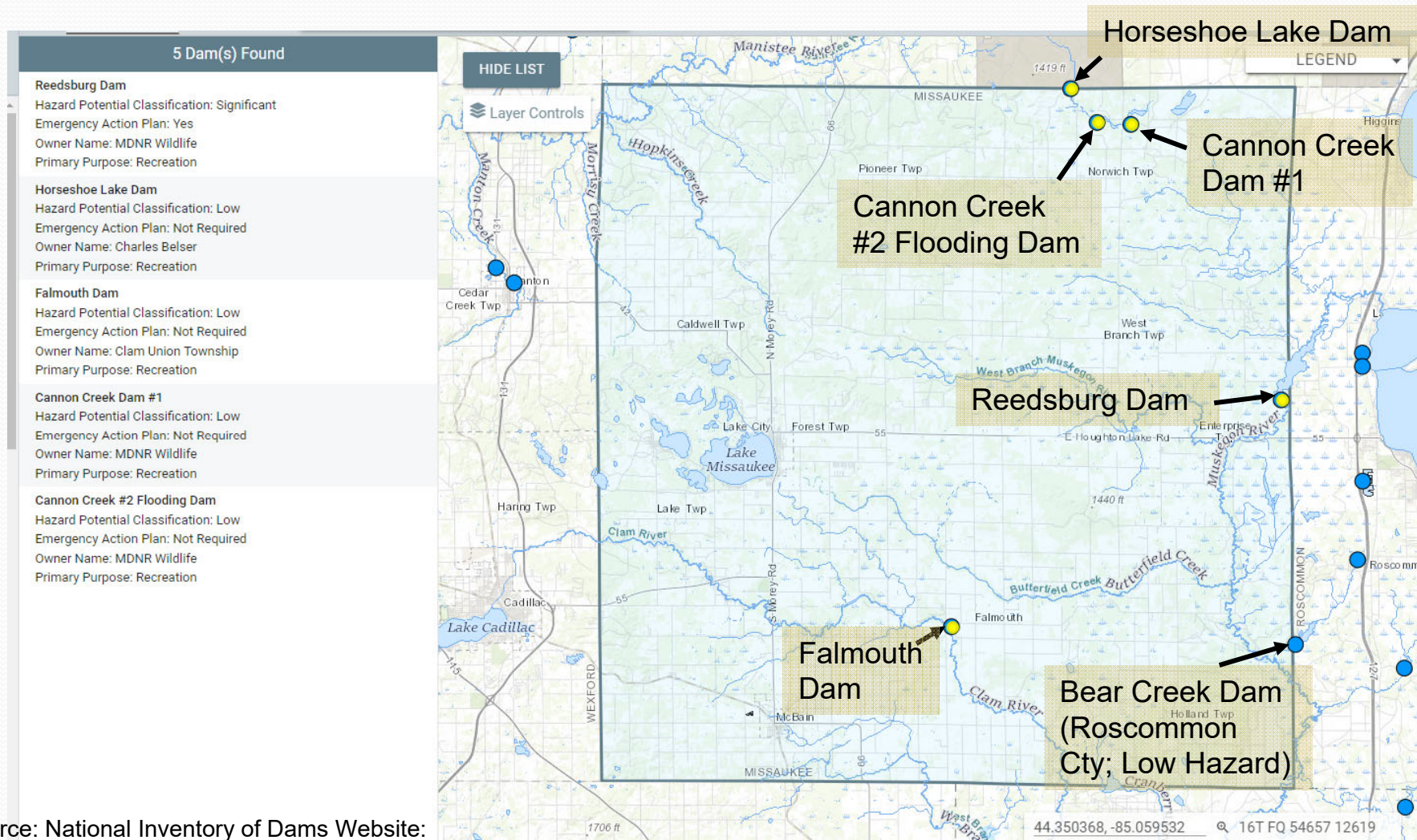
☐ Soil areas which include wetland soils

☐ Wetlands as identified on NWI and MIRIS maps and
soil areas which include wetland soils



Source: <https://www.mcgi.state.mi.us/wetlands/mcgiMap.html>

Missaukee County Dams



Source: National Inventory of Dams Website:
<https://nid.sec.usace.army.mil/#/>



NFIP & CRS Participating Communities

- The National Flood Insurance Program
- The NFIP provides flood insurance to property owners, renters and businesses, and having this coverage helps them recover faster when floodwaters recede. The NFIP works with communities required to adopt and enforce floodplain management regulations that help mitigate flooding effects.
- **None of the communities in Missaukee County currently participate in the NFIP.**
- The Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP



Group Activity

● Using the maps provided, mark the following:

● **Riverine and urban flooding (blue marker)**

- Potential for dam failure
- Locations where floods have occurred in the past
- Locations where floods have a higher probability of occurring

● **Wildfires (red marker)**

- Locations where wildfires have occurred in the past
- Locations where wildfires have a higher probability of occurring

● **High Winds – (purple marker)**

- Locations where high winds would have the greatest impact on infrastructure, vulnerable populations



Before you go!

- Complete the question on the half sheet of paper.
- Complete the in-kind match form (if your position is not federally-funded).

- NEXT STEPS:

- Hazard Analysis / Prioritization
- Mitigation Goals
- Mitigation Strategies