
2020 HURON COUNTY HAZARD MITIGATION PLAN

ADOPTED MONTH YEAR



Huron County Planning Commission

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George Lauinger – Citizen at Large

Bernie Creuger – Meade Township Supervisor

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Todd Talaski – Caseville Township, City of Caseville, McKinley Township, Winson Township

Steve Vaughan – Chandler Township, Colfax Township, Meade Township, Oliver Township

John Bodis – City of Bad Axe, Sigel Township, Verona Township

Ron Wruble – City of Harbor Beach, Bloomfield Township, Gore Township, Huron Township

Mary Babcock – Dwight Township, Hume Township, Lake Township, Lincoln Township, Pte Aux Barques Township, Port Austin Township

Other Staff and Officials

Jeff Smith – Huron County Board of Commissioners Representative

Neal Hentschl – Huron County Road Commission

Tom Donnellon – Huron County Road Commission

Carl Osentoski – Huron County Economic Development Director

Kelly Hanson – Huron County Sheriff

Ken Jimkowski – Huron Transit Authority

Randy Miller – Huron County Emergency Management Director

Steve Anderson – Tuscola County Emergency Management Deputy Director

Todd Hillman – Sanilac County Emergency Management Director

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Introduction

The Huron County Hazard Mitigation Plan (Plan) was created to protect the health, safety, and economic interests of residents by reducing the impacts of natural and technological hazards through hazard mitigation planning, awareness, and implementation. Hazard mitigation is any action taken to permanently eliminate or reduce the long-term risk to human life and property from natural and technological hazards. It is an essential element of emergency management along with preparedness, response, and recovery. This Plan serves as the foundation for hazard mitigation activities within the community. Implementation of the Plan's recommendations will reduce injuries, loss of life, and destruction of property due to natural and technological hazards. The Plan provides a path toward continuous and proactive reduction of vulnerability to the most frequent hazards, which often result in repetitive and severe social, economic, and physical damage. The ideal end-state is total integration of hazard mitigation activities, programs, capabilities, and actions into normal, day-to-day governmental functions and management practices.

Document Overview

Hazard mitigation planning is any action taken before, during, or after a disaster to permanently eliminate or reduce the long-term risk to human life and property from natural and technological hazards. It is a cornerstone element and responsibility of emergency management, along with preparedness, response, and recovery. Therefore, this planning document intends to reduce the impact of hazards on people and property, and through the coordination of resources and authorities, contribute to successful mitigation of disasters.

The entity with primary responsibility to formulate and carry out action items outlined in this Plan is the Huron County Board of Commissioners. The Board of Commissioners has delegated the monitoring of the plan and action items to the Huron County Emergency Services Director as the Emergency Management Coordinator for Huron County.

As a result, the County will be better prepared for disasters with quick and effective responses when they occur. Transitioning into the recovery process should minimize damages and improve the community's preparedness for the following incident. When successful, mitigation lessens the impact of hazards, helping to ensure incidents remain incidents and do not become disasters.

The intent of the Plan is to protect the safety and economic investment of Huron County residents and businesses by reducing the impacts of hazards. Through the initial planning process and implementation strategies, the Plan serves as the hub of hazard mitigation activities and actions.

The Plan itself is composed of requirements resulting from the Disaster Mitigation Act (DMA) of 2000 for hazard mitigation planning. This plan document is required to become eligible for hazard mitigation grant program funds in the future.

This Plan provides an outline towards ongoing and proactive reduction of vulnerability to hazards resulting in social, economic, and physical damage. The intent of this document is to be the Huron County "playbook" of hazard mitigation strategies and management practices with an emphasis on threats to public health and safety of citizens as well as the economic and physical well-being of Huron County.

Planning Process

The Huron County Hazard Mitigation Plan examines multi-hazard mitigation activities and opportunities. Emphasis is placed on hazards that have had significant impact on the community in the past. The planning process for the Huron County Hazard Mitigation Plan was:

- Inventory of County demographics, natural features, and infrastructure
- Selection of hazard evaluation criteria
- Identification of hazards and risks
- Identification of goals and objectives
- Identification for mitigation strategies
- Implementation strategies

The 2020 update of the Huron County Hazard Mitigation Plan was prepared by the Huron County Local Emergency Planning Committee (LEPC) under the overall direction of the Huron County Planning Commission. The LEPC served as the local hazard mitigation planning committee. This Committee acts as an advisory board to the Huron County Office of Emergency Services. The group is made up of 13 members who represent the following agencies. In addition to the LEPC and Planning Commission, several other agencies and local communities were involved in the update. All are listed below.

Local Emergency Planning Committee

- Huron County Emergency Management Director
- 911 Central Dispatch Director
- Huron Area Transit Corporation, Director
- Huron County Health Department Emergency Preparedness Coordinator
- Scheurer Hospital Emergency Preparedness Coordinator
- Huron Behavioral Health Preparedness Coordinator
- City of Harbor Beach Building and Zoning Director
- Corteva Corporation Safety Coordinator
- Huron County Sheriff / Deputy
- Huron County Board of Commissioners Safety Committee Chair
- Courtney Manor Skilled Nursing Facility Emergency Preparedness Coordinator

Huron County Planning Commission

- Todd Talaski – Huron County Board of Commissioners Representative
- Julie Epperson – Sebawaing Village President
- George Lauinger – Citizen-at-Large
- Bernie Creuger – Meade Township Supervisor
- Jeremy Polego – Farm Community Representative
- Bill Renn – Chandler Township Supervisor
- Ken Walker – Citizen-at-Large
- Robert Tenbusch – Citizen-at-Large

Other County Staff/Agency Participation

- Jeff Smith – Huron County Building and Zoning Director
- Neal Hentschl – Huron County Road Commission Operations Manager
- Tom Donnellon – Huron County Road Commission Engineer
- Carl Osentoski – Huron County Economic Development Director
- Kelly Hanson – Huron County Sheriff
- Kenneth Jimkowski – Huron Transit Authority Director
- Randy Miller – Huron County Emergency Management Director
- Steve Anderson – Tuscola County Emergency Management Director
- Todd Hillman – Sanilac County Emergency Management Director

The initial effort for the Plan began with a meeting in September 2018 between representatives from the County Emergency Management Division and the consultant. The group discussed the project, who to involve in the planning process from the County, and how to involve the other municipal jurisdictions in the County.

In October 2018, the Huron County Planning Commission and consultants met to discuss the purpose of the hazard mitigation plan, the process for updating and adopting the Plan, the role of the Planning Commission and the LEPC, community input, past rankings, and hazard analysis criteria. The Planning Commission and the LEPC were asked to review the hazard evaluation criteria and provide comments for changes to that criteria for the 2020 update. Once the Committee finalized the evaluation criteria in November of 2018, the Planning Commission and the LEPC reviewed the past hazard rankings and evaluated the hazards based on the predefined evaluation criteria. The rankings were tabulated, and the hazards were ranked according to Huron County Planning Commission and LEPC input.

The Cities of Bad Axe, Caseville, Harbor Beach, and the Village of Sebawaing participated in this plan update by having their representatives attend meetings. The representatives participated by attending and being involved in the monthly Planning Commission meetings between the months of (October 2018) and (February 2022). These opportunities for public input were held in compliance with the Open Meetings Act. The agendas that show the Hazard Mitigation Plan as an agenda item for those months are included in Appendix D. The representatives were each sent the public survey link to participate in that input strategy as well (see Appendix D).

In addition to hazard evaluation and ranking from the Huron County Planning Commission and the LEPC, they also asked every community in Huron County to participate in a public input survey which began in January 2019 and lasted through March of 2019. When the survey was launched, a companion website was made available at <https://huronhazmit.blogspot.com>. The survey results were used to determine what the public felt was the greatest threat and helped in the creation of several mitigation strategies. A summary of the survey results and a full compilation of the results are available for review in Appendix D. In total, there were 298 survey respondents from 37 of the 39 County jurisdictions. The only communities that did not participate were the Village of Owendale and Pointe Aux Barques Township.

The consultant began to update the text of the 2008 plan. This included an updated community profile section that analyzes the County's demographic, social, and economic characteristics. They also worked with the LEPC to determine which hazards would be included in the update of this Plan, determined the final evaluation criteria for ranking the hazards, and compiled a community input survey. Finally, the planning consultant continued updating the Risk Assessment section of the Plan.

The community input survey closed in March 2019. At the May 2019, meeting of the Huron County Planning Commission, the consultant shared the compiled survey results and reviewed the next steps in the planning process. Then, the LEPC reviewed and discussed the goals and strategies of the hazard mitigation plan and reviewed the mitigation strategies from the past Plan. They were then asked to give their opinion on the goals and mitigation strategies. Based on the input from the Huron County Planning Commission and the LEPC, and the general public, the goals and mitigation strategies were updated in the Plan.

During the plan writing process, specific hazard concerns were discussed by jurisdiction. More specifically, each jurisdiction was able to create a list of hazard mitigation strategies specific to their locality.

The jurisdictions with local mitigation strategies are:

- City of Caseville, Todd Talaski, Board of Commissioner
- City of Harbor Beach, Ron Wruble, City Manager
- Village of Sebawaing, Julie Epperson, Village President

The draft was completed in October 2020, and it was sent to the Huron County Planning Commission for review and comment. After, the draft was sent to all participating communities for their review. The participating communities include:

- City of Bad Axe, John Bodis, Board of Commissioner

Community members were given the opportunity to express their opinions on the Huron County Hazard Mitigation Plan draft. The draft plan was posted on the Huron County website and advertised in the newspaper. It is still posted for review until adoption. The plan will be posted in on the County web site for all the government bodies within the county to see, download and review and adopt.

The open comment period lasted from MONTH to MONTH. After local reviews were complete, the draft was sent to the State Hazard Mitigation Officer for State Review. Finally, after necessary revisions were made, the draft was sent to the Federal Emergency Management Administration (FEMA) for review and was approved on DATE. The document was officially adopted by the County Board of Commissioners on DATE and by ## other participating jurisdictions in Huron County. A list of the adopting jurisdictions, the dates they adopted the Plan, and copies of each resolution can be found in Appendix C of this document.

Incorporation of Plans and Documents

A variety of references were used in the development of the risk assessment and ultimately in developing the entire Plan. In addition to the reference material listed here, the LEPC drew upon their vast years of experience dealing with these issues in Huron County and their extensive knowledge of the community and available resources.

Federal Resources

- Census Data on Huron County, Michigan and the United States from the United States Census Bureau Community Factfinder. Decennial Census 2000 and 2010
- FEMA, Flood Insurance Information
- FEMA, NFIP Flood Insurance Rate Maps
- FEMA, Local Mitigation Planning Handbook
- National Climate Data Center
- National Public Pipeline Mapping Center

State Resources

- Michigan State Police and Homeland Security-Hazard Mitigation PowerPoint
- Michigan Hazard Analysis, Michigan State Police Emergency Management, and Homeland Security Division
- Michigan Damage Assessment Handbook
- EGLE– Mining, Pipelines, Wells
- Licensing and Regulatory Affairs– Structural Fire Database

Local Resources

- Local planning documents, including zoning and master plans including:
 - The Huron County Master Plan – updated concurrently with this Plan and adopted in March of 2021.
 - Bad Axe, Caseville, Sebawaing, and Harbor Beach Master Plans
- Tuscola County Hazard Mitigation Plan
- Sanilac County Hazard Mitigation Plan
- Local City, Village, and Township stormwater ordinances
- County Emergency Action Guidelines

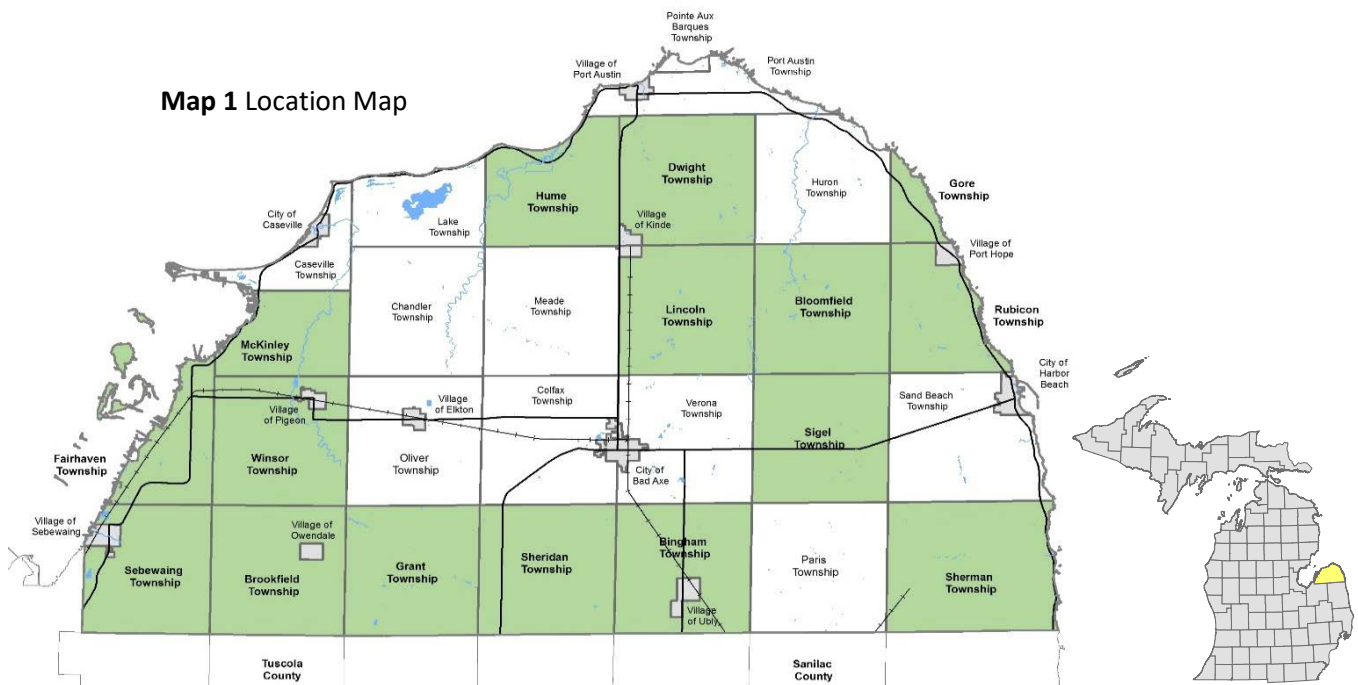
Community Profile

About Huron County

Huron County is the northernmost County in the tip of the Thumb of Michigan, see Map 1 below. The County is a peninsula bordered to the northeast by Lake Huron, Saginaw Bay to the northwest, Sanilac County to the southeast, and Tuscola County to the southwest. The County covers an area of 838 square miles, making it one of the larger counties in the Lower Peninsula. Huron County has very different natural landscapes. The County has about 90 miles of wooded Lake Huron shoreline, and the interior is mainly agricultural, which is flat and full of fertile farmland.

Huron County is organized into 28 townships, three cities, and eight villages. There are four state highways that provide access throughout the County; these include M-25, M-53, M-19, and M-142. M-25 provides access to I-75 to southwest of the County at Bay City. The County seat is the City of Bad Axe, located in the center of the County. The County was originally settled in 1849 and was officially organized in 1860. The name Huron was derived from the phrase "Inelles hures," meaning "what heads." This was applied to the Wyandotte and Huron Native Americans by the astonished French travelers on seeing the Native Americans' fantastic dressing of their hair.

Upon organization of the County in 1859, Sand Beach (presently Harbor Beach) became to first County seat. After a fire in 1864, the seat was moved to Port Austin. Finally, in 1873 the seat was moved to Bad Axe, which is the current County seat. Various Native American tribes originally settled the County, and in the 1840s, the area was settled by colonists. The settlers were engaged in fishing, trapping, and lumbering. The timber industry was a significant factor in attracting many new settlers. However, in 1871 and 1881, two large forest fires destroyed most of the timber industry. Agriculture soon replaced the



timber industry and remains the dominant economic force today, in addition to tourism along the lakeshore. Map 1 on the previous page highlights the communities that are locally zoned (white) and those that are county-zoned (green).

Demographics

Background information from the U.S. Census is used to analyze a community's current demographic conditions. Huron County Census-based data on overall population trends, housing characteristics, and economic information is analyzed in the following sections.

The information presented uses Census Data from the 2000 and 2010 Census and the 2014 American Community Survey (ACS) (NOTE: The 2020 Census Data had not been released at the time this Plan was written). Appendix A contains a summary table of U.S. Census demographic data for Huron County, the State of Michigan, and the United States. This table is for comparison purposes.

The following points highlight and summarize major shifts in the County since the 1990s.

1. In the past 15 years, the County has experienced a decline in population from 36,024 people in 2000 to 33,118 people in 2015, a decrease of 2,906 people. All of the cities and villages in Huron County experienced a decrease in population from 2000-2010; this is also true for the time period from 1990 to 2010. The only differences were the villages of Pigeon and Ubyly, which saw increases in population over the same 20-year period. The same trend is true for the townships in Huron County. Aside from Fairhaven, Gore, Huron, and Pointe Aux Barques, all the townships saw a decrease in population from 2000 to 2010. However, over the 20-year period from 1990 to 2010, there were several more townships that experienced population growth. These include Bingham, Caseville, Gore, Grant, Hume, Huron, Lake, Sheridan, and Verona.
2. Huron County and Michigan are aging at almost the same rate. The County is aging at a rate of one percent greater than the state. However, Huron County is aging at a rate doubly as fast compared to the Nation. It should be noted that just because the state and County are aging at the same rate, it does not mean that their ages are the same. The median age for the County is eight years older than that of the state and nine years older than that of the Nation.
3. The overall population of the County is aging. This is illustrated in the age ranges 45-64 and 65+ because they were the only groups to have an increase in population, even though the County, as a whole, lost population. The younger age groups have similar trends to one another, and each group lost over at least 10% of their population. The loss is most reflected in the 25-44 and 5-9 age groups, which have experienced losses over 20%. When comparing the age ranges throughout the County, the largest population of residents (30.8%) is in the 45-64 age group, which experienced a 14.7% increase in population from the 2000 figures.
4. The County has high vacancies rates, which indicate large amounts of seasonal housing. In 2010, 67.7% of the housing in the County was occupied, and 32.3% was vacant. While high seasonal vacancy rates are not true for all the communities in the County, they are for some. This trend is most apparent when vacancy rates are compared against the state and nation rates. The inland communities that do not have large seasonal housing numbers compare more closely to the state

and country rates. These both have occupancy percentage rates in the high eighties and vacancy percentage rates in the low teens. The high vacancy rates are most noticeable on the townships along the coast, where vacancy rates range from mid 20% range all the way to 90%, with the average falling in the high 40% range.

5. In the County, there are a total of 14,348 full-time occupied housing units. In Huron County, the percentage of owner-occupied housing units is 81.8%, which is significantly higher than the 72.1% of the state and 65.1% of the Nation as a whole. It is worth noting that the lowest percentage of owner-occupied housing is 60.8% in the City of Bad Axe, and the highest is Lake Township at 93.4%, with several other townships also in the 90% range.
6. Manufacturing, educational services, health care, and social assistance are the County's largest employment industries representing 20% of the population each. The third-largest industry is retail trade at 10.7%, and agriculture, forestry, fishing and hunting, and mining are fourth with 9.1%.

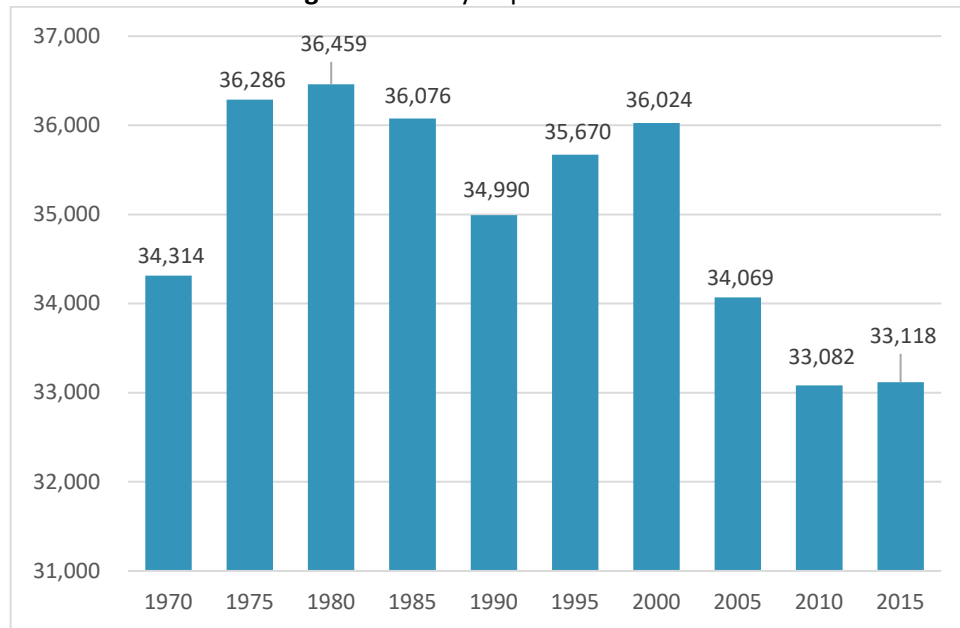
Population

Population information is presented in this report using the most recent U.S. Census Data (2000 and 2010 U.S. Census Data and the 2014 American Community 5-Year Estimates) and Historic Census Data. To review a more in-depth comparison for many of the demographic characteristics that will be discussed in the following sections, reference the chart located in Appendix A of this document.

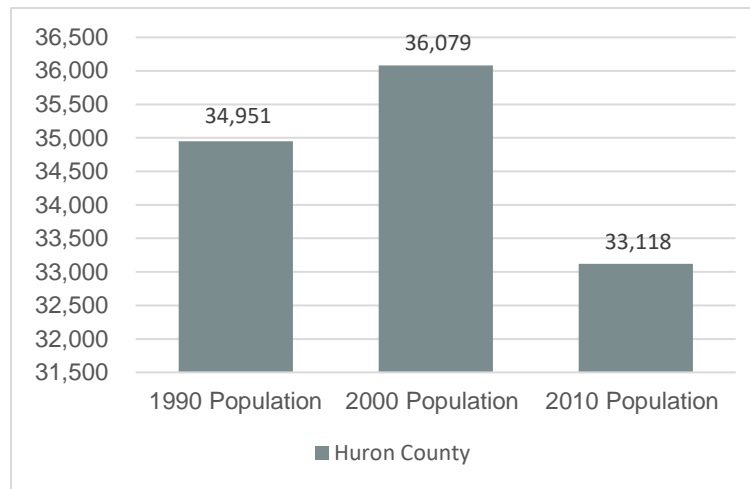
Population Trends

Population change influences land-use decisions; therefore, it's important to know the trends in order to be prepared for the future.

For the past five decades, the County has experienced many fluctuations in population. Figure 1 illustrates the population changes every five years beginning in 1970. From 1970 to 1980, the population of the County increased by 2,145 people. This was the period with the largest population growth in the timeframe outlined in Figure 1. Then, over the next decade, there was a period of population decline. The population decreased by 1,469 people (-3.0%). Between 1990 and 2000, the County had another period of growth, with an increase of 1,304 people, or 2.98%. Finally, between 2000 and 2010, there has been a sharp decline of population from 36,024 people to 33,082 people, a decrease of 2,942 people, of -8.2%. According to the 2014 ACS, the population in County is 32,525. This is a decrease from the 2010 Census. However, it is important to remember ACS data is estimate data, and the Decennial Census is a full population count. The County will not have another full population count until the 2020 Census, at this time, there is some 2020 Census data publicly available, however, the majority has not yet been released. The data that is available is provided as a supplement to the full demographic analysis below.

Figure 1 County Population Trends

The extent of the population loss in Huron County from 2000 to 2010 is highly likely attributable to Michigan's one-state recession that ran from 2001 to 2010. County population grew from 34,951 to 36,079 between 1990 and 2000 and then decreased by 8.21% between 2000 and 2010. In the past two decades, the overall population change in Huron County has decreased by 5.24%. This means the population in Huron County is below the 1990 level. This is different from both Michigan and the country, which had population increases. All the cities and villages in Huron County experienced a decrease in population from 2000 - 2010. This is also true for the time period from 1990 to 2010. The only differences were the villages of Pigeon and Ubly, which saw increases in population over the same 20-year period. The same trend is true for the townships in Huron County. Aside from Fairhaven, Gore, Huron, and Pointe Aux Barques, all the townships in the County had a population decline between 2000 to 2010. However, over the 20-year period from 1990 to 2010, several townships experienced population growth. These include Bingham, Caseville, Gore, Grant, Hume, Huron, Lake, Sheridan, and Verona. Tables 1a - 1d below depict the population change per jurisdiction over the past 20 years. The 2020 population in Huron County is 31,407 people.

Figure 2 County Population (1990, 2000, and 2010 Census)**Table 1a** Population Trends by Jurisdictions, Overall (1990, 2000, and 2010 Census)

Jurisdiction	1990 Population	2000 Population	2010 Population	2000 - 2010 % of Population Change	1990 - 2010 % of Population Change
Huron County	34,951	36,079	33,118	-8.21%	-5.24%
Michigan	9,295,297	9,938,444	9,883,640	-0.55%	6.33%
United States	248,708,873	281,421,906	308,745,538	9.71%	24.14%

Table 1b Population Trends by Jurisdictions, by City (1990, 2000, and 2010 Census)

Jurisdiction	1990 Population	2000 Population	2010 Population	2000 - 2010 % of Population Change	1990 - 2010 % of Population Change
Bad Axe	3,484	3,462	3,129	-9.62%	-10.20%
Caseville	857	896	749	-16.40%	-12.60%
Harbor Beach	2,089	1,837	1,703	-7.30%	-18.47%

Table 1c Population Trends by Jurisdictions, by Village (1990, 2000, and 2010 Census)

Jurisdiction	1990 Population	2000 Population	2010 Population	2000 - 2010 % of Population Change	1990 - 2010 % of Population Change
Elkton	958	863	808	-0.06%	-15.66%
Kinde	473	534	448	-0.16%	-5.28%
Owendale	285	296	241	-0.16%	-15.43%
Pigeon	1,207	1,207	1,208	-0.00008	0.08%
Port Austin	815	737	664	-9.91%	-18.52%
Port Hope	313	310	267	-13.87%	-14.69%
Sebewaing	1,923	1,974	1,759	-10.89%	-8.52%
Udly	821	873	858	-1.72%	4.50%

Table 1d Population Trends by Jurisdictions, by Township (1990, 2000, and 2010 Census)

Jurisdiction	1990 Population	2000 Population	2010 Population	2000 - 2010 % of Population Change	1990 - 2010 % of Population Change
Bingham	1,617	1,751	1,709	-2.40%	5.69%
Bloomfield	563	535	455	-14.95%	-19.18%
Brookfield	947	914	760	-16.85%	-19.74%
Caseville	2,139	2,723	2,570	-5.62%	20.14%
Chandler	509	501	472	-5.79%	-7.26%
Colfax	1,936	1,954	1,884	-3.58%	-2.68%
Dwight	917	930	758	-18.49%	-17.33%
Fairhaven	1,250	1,259	1,107	-12.07%	-11.44%
Gore	125	139	144	3.60%	15.20%
Grant	778	833	913	9.60%	17.35%
Hume	714	801	749	-6.49%	4.90%
Huron	376	423	437	3.31%	16.22%
Lake	800	996	855	-14.16%	6.87%
Lincoln	868	873	807	-7.56%	-7.02%
McKinley	527	503	445	-11.53%	-24.09%
Meade	777	799	720	-9.89%	-7.33%
Oliver	1,685	1,626	1,483	-8.79%	-11.98%
Paris	624	557	481	-13.64%	-22.91%
Pointe Aux Barques	15	10	10	0.00%	-33.33%
Port Austin	1,474	1,591	1,424	-10.50%	-3.39%
Rubicon	766	778	732	-5.91%	-4.43%
Sand Beach	1,358	1,470	1,221	-16.94%	-10.08%
Sebewaing	2,937	2,944	2,724	-7.47%	-7.25%
Sheridan	694	736	712	-3.26%	2.59%
Sherman	1,155	1,165	1,083	-7.04%	-6.23%
Sigel	599	576	465	-19.27%	-22.37%
Verona	1,196	1,349	1,259	-6.67%	5.26%
Winsor	2,032	2,044	1,907	-6.70%	-6.15%

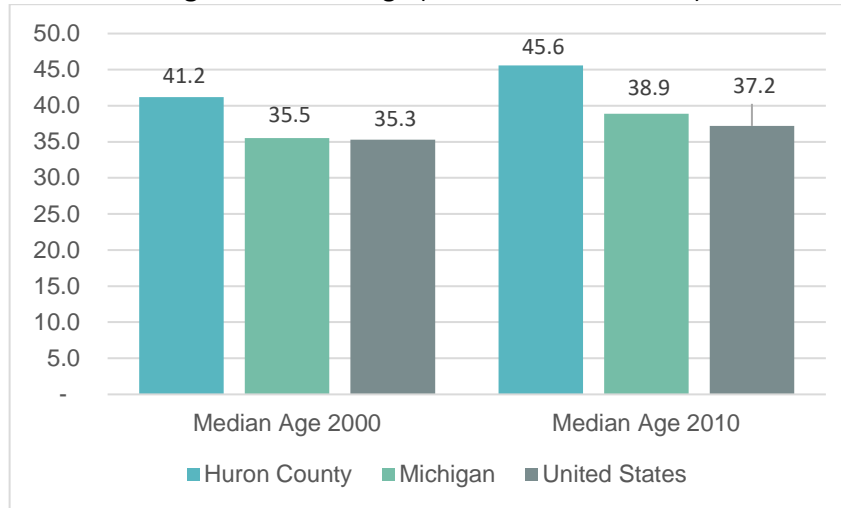
Median Age

The median age of a community is another tool that can be used to analyze a population's overall age. Even more insightful is the change of the median age over a period of time. It is a good indicator of how fast or slow a population is aging. Referencing Figure 3, Huron County and Michigan are aging at a similar rate; the County is aging at a rate of one percent greater than the state. The median age in Huron County grew from 41.2 years in 2000 to 45.6 years in 2010. Even though the state and County are aging at the same rate, it does not mean that their ages are the same. The median age for the County is eight years older than that of the state and nine years older than that of the country. Huron County is aging at a rate

doubly as fast as the rest of the United States compared to the country. According to the 2020 Census, the median age in Huron County is 49.2.

An aging community has very different needs than a young community. Housing needs for a young community that is in the family starting age are often single-family homes. In contrast, an aging community requires condos or apartments with less maintenance or assisted living facilities. They may also require public transportation and advanced health care facilities.

Figure 3 Median Age (2000 and 2010 Census)



When analyzing the change in median age per community from 2000 to 2010, it is clear that Huron County is aging quickly. This creates particular concerns when considering land use planning in the future. All but four of the townships in Huron County have aged at rates higher than 10%. The outlier, Pointe Aux Barques Township, has aged by 75%, but aside from that, the highest rate in the townships was 24%. When comparing the aging rate of the cities and villages to that of the townships, the changes are not as drastic, but some cities and villages are still aging fast. See Tables 2a – 2d for information for each jurisdiction.

Table 2a Median Age, Overall (2000 and 2010 Census)

Jurisdiction	Median Age 2000	Median Age 2010	% Change from 2000 - 2010
Huron County	41.2	45.6	10.67%
Michigan	35.5	38.9	9.6%
United States	35.3	37.2	5.4%

Table 2b Median Age, by City (2000 and 2010 Census)

Jurisdiction	Median Age 2000	Median Age 2010	% Change from 2000 - 2010
Bad Axe	38.7	39.8	2.48%
Caseville	48.8	55.1	12.90%
Harbor Beach	41.9	47.7	13.84%

Table 2c Median Age, by Village (2000 and 2010 Census)

Jurisdiction	Median Age 2000	Median Age 2010	% Change from 2000 - 2010
Elkton	35.6	36.3	1.96%
Kinde	33.6	40.0	19.04%
Owendale	34.0	35.5	4.40%
Pigeon	42.1	47.2	12.11%
Port Austin	52.4	55.4	5.72%
Port Hope	48.0	54.9	14.37%
Sebewaing	40.9	44.9	9.77%
Udly	38.5	40.8	5.97%

Table 2d Median Age, by Township (2000 and 2010 Census)

Jurisdiction	Median Age 2000	Median Age 2010	% Change from 2000 - 2010
Bingham	36.2	40.9	12.98%
Bloomfield	38.0	45.4	19.47%
Brookfield	39.0	44.3	13.58%
Caseville	51.9	57.2	10.21%
Chandler	37.8	42.1	11.37%
Colfax	40.6	45.0	10.83%
Dwight	37.1	44.9	21.00%
Fairhaven	39.5	46.2	16.96%
Gore	49.3	61.4	24.54%
Grant	35.2	39.9	13.30%
Hume	46.9	52.3	11.51%
Huron	51.1	54.3	6.26%
Lake	56.0	60.3	7.67%
Lincoln	38.2	42.9	12.30%
McKinley	44.6	50.1	12.33%
Meade	40.6	45.5	12.06%
Oliver	35.3	39.5	11.89%
Paris	35.9	41.3	15.04%
Pointe Aux Barques	39.5	69.5	75.94%
Port Austin	52.0	55.5	6.73%
Rubicon	43.3	50.7	17.09%
Sand Beach	40.5	46.7	15.30%
Sebewaing	40.9	44.7	9.29%
Sheridan	36.3	42.3	16.52%
Sherman	38.7	44.3	14.47%
Sigel	33.6	41.4	23.21%
Verona	38.3	45.5	17.26%
Winsor	40.5	47.6	17.53%

Age Distribution

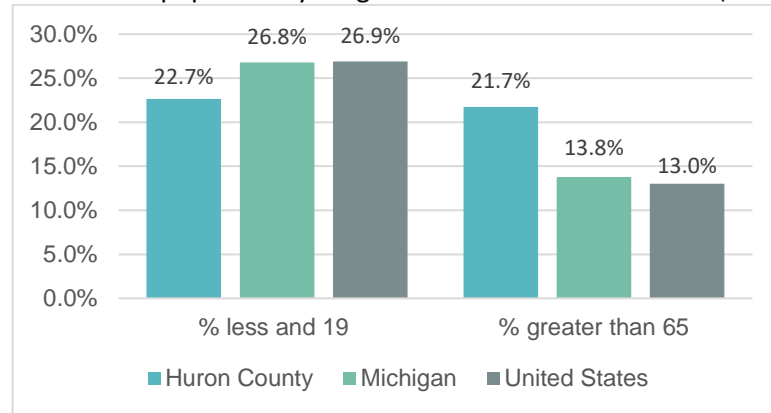
Over the past decade, the age distribution of the population in Huron County has changed significantly. The overall population in the County is aging. This is illustrated in the age ranges 45-64 and 65+ because they were the only groups to have an increase in population between 2000 to 2010, even though the County lost population. The younger age groups have similar trends to one another, in that each group lost over 10% of their population. The loss is most reflected in the 25-44 and 5-9 age groups, which have experienced losses over 20%. When comparing the age ranges throughout the County, the largest population of residents (30.8%) is in the 45-64 age group, which experienced a 14.7% increase in population from the 2000 figures. These figures can be found in Table 3.

Table 3 County Population by Age and Sex (2000 and 2010 Census)

	2000				2010				% Change 2000 - 2010
	Male	Female	Total	% of Total	Male	Female	Total	% of Total	
Under 5	1,002	984	1,986	5.5%	828	801	1,629	4.9%	-18.0%
Age 5 -19	3,876	3,627	7,503	20.8%	3,004	2,872	5,876	17.7%	-21.7%
Age 20 - 24	880	756	1,636	4.5%	773	679	1,452	4.4%	-11.2%
Age 25 - 44	4,571	4,460	9,031	25.0%	3,471	3,289	6,760	20.4%	-25.1%
Age 45 - 64	4,470	4,429	8,899	24.7%	5,165	5,038	10,203	30.8%	14.7%
Age 65+	3,028	3,996	7,024	19.5%	3,197	4,001	7,198	21.7%	2.5%
Total	17,827	18,252	36,079		16,438	16,680	33,118		-8.2%

Over the past decade, the age distribution of the population in Huron County has changed significantly. The overall population in the County is aging. This is illustrated in the age ranges 45-64 and 65+ because they were the only groups to have an increase in population between 2000 to 2010, even though the County lost population. The younger age groups have similar trends to one another, in that each group lost over 10% of their population. The loss is most reflected in the 25-44 and 5-9 age groups, which have experienced losses over 20%. When comparing the age ranges throughout the County, the largest population of residents (30.8%) is in the 45-64 age group, which experienced a 14.7% increase in population from the 2000 figures. These figures can be found in Table 3.

To see a further breakdown of age groups by community for 2010, please reference Tables 4a – 4d on the following pages. These tables also illustrate the percentage of the population in each community that is under the age of 19 and above the age of 65. Figure 4 illustrates those numbers below as well. Compared to the state and country, Huron County has a smaller number of residents younger than 19 and a significantly larger number of residents who are older than 65. It can be assumed that there is a larger population of elderly and retirement-aged people because they are choosing to age in place. Another possibility may be an influx of new permanent residents as people who have second homes choose to retire in Huron County. The percentage of residents over 65 in each jurisdiction varies widely. When comparing the townships, Pointe Aux Barques Township stands out with 60% of the residents older than five and no residents younger than 19. The other townships with a larger population older than 65 are Lake, Fairhaven, and Caseville. The townships with the largest population of kids younger than 19 are Grant at 30%, and Paris, Oliver, Bingham, and Sheridan all have 27%.

Figure 4 Percent of population younger than 19 and older than 65 (2010 Census)**Table 4a** Population by Age and Sex and Jurisdiction, Overall (2010 Census)

Jurisdiction	Age Distribution						% younger and 19	% older than 65
	Under 5 Years	5 - 19 years	20 - 24 years	25 - 44 years	45 - 64 years	65+ years		
Huron County	1,629	5,876	1,452	6,760	10,203	7,198	22.7%	21.7%
Michigan	596,286	2,052,599	699,072	2,442,123	2,762,030	1,361,530	26.8%	13.8%
United States	20,201,362	63,066,194	21,585,999	82,134,554	81,489,445	40,267,984	26.9%	13.0%

Table 4b Population by Age and Sex and Jurisdiction, by City (2010 Census)

Jurisdiction	Age Distribution						% younger and 19	% older than 65
	Under 5 Years	5 - 19 years	20 - 24 years	25 - 44 years	45 - 64 years	65+ years		
Bad Axe	188	557	185	725	833	641	23.8%	20.5%
Caseville	26	75	32	138	285	221	13.0%	28.4%
Harbor Beach	94	288	91	333	511	386	22.4%	22.7%

Table 4c Population by Age and Sex and Jurisdiction, by Village (2010 Census)

Jurisdiction	Age Distribution						% younger and 19	% older than 65
	Under 5 Years	5 - 19 years	20 - 24 years	25 - 44 years	45 - 64 years	65+ years		
Elkton	63	167	46	215	192	125	28.5%	15.5%
Kinde	36	80	26	112	113	81	25.9%	18.1%
Owendale	15	56	14	63	57	36	29.5%	14.9%
Pigeon	69	193	57	247	301	341	24.2%	28.2%
Port Austin	29	73	23	107	231	201	15.4%	30.3%
Port Hope	8	40	10	39	78	92	18.0%	34.5%
Sebewaing	95	309	84	394	512	365	23.0%	20.8%
Ubyly	51	163	54	210	215	165	24.9%	19.2%

Table 4d Population by Age and Sex and Jurisdiction, by Township (2010 Census)

Jurisdiction	Age Distribution						% younger and 19	% older than 65
	Under 5 Years	5 - 19 years	20 - 24 years	25 - 44 years	45 - 64 years	65+ years		
Bingham	86	376	94	399	480	274	27.0%	16.0%
Bloomfield	19	92	16	97	141	90	24.4%	19.8%
Brookfield	34	147	37	174	229	139	23.8%	18.3%
Caseville	89	310	75	379	851	866	15.5%	33.7%
Chandler	26	98	19	116	150	63	26.3%	13.3%
Colfax	116	355	69	402	551	391	25.0%	20.8%
Dwight	38	143	46	153	255	123	23.9%	16.2%
Fairhaven	48	183	77	224	366	209	20.9%	18.9%
Gore	3	12	4	15	59	51	10.4%	35.4%
Grant	62	217	35	215	266	118	30.6%	12.9%
Hume	30	90	25	129	300	175	16.0%	23.4%
Huron	17	67	11	71	134	137	19.2%	31.4%
Lake	26	69	11	101	307	341	11.1%	39.9%
Lincoln	59	158	26	181	237	146	26.9%	18.1%
McKinley	17	66	22	81	152	107	18.2%	23.5%
Meade	32	137	27	160	246	118	23.5%	16.4%
Oliver	92	312	76	375	403	225	27.2%	15.2%
Paris	13	121	25	111	119	92	27.9%	19.1%
Pointe Aux Barques	-	-	-	1	3	6	0.0%	60.0%
Port Austin	44	159	43	210	530	438	14.3%	30.8%
Rubicon	28	118	34	121	233	198	19.9%	27.0%
Sand Beach	67	236	50	235	373	260	24.8%	21.3%
Sebewaing	146	509	119	600	824	526	23.9%	19.2%
Sheridan	48	144	33	160	204	123	27.0%	17.3%
Sherman	55	213	57	228	316	214	24.7%	19.8%
Sigel	22	101	26	111	123	82	26.5%	17.6%
Verona	48	263	37	268	440	203	24.7%	16.1%
Winsor	82	335	82	385	567	456	21.9%	23.9%

Household Characteristics

In addition to population demographics, the Census also measures various household and housing characteristics. The household characteristics analyze the human element of each household. These characteristics give a community a broader understanding of who lives within their jurisdiction, how they live there, and what family structures are present. In comparison, housing characteristics include information like the occupancy, number, type, ownership, and value of the housing units within a jurisdiction.

Average Household Size

From 2000 to 2010, the average household size in the County decreased from 2.42 to 2.27. This is similar to the decrease in the State of Michigan but significantly more than that of the country. These figures are depicted in Figure 5 and Table 6a through 6d, where average household size is illustrated for each jurisdiction in the County. Aside from Grant and Huron townships, every jurisdiction had a decrease in average household size. This trend could be happening for many reasons, but with a large elderly population, there are often smaller household sizes because there is an increase in single-persons living alone or other non-family structures. With a large elderly population and a declining group of residents in the family stage of life, it is also safe to assume there are fewer families in Huron County, correlating to the increasing size of empty nesters and retirees living alone. These trends require specific types of housing that the County and local jurisdictions will need to consider. For example, if more people are living alone and there are fewer families, the demand for single-family housing structures could be less than the demand for apartments or condos. Grant, Sigel, and Sheridan townships all have the largest average household size compared to the County's other jurisdictions. The jurisdictions with the smallest average household size are Pointe Aux Barques, Caseville, and Lake townships. . According to the 2020 Census, the average household size in Huron County is 2.22.

Figure 5 Average Household Size (2000 and 2010 Census)

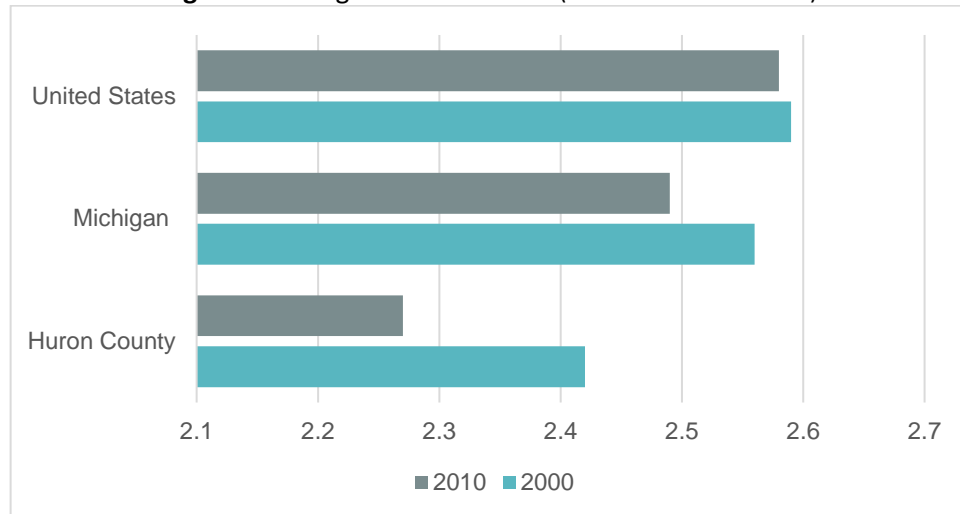


Table 5a Average Household Size by Jurisdiction, Overall (2000 and 2010 Census)

Jurisdiction	2000	2010	Change from 2000 - 2010
Huron County	2.42	2.27	-0.15
Michigan	2.56	2.49	-0.07
United States	2.59	2.58	-0.01

Table 5b Average Household Size by Jurisdiction, by City (2000 and 2010 Census)

Jurisdiction	2000	2010	Change from 2000 - 2010
Bad Axe	2.31	2.16	-0.15
Caseville	2.01	1.84	-0.17
Harbor Beach	2.31	2.14	-0.17

Table 5c Average Household Size by Jurisdiction, by Village (2000 and 2010 Census)

Jurisdiction	2000	2010	Change from 2000 - 2010
Elkton	2.35	2.32	-0.03
Kinde	2.55	2.30	-0.25
Owendale	2.52	2.43	-0.09
Pigeon	2.33	2.13	-0.20
Port Austin	1.94	1.91	-0.03
Port Hope	2.32	2.01	-0.31
Sebewaing	2.27	2.19	-0.08
Ubyly	2.30	2.22	-0.08

Table 5d Average Household Size by Jurisdiction, by Township (2000 and 2010 Census)

Jurisdiction	2000	2010	Change from 2000 - 2010
Bingham	2.55	2.44	-0.11
Bloomfield	2.80	2.43	-0.37
Brookfield	2.53	2.35	-0.18
Caseville	2.10	1.98	-0.12
Chandler	2.84	2.61	-0.23
Colfax	2.59	2.43	-0.16
Dwight	2.61	2.29	-0.32
Fairhaven	2.33	2.20	-0.13
Gore	2.21	2.01	-0.20
Grant	2.69	2.74	0.05
Hume	2.17	2.07	-0.10
Huron	2.21	2.24	0.03
Lake	2.06	1.95	-0.11
Lincoln	2.59	2.46	-0.13
McKinley	2.50	2.24	-0.26
Meade	2.59	2.35	-0.24
Oliver	2.48	2.39	-0.09
Paris	2.73	2.56	-0.17
Pointe Aux Barques	2.00	1.67	-0.33
Port Austin	2.07	1.96	-0.11
Rubicon	2.44	2.22	-0.22
Sand Beach	2.61	2.43	-0.18

Sebewaing	2.35	2.30	-0.05
Sheridan	2.82	2.62	-0.20
Sherman	2.62	2.44	-0.18
Sigel	3.13	2.64	-0.49
Verona	2.76	2.48	-0.28
Winsor	2.51	2.24	-0.27

Type of Household

The following information categorizes the type of family unit that lives in each household. The U.S. Census breaks families into two categories, which have several sub-categories. The first category is family households, which includes the sub-categories: married-couple families, male householder, and female householder. The second category is non-family households, which includes the sub-categories: living alone and not living alone. The 2000 and 2010 Census counted types of family units in different ways. In 2010, the new category "male householder" was added, and this addition accounts for the differences in Table 6.

In Huron County, 65% of households are considered to be family households. Of the 65%, 53% are married-couple families, 8% are female householders, and 4% are male householders. Between 2000 and 2010, the number of family households decreased by almost 5%. Between 2000 and 2010, non-family households increased by 5%. Non-family households are defined as people living together who are not related by blood or marriage. Table 6 illustrates these changes.

Table 6 Type of Household in County (2000 and 2010 Census)

	2000	2010
Family Households	69.5%	65%
Married-Couple Family	58.6%	52.7%
Female householder (no husband)	7.4%	8.1%
Male householder (no wife)	-	4.2%
Nonfamily Households	30.5%	35%
Householder Living Alone	27.3%	30.7%
Householder Not Living Alone	3.2%	4.3%

Housing Characteristics

In addition to household characteristics, the U.S. Census also measures housing characteristics such as the occupancy, number, type, ownership, and value of the housing units within a jurisdiction. Once a community understands how its population is changing and the needs of the shifting population, it is important to understand what housing options are available to County residents. Analyzing this information allows the County to see where there is a lack or gap of a certain type of housing, the conditions of the housing stock, and the cost of living. Understanding these changes will help Huron County plan for changes in the future.

Housing Occupancy

The Census measures the total housing units in a jurisdiction and categorizes them into two categories, occupied or vacant. In 2010, there were 21,199 housing units in Huron County. Of those, 14,348 units, or 67.7%, were occupied, and 6,851, or 32.3%, of the units were vacant. These percentages are very different than that of the state and country, which both have similar occupancy rates in the mid to high 80% range. The jurisdictions with the largest percentage of occupied units are Colfax, Elkton, and Verona.

To the residents of Huron County, it is common knowledge that many of the homes along the lake and bay are seasonal. If a housing unit is only seasonally occupied, the Census considers it vacant. Therefore the high vacancy rates in the County can be explained by the large amount of seasonal housing units. High seasonal vacancy rates are not a reality for all Huron County communities. This trend is most apparent when the vacancy rates in each township, city, and village are compared individually against the state and country rates. The communities that do not have a large number of seasonal housing units compare more closely to the percentages of the state and country. The majority of the inland cities, villages, and townships in Huron County have rates that are comparable to the state, and the high vacancy rates are most noticeable in the townships along the coastline. Here, vacancy rates range from the mid 20% range all the way to 90%, with the average falling in the high 40% range. These figures are represented in Tables 7a – 7d.

To corroborate the seasonal vacancy analysis above, the U.S Census breaks down vacant units into the following categories: seasonal, for rent, rented, but unoccupied, for sale only, sold but unoccupied, for migratory workers, or other vacant. Table 8a – 8d breakdown the vacancies by jurisdiction. These charts only further emphasize the seasonal use of the majority of the vacant housing in the County.

Figure 6 Housing Occupancy (2010 Census)

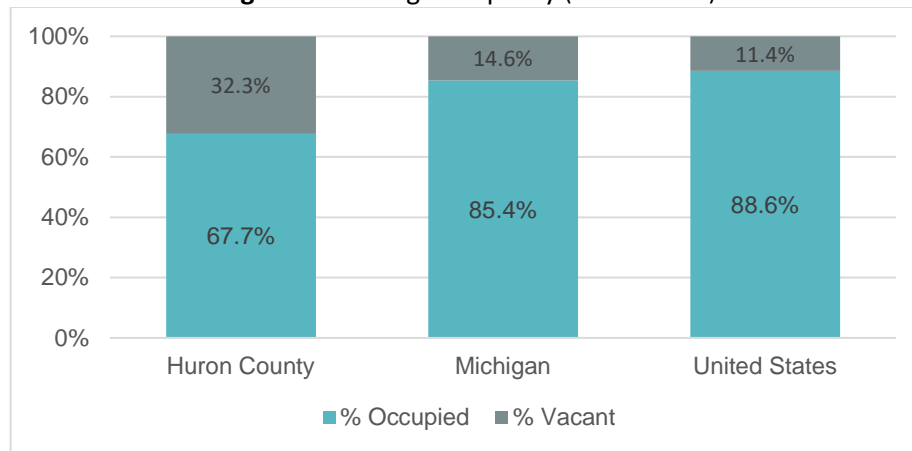


Table 7a Housing Occupancy by Jurisdiction, Overall (2010 Census)

2010	Total Housing Units	Occupied	Vacant	% Occupied	% Vacant
Huron County	21,199	14,348	6,851	67.7%	32.3%
Michigan	4,532,233	3,872,508	659,725	85.4%	14.6%
United States	131,704,730	116,716,292	14,988,438	88.6%	11.4%

Table 7b Housing Occupancy by Jurisdiction, by City (2010 Census)

2010	Total Housing Units	Occupied	Vacant	% Occupied	% Vacant
Bad Axe	1,546	1,358	188	87.8%	12.2%
Caseville	837	422	415	50.4%	49.6%
Harbor Beach	975	774	201	79.4%	20.6%

Table 7c Housing Occupancy by Jurisdiction, by Village (2010 Census)

2010	Total Housing Units	Occupied	Vacant	% Occupied	% Vacant
Elkton	387	349	38	90.2%	9.8%
Kinde	223	195	28	87.4%	12.6%
Owendale	116	99	17	85.3%	14.7%
Pigeon	621	551	70	88.7%	11.3%
Port Austin	724	338	386	46.7%	53.3%
Port Hope	201	133	68	66.2%	33.8%
Sebewaing	201	133	68	66.2%	33.8%
Udly	418	382	36	91.4%	8.6%

Table 7d Housing Occupancy by Jurisdiction, by Township (2010 Census)

2010	Total Housing Units	Occupied	Vacant	% Occupied	% Vacant
Bingham	776	696	80	89.7%	10.3%
Bloomfield	225	187	38	83.1%	16.9%
Brookfield	358	314	44	87.7%	12.3%
Caseville	2,848	1,295	1,533	45.5%	54.5%
Chandler	203	181	22	89.2%	10.8%
Colfax	799	727	72	91.0%	9.0%
Dwight	406	329	77	81.0%	19.0%
Fairhaven	772	503	269	65.2%	34.8%
Gore	187	70	117	37.4%	62.6%
Grant	360	330	30	91.7%	8.3%
Hume	872	361	511	41.4%	58.6%
Huron	427	195	232	45.7%	54.3%
Lake	1,413	438	975	31.0%	69.0%
Lincoln	373	325	48	87.1%	12.9%
McKinley	292	199	93	68.2%	31.8%
Meade	365	306	59	83.8%	16.2%
Oliver	690	621	69	90.0%	10.0%
Paris	230	188	42	81.7%	18.3%
Pointe Aux Barques	71	6	65	8.5%	91.5%
Port Austin	1,741	715	1,026	44.1%	58.9%
Rubicon	561	329	232	58.6%	41.4%

Sand Beach	708	503	205	71.0%	29.0%
Sebewaing	1,342	1,185	157	88.3%	11.7%
Sheridan	298	267	31	89.6%	10.4%
Sherman	672	444	228	66.1%	33.9%
Sigel	206	176	30	85.4%	14.6%
Verona	548	49	54	90.1%	9.9%
Winsor	935	832	103	89.0%	11.0%

Overall the following charts highlight the seasonal nature of Huron County's vacant housing stock. The townships with the highest percentage of seasonal housing are Pointe Aux Barques (100%), Lake Township (94.5%), and the City of Caseville, Caseville Township, and Gore Township (88.9% each). Other townships with high rates of seasonal housing are Huron, Port Austin, and Hume.

Table 8a Structures by Vacancy Type and Jurisdiction, Overall (2010 Census)

	Total Housing Units	Total Vacant Units	% of Units Vacant	Seasonal, Recreational, or Occasional Use	For Rent	Rented, Unoccupied	For Sale Only	Sold, Unoccupied	For Migratory Workers	Other Vacant
Huron County	21,199	6,851	32.3%	75.2%	5.7%	0.3%	5.4%	1.2%	0.1%	12.1%
Michigan	4,532,233	659,725	14.6%	39.9%	21.5%	0.1%	11.7%	2.7%	0.3%	23.0%
United States	131,704,730	14,988,438	11.4%	31.0%	27.6%	1.4%	12.7%	2.8%	0.2%	24.4%

Table 8b Structures by Vacancy Type and Jurisdiction, by City (2010 Census)

	Total Housing Units	Total Vacant Units	% of Units Vacant	Seasonal, Recreational, or Occasional Use	For Rent	Rented, Unoccupied	For Sale Only	Sold, Unoccupied	For Migratory Workers	Other Vacant
Bad Axe	1,546	188	12.2%	12.8%	23.9%	2.1%	28.2%	5.9%	0.0%	27.1%
Caseville	2,848	1,553	54.5%	88.9%	3.8%	0.1%	3.7%	0.4%	0.1%	3.0%
Harbor Beach	975	201	20.6%	45.3%	20.9%	1.0%	8.5%	4.0%	0.0%	20.4%

Table 8c Structures by Vacancy type and jurisdiction, by Village (2010 Census)

	Total Housing Units	Total Vacant Units	% of Units Vacant	Seasonal, Recreational, or Occasional Use	For Rent	Rented, Unoccupied	For Sale Only	Sold, Unoccupied	For Migratory Workers	Other Vacant
Elkton	387	38	9.8%	5.3%	26.3%	0.0%	23.7%	2.6%	0.0%	42.1%
Kinde	223	28	12.6%	35.7%	17.9%	3.6%	21.4%	7.1%	0.0%	14.3%
Owendale	116	17	14.7%	5.9%	47.1%	0.0%	17.6%	5.9%	0.0%	23.5%
Pigeon	621	70	11.3%	8.6%	41.4%	4.3%	11.4%	4.3%	0.0%	30.0%

Port Austin	724	386	53.3%	77.5%	6.0%	0.3%	6.5%	0.0%	0.0%	9.8%
Port Hope	201	68	33.8%	75.0%	1.5%	0.0%	8.8%	0.0%	0.0%	14.7%
Sebewing	917	115	12.5%	7.0%	35.7%	0.9%	22.6%	1.7%	0.0%	32.2%
Ubley	418	36	8.6%	25.0%	41.7%	0.0%	16.7%	5.6%	0.0%	11.1%

Table 8d Structures by Vacancy Type and Jurisdiction, by Township (2010 Census)

	Total Housing Units	Total Vacant Units	% of Units Vacant	Seasonal, Recreational, or Occasional Use	For Rent	Rented, Unoccupied	For Sale Only	Sold, Unoccupied	For Migratory Workers	Other Vacant
Bingham	776	80	10.3%	31.3%	20.0%	1.3%	8.8%	5.0%	0.0%	33.8%
Bloomfield	225	38	16.9%	31.6%	0.0%	0.0%	0.0%	0.0%	0.0%	68.4%
Brookfield	358	44	12.3%	15.9%	20.5%	0.0%	6.8%	15.9%	2.3%	38.6%
Caseville	2848	1553	54.5%	88.9%	3.8%	0.1%	3.7%	0.4%	0.1%	3.0%
Chandler	203	22	10.8%	40.9%	18.2%	0.0%	9.1%	4.5%	0.0%	27.3%
Colfax	799	72	9.0%	31.9%	12.5%	0.0%	19.4%	15.3%	0.0%	20.8%
Dwight	406	77	19.0%	32.5%	6.5%	1.3%	6.5%	6.5%	0.0%	46.8%
Fairhaven	772	269	34.8%	78.1%	4.1%	0.7%	5.9%	0.4%	0.0%	10.8%
Gore	187	117	62.6%	88.9%	0.0%	0.9%	0.9%	0.0%	0.0%	9.4%
Grant	360	30	8.3%	30.0%	10.0%	0.0%	13.3%	3.3%	0.0%	43.3%
Hume	872	511	58.6%	86.5%	4.3%	0.2%	2.7%	0.2%	0.0%	6.1%
Huron	427	232	54.3%	87.5%	0.0%	0.0%	1.3%	0.4%	0.0%	10.8%
Lake	1413	975	69.0%	94.5%	2.2%	0.1%	1.7%	0.0%	0.0%	1.5%
Lincoln	373	48	12.9%	47.9%	6.3%	0.0%	12.5%	0.0%	0.0%	33.3%
Mckinley	292	93	31.8%	73.1%	4.3%	0.0%	3.2%	1.1%	0.0%	18.3%
Meade	365	59	16.2%	35.6%	6.8%	0.0%	3.4%	0.0%	0.0%	54.2%
Oliver	690	69	10.0%	17.4%	20.3%	0.0%	20.3%	14.0%	0.0%	40.6%
Paris	230	42	18.3%	38.1%	2.4%	0.0%	9.5%	2.4%	0.0%	47.6%
Pointe Aux Barques	71	65	91.5%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Port Austin	1741	1026	58.9%	87.2%	3.0%	0.1%	3.5%	0.0%	0.0%	6.1%
Rubicon	561	232	41.4%	80.6%	0.9%	0.0%	3.9%	0.4%	0.4%	13.8%
Sand Beach	708	205	29.0%	73.7%	1.5%	0.0%	4.4%	0.0%	0.0%	20.5%
Sebewing	1342	157	11.7%	8.9%	26.8%	0.6%	22.3%	3.2%	0.6%	37.6%
Sheridan	298	31	10.4%	51.6%	3.2%	3.2%	6.5%	9.7%	0.0%	25.8%
Sherman	672	228	33.9%	75.9%	0.9%	0.0%	4.8%	0.4%	0.0%	18.0%
Sigel	206	30	14.6%	16.7%	3.3%	0.0%	6.7%	0.0%	0.0%	73.3%
Verona	548	54	9.9%	20.4%	3.7%	1.9%	18.5%	14.8%	1.9%	38.9%
Winsor	935	103	11.0%	11.7%	31.1%	2.9%	10.7%	3.9%	1.9%	37.9%

Housing Tenure

Now that there is an understanding of the housing units in the County, it will be important to analyze housing tenure, or ownership, of the occupied units. The following set of charts and tables depict housing tenure and the percentage of homeownership rates in the County over the past ten years. Of the 21,199 housing units in the County, 14,348 units are occupied. Of the 14,348 occupied units, 81% are owner-occupied and 18% are renter-occupied. In Huron County, the rate of owner-occupied housing units is significantly higher than that of the state (72.1%) and the country (65%). This means that there are considerably fewer renters in Huron County. The housing tenure breakdown per jurisdiction can be found in Tables 9a – 9d. It is worth noting that the lowest percentage of owner-occupied housing is 60.8% in the City of Bad Axe. The highest is Lake Township at 93.4%, with several other townships falling in the 90% range, including Chandler, Grant, Hume, Lincoln, McKinley, Meade, Sand Beach, Sherman, and Verona. This means there are ten townships in Huron County with ownership rates higher than 90% - this is a very high number for housing tenure in Michigan.

Table 9a Housing Tenure by Jurisdiction, Overall (2010 Census)

2010	Occupied	Owner Occupied	Renter Occupied	% Owner Occupied	% Renter Occupied
Huron County	14,348	11,736	2,612	81.8%	18.2%
Michigan	3,872,508	2,793,342	1,079,166	72.1%	27.9%
United States	116,716,292	75,986,074	40,730,218	65.1%	34.9%

Table 9b Housing Tenure by Jurisdiction, by City (2010 Census)

2010	Occupied	Owner Occupied	Renter Occupied	% Owner Occupied	% Renter Occupied
Bad Axe	1,358	828	532	60.8%	39.2%
Caseville	422	282	140	66.8%	33.2%
Harbor Beach	774	553	221	71.4%	28.6%

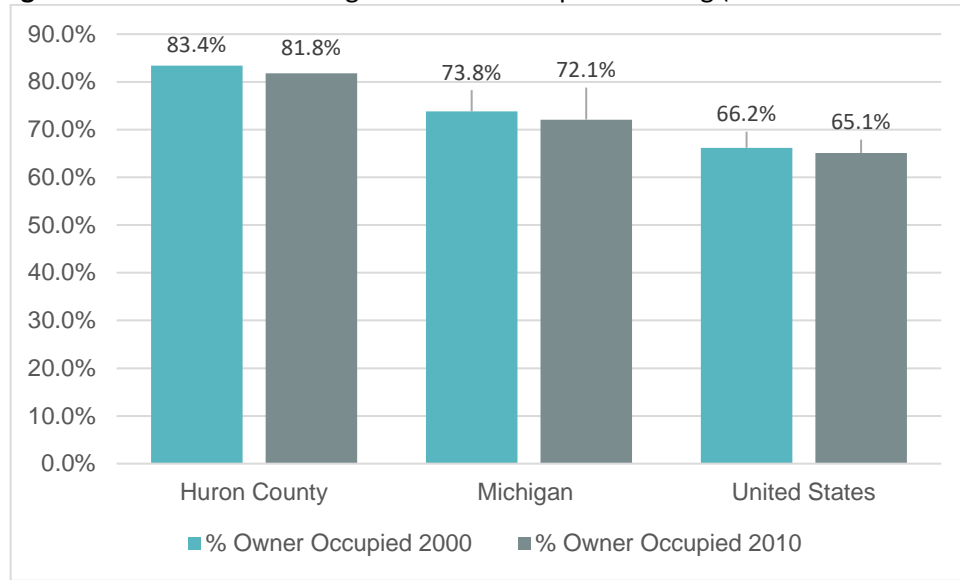
Table 9c Housing Tenure by Jurisdiction, by Village (2010 Census)

2010	Occupied	Owner Occupied	Renter Occupied	% Owner Occupied	% Renter Occupied
Elkton	349	238	111	68.2%	31.8%
Kinde	195	159	36	81.5%	18.5%
Owendale	99	82	17	82.8%	17.2%
Pigeon	551	374	177	67.9%	32.1%
Port Austin	338	256	82	75.7%	24.3%
Port Hope	133	114	19	85.7%	14.3%
Sebewaing	133	114	19	85.7%	14.3%
Ubyly	382	280	102	73.3%	26.7%

Table 9d Housing Tenure by Jurisdiction, by Township (2010 Census)

2010	Occupied	Owner Occupied	Renter Occupied	% Owner Occupied	% Renter Occupied
Bingham	696	568	128	81.6%	18.4%
Bloomfield	187	162	25	86.6%	13.4%
Brookfield	314	259	55	82.5%	17.5%
Caseville	1,295	1,075	220	83.0%	17.0%
Chandler	181	165	16	91.2%	8.8%
Colfax	727	632	95	86.9%	13.1%
Dwight	329	274	55	83.3%	16.7%
Fairhaven	503	420	83	83.5%	16.5%
Gore	70	61	9	87.1%	12.9%
Grant	330	297	33	90.0%	10.0%
Hume	361	328	33	90.9%	9.1%
Huron	195	173	22	88.7%	11.3%
Lake	438	409	29	93.4%	6.6%
Lincoln	325	296	29	91.1%	8.9%
McKinley	199	179	20	89.9%	10.1%
Meade	306	279	27	91.2%	8.8%
Oliver	621	468	153	75.4%	24.6%
Paris	188	159	29	84.6%	15.4%
Pointe Aux Barques	6	5	1	83.3%	16.7%
Port Austin	715	595	120	83.2%	16.8%
Rubicon	329	294	35	89.4%	10.6%
Sand Beach	503	458	45	91.1%	8.9%
Sebewaing	1,185	927	258	78.2%	21.8%
Sheridan	267	234	33	87.6%	12.4%
Sherman	444	400	44	90.1%	9.9%
Sigel	176	158	18	89.8%	10.2%
Verona	49	456	38	92.3%	7.7%
Winsor	832	626	206	75.2%	24.8%

Another factor to consider is the change in homeownership between 2000 and 2010. All but 14 of the jurisdictions have seen a decrease in the percentage of owner-occupied homes since 2000. The percentage change in owner-occupied units in Huron County and the Country is almost the exact same percentage compared to Michigan, which had a much larger decrease in owner-occupied housing over the same 10-year period. The comparison between the regions is shown in Figure 7, and the information by jurisdiction is shown in Tables 10a – 10d. Overall, the largest increase in homeownership rates was in Pointe Aux Barques, with 43% more homes owner-occupied in 2010 compared to 2000. The other three jurisdictions with a significant amount of homeownership are the Village of Sebewaing, Sand Beach Township, Chandler Township, which all range from 5% to 10% increases.

Figure 7 2000 – 2010 % Change in Owner-Occupied Housing (2000 and 2010 Census)**Table 10a** 2000 – 2010 % Change in Owner-Occupied Housing by Jurisdiction, Overall (2000 and 2010 Census)

	% Owner-Occupied 2000	% Owner-Occupied 2010	%-Change
Huron County	83.4%	81.8%	-1.60%
Michigan	73.8%	72.1%	-2.31%
United States	66.2%	65.1%	-1.66%

Table 10b 2000 – 2010 % Change in Owner-Occupied Housing by Jurisdiction, by City (2000 and 2010 Census)

	% Owner-Occupied 2000	% Owner-Occupied 2010	% Change
Bad Axe	68.2%	60.8%	-7.40%
Caseville	73.1%	66.8%	-6.30%
Harbor Beach	76.6%	71.4%	-5.20%

Table 10c 2000 – 2010 % Change in Owner-Occupied Housing by Jurisdiction, by Village (2000 and 2010 Census)

	% Owner-Occupied 2000	% Owner-Occupied 2010	% Change
Elkton	73.4%	68.2%	-5.20%
Kinde	80.9%	81.5%	0.60%
Owendale	85.1%	82.8%	-2.30%
Pigeon	76.8%	67.9%	-8.90%
Port Austin	77.8%	75.7%	-2.10%
Port Hope	86.4%	85.7%	-0.70%
Sebewaing	74.2%	85.7%	11.50%
Ubyly	82.1%	73.3%	-8.80%

Table 10d 2000 – 2010 % Change in Owner-Occupied Housing by Jurisdiction, by Township (2000 and 2010 Census)

	% Owner-Occupied 2000	% Owner-Occupied 2010	% Change
Bingham	86.2%	81.6%	-4.60%
Bloomfield	90.1%	86.6%	-3.50%
Brookfield	84.5%	82.5%	-2.00%
Caseville	85.2%	83.0%	-2.20%
Chandler	85.8%	91.2%	5.40%
Colfax	84.5%	86.9%	2.40%
Dwight	81.4%	83.3%	1.90%
Fairhaven	85.3%	83.5%	-1.80%
Gore	96.8%	87.1%	-9.70%
Grant	87.4%	90.0%	2.60%
Hume	91.1%	90.9%	-0.20%
Huron	92.7%	88.7%	-4.00%
Lake	93.2%	93.4%	0.20%
Lincoln	93.1%	91.1%	-2.00%
McKinley	87.6%	89.9%	2.30%
Meade	89.1%	91.2%	2.10%
Oliver	79.2%	75.4%	-3.80%
Paris	87.3%	84.6%	-2.70%
Pointe Aux Barques	40.0%	83.3%	43.30%
Port Austin	85.7%	83.2%	-2.50%
Rubicon	89.6%	89.4%	-0.20%
Sand Beach	81.0%	91.1%	10.10%
Sebewaing	79.2%	78.2%	-1.00%
Sheridan	87.5%	87.6%	0.10%
Sherman	90.5%	90.1%	-0.40%
Sigel	88.0%	89.8%	1.80%
Verona	91.5%	92.3%	0.80%
Winsor	80.7%	75.2%	-5.50%

Housing Value

The median housing value in Huron County is \$92,100, which is less than both the state (\$119,200) and the country (\$174,600). There are various reasons for this, and one major contributing factor is that almost a third of the housing stock in the County is seasonal homes. Table 12 illustrates the values of owner-occupied housing units in Huron County.

Table 11 Owner-Occupied Housing Values (2014 ACS)

Owner-Occupied Units	Number	Percent
Less than \$50,000	2,007	17.7%
\$50,000 to \$99,999	4,210	37.1%
\$100,000 to \$149,999	2,014	17.7%
\$150,000 to \$199,999	1,445	12.7%
\$200,000 to \$299,999	866	7.6%
\$300,000 to \$499,999	518	4.6%
\$500,000 to \$999,999	238	2.1%
\$1,000,000 or more	60	0.5%

Housing Units

Table 13 depicts the different types of housing units. For reference, a 1-Unit, detached housing unit is a typical single-family home, and a 1-Unit, attached structure is a single-family housing unit attached to several other single-family housing units (such as townhomes or rowhouses) but is a separate unit from the adjoining neighbors. There is a total of 21,162 housing units in the County. Of those, 81.8% are 1-Unit, detached structures. In Huron County, the second most prevalent form of housing is mobile homes, at 9.8%. All of the multi-family housing units are relatively equal across the different types, each just over 1% of the total housing stock. These kinds of housing characteristics are a way for the County to evaluate the existing structures and determine if the housing needs of the residents are being met.

Table 11 Housing Units in County (2010 Census)

Units in Structure	# of Units	% of Total
1-Unit, Detached	17,171	81.8%
1-Unit, Attached	267	1.3%
2 Units	313	1.5%
3 or 4 units	248	1.2%
5 to 9 Units	477	2.3%
10 to 19 Units	363	1.7%
20 or More Units	230	1.1%
Mobile Home	2,081	9.8%
Boat, RV, Van etc	12	0.1%
Total	21,162	

Housing Costs as a Percent of Income

A conventional indication of housing quality is the percent of income spent on housing. Planners view housing expenditures that exceed 30% of household income as an indicator of a housing affordability problem for residents. Sixty-seven percent of homeowners in Huron County spend less than 30% of their income on monthly housing costs. This means 33% of homeowners spend more than 30% of their income

on monthly housing costs. In comparison, 73% of homeowners pay less than 30% of their income in the state, and the same is true for 70% of homeowners across the country.

Table 12 Selected Monthly Owner Costs as a Percentage of Household Income (2014 ACS)

	Huron County	Michigan	United States
Total Units	5,262	1,679,548	47,766,759
Less than 30%	66.6%	73.4%	69.5%
Greater than 30%	33.3%	26.6%	30.8%

The same consideration is true for renters as homeowners. Housing expenditures that exceed 30% of a household income are viewed as an indicator of housing affordability issues. In Huron County, 50% of renters spend less than 30% of their income on rent, which is a higher percentage than both the state (48%) and the country (49%). This means more renters in Huron County spend less money on rent than the other jurisdictions.

Table 13 Gross Rent as a Percentage of Household Income (2014 ACS)

	Huron County	Michigan	United States
Total Units	2,240	1,037,848	39,628,951
Less than 30%	50.4%	48.4%	48.9%
Greater than 30%	49.6%	51.7%	51.0%

When comparing homeowner costs to renter costs in Huron County, 33% of homeowners pay greater than 30% of their income on housing, and 50% of renters pay more than 30% of their income on housing, which is an indication of higher rental costs compared to homeownership. This trend is also true in the state and country, where 52% of renters in Michigan pay more than 30% of their income on rent and 27% of homeowners pay the same.

Economy

Economic characteristics comprise a major part of Census data. It is important to examine the economic quality of a community to determine the ability to support future commercial, residential, and industrial development. The data exposes the strengths and weaknesses of a community while alluding to trends that may aid or hurt the economic future of the community. This economic analysis will utilize 2000 and 2010 U.S. Census data and 2014 American Community Survey 5-Year Estimates.

Education

Educational attainment measures the education level of a community. It allows for analysis of the skills and capabilities of the labor force and the economic vitality of the community. The level of educational attainment achieved within a community illustrates the types of jobs that are suitable or necessary for citizens.

The U.S. Census Bureau reports on all levels of educational attainment, including those who did not complete high school, those who earned a high school diploma or an equivalent, those that attended some college, earned an associate degree, and those who earned a bachelor's degree or higher.

As illustrated in Figure 8, Huron County has the largest percentage of individuals with high school diplomas, as compared to the state and country, and has the least number of residents who earned a bachelor's degree or higher when compared to both geographies. Tables 14a – 14d illustrate the educational attainment for each community in Huron County. The communities with the most people who have earned a bachelor's degree are Pointe Aux Barques (41%), Elkton (16%), and Pigeon (15%). Most jurisdictions in the County have a percentage of residents with a bachelor's degree ranging from 9% - 11%. Only Pointe Aux Barques has a population greater than 10% who have earned a graduate or professional degree.

Figure 8 Educational Attainment (2014 ACS)

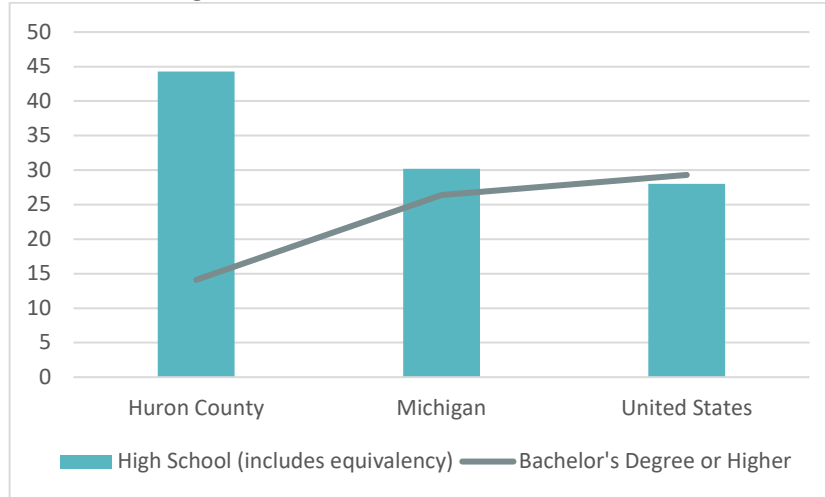


Table 14a Percent Educational Attainment by Jurisdiction, Overall (2014 ACS)

	Less than 9th grade	High School, no Diploma	High School (includes equivalency)	Some College, no degree	Associate's Degree	Bachelor's Degree	Graduate or Professional Degree
Huron County	4.5%	8%	44.3%	20%	9%	9.5%	4.6%
Michigan	3.3%	7.4%	30.2%	23.9%	8.8%	16.1%	10.3%
United States	5.8%	7.8%	28%	21.1%	7.9%	18.3%	11%

Table 14b Percent Educational Attainment by Jurisdiction, by City (2014 ACS)

2010	Less than 9th grade	High School, no Diploma	High School (includes equivalency)	Some College, no degree	Associate's Degree	Bachelor's Degree	Graduate or Professional Degree
Bad Axe	5.6%	2.2%	46.6%	20.6%	8.7%	11.3%	5.1%
Caseville	3.4%	17%	34%	23.3%	6.9%	10.1%	5.2%
Harbor Beach	5%	8.1%	42.1%	21.6%	7.3%	11.7%	4.1%

Table 14c Percent Educational Attainment by Jurisdiction, by Village (2014 ACS)

	Less than 9th grade	High School, no Diploma	High School (includes equivalency)	Some College, no degree	Associate's Degree	Bachelor's Degree	Graduate or Professional Degree
Elkton	2.1%	9.6%	38.6%	22.8%	9.8%	16.2%	0.9%
Kinde	7.4%	14.7%	39.7%	20.3%	12.1%	2.6%	3.2%
Owendale	2.2%	5.5%	72%	11%	4.9%	3.8%	0.5%
Pigeon	3.3%	6.4%	38.4%	17.4%	10.8%	15.3%	8.4%
Port Austin	3.9%	10.3%	30.1%	29.2%	6.5%	11.7%	8.3%
Port Hope	2%	13.1%	59.1%	10.6%	5.6%	7.1%	2.5%
Sebewaing	5.2%	7%	46.2%	21.1%	7.8%	7.8%	4.9%
Ubyly	5.2%	3.3%	46.7%	19.6%	7.2%	14.1%	3.9%

Table 14d Percent Educational Attainment by Jurisdiction, by Township (2014 ACS)

	Less than 9th grade	High School, no Diploma	High School (includes equivalency)	Some College, no degree	Associate's Degree	Bachelor's Degree	Graduate or Professional Degree
Bingham	5.6%	2.2%	46.6%	20.6%	8.7%	11.3%	5.1%
Bloomfield	8.2%	7.2%	54.8%	14.4%	10.1%	4.3%	1.1%
Brookfield	2.4%	10.2%	55.4%	9%	13%	7.3%	2.8%
Caseville	0.5%	6.4%	36.8%	24.9%	13.5%	11.4%	6.6%
Chandler	2.4%	8.3%	41.9%	25.4%	8.9%	10.7%	2.4%
Colfax	5%	8%	43.8%	18.7%	8.4%	11.6%	4.4%
Dwight	7.2%	12.8%	42.3%	18.7%	11.8%	3.4%	3.9%
Fairhaven	1.8%	10.7%	44%	22%	11.1%	8.7%	1.7%
Gore	4%	9.8%	44.5%	21.4%	6.4%	10.4%	3.5%
Grant	5.1%	7.4%	55.2%	18.4%	6.1%	7.2%	0.5%
Hume	3.8%	6.6%	41.4%	21%	8%	10.4%	8.8%
Huron	9%	4.7%	51.6%	13.7%	9.3%	8.7%	3.1%
Lake	1.1%	9%	42.7%	27.2%	7.7%	9.2%	3.1%
Lincoln	5.7%	4.9%	47.2%	17.1%	11.1%	9.7%	4.2%
McKinley	2.1%	10.3%	45.8%	19.6%	10.3%	7.7%	4.2%
Meade	2%	8.2%	48.3%	16.3%	12.1%	10.1%	3%
Oliver	2.1%	8.6%	41.8%	25.1%	8.1%	13.4%	0.9%
Paris	9.5%	8.9%	50.6%	12.3%	6.7%	7.1%	4.9%
Pointe Aux Barques	0%	0%	17.6%	29.4%	0%	41.2%	11.8%
Port Austin	4.4%	8.8%	36.6%	25.7%	7.7%	8.8%	8%
Rubicon	2.3%	9%	46.6%	20.6%	8.4%	8.3%	4.9%
Sand Beach	6.2%	9.8%	43%	17.2%	10.1%	10.5%	3.4%
Sebewaing	3.8%	6%	47%	21%	9.4%	9.3%	3.5%
Sheridan	6.5%	7.4%	47%	18.4%	10.8%	9.5%	0.4%
Sherman	8.2%	7.5%	53.4%	12.7%	9.4%	5.9%	2.9%

Sigel	6.6%	7.2%	49.8%	15.7%	6.6%	11.1%	3%
Verona	6.1%	6.2%	42.6%	16.4%	11.1%	12.8%	4.7%
Winsor	3.5%	7.9%	43.6%	17.5%	8.7%	12.5%	6.2%

In addition to educational attainment, the State of Michigan measures enrollment data for all school districts K through 12. Within Huron County, there are 14 different school districts. The make-up of these districts is unique to that of other surrounding jurisdictions because five of these districts are one-room schoolhouses that teach under 30 students grades K through 8. In the 2015-2016 school year, there were approximately 4,200 students enrolled in Huron County Schools. This number is down from approximately 4,500 students from the 2010-2011 school year. This trend is illustrated in Figure 9 and Table 17 below, which indicates the number of students enrolled in each district.

Figure 9 Huron County School Enrollment Trends (Michigan Department of Education)

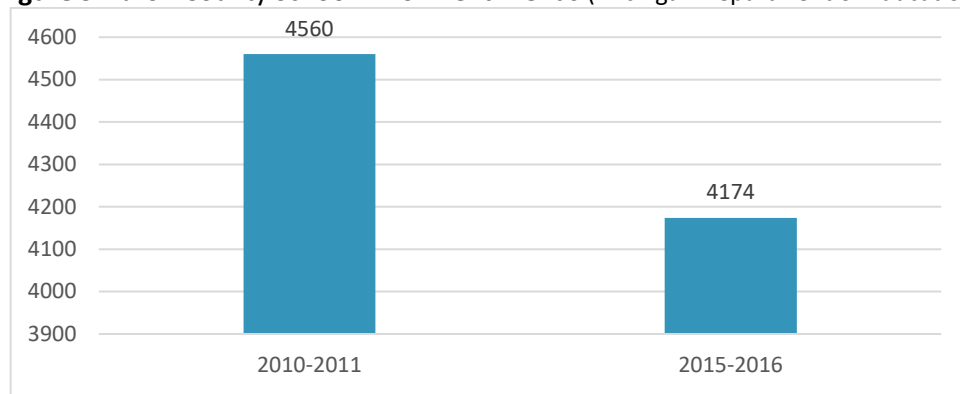


Table 15 Huron County School Enrollment (Michigan Department of Education)

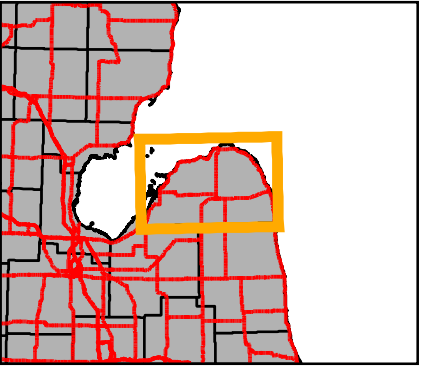
District	School Year	
	2010-2011	2015-2016
Bad Axe Public Schools	1,194	1,013
Bloomfield S/D #7F	Closed	Closed
Caseville Public Schools	265	310
Church School District	24	18
Colfax Township S/D #1F	23	26
Elkton-Pigeon-Bay Port Laker Schools	909	891
Harbor Beach Community Schools	547	508
North Huron School District	450	463
Owendale-Gagetown Area School District	205	158
Port Hope Community Schools	82	Closed
Sigel Township S/D #3F	10	15
Sigel Township S/D #4F	18	28
Sigel Township S/D #6	9	8
Udly Community Schools	798	713
Verona Township S/D #1F	26	23

As indicated in the table above, Bad Axe Public Schools has the largest number of students enrolled, with a total of 1,013 students. Over the past five years, five of the school districts have had increases in enrollment. They include: Caseville Public Schools, Colfax Township S/D #1F, North Huron School District, Sigel Township S/D #3F, and Sigel Township S/D #4F. Three of the five schools that had increases were the one-room schoolhouses. Caseville Public Schools' enrollment increased by 45 students, and North Huron School District increased by 13 students. Bad Axe Public Schools lost 181 students, the most of any district in Huron County. Map 2 depicts the school district boundaries and school locations in the County. The Port Hope Community School District was closed in 2015, merging with the North Huron School District.

In some cases, such as the two closed schools, the vulnerability of those locations has been reduced because they no longer protect special populations (school children). The overall trend in school enrollment has been one of decline. Therefore, the closed schools did not increase the risks for the other schools nearby. The transferred students from the closed schools merely helped to offset an overall decline in enrollment.

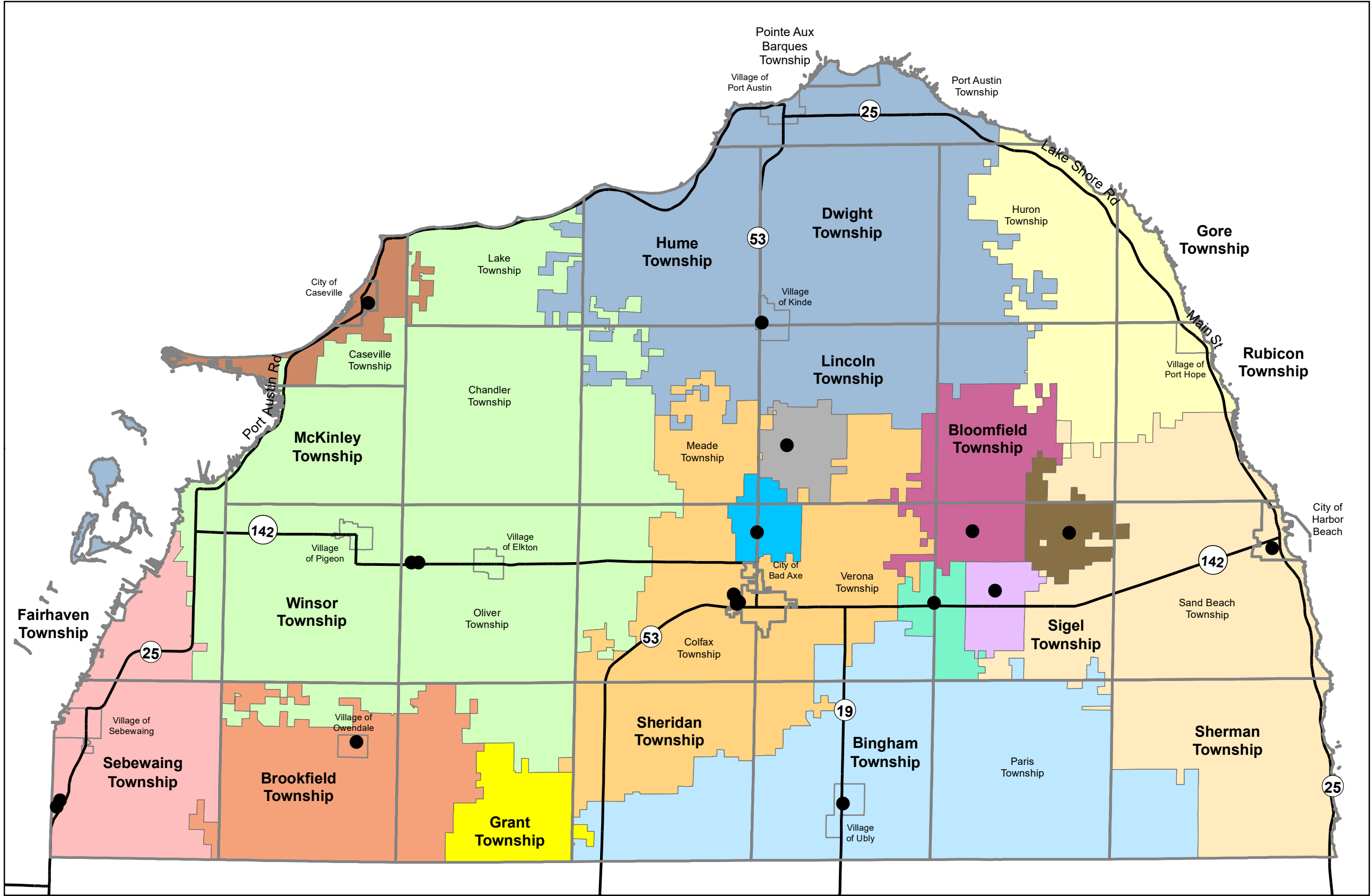
COUNTY SCHOOLS AND SCHOOL DISTRICTS

Huron County, Michigan



LEGEND

- Schools
- Bad Axe Public Schools
- Caseville Public Schools
- Cass City Public Schools
- Church School District
- Colfax Township S/D #1F
- Elkton-Pigeon-Bay Port Laker Schools
- Harbor Beach Community Schools
- North Huron School District (Includes Port Hope Community Schools)
- Owendale-Gagetown Area Schools
- Port Hope Community Schools (Now part of North Huron Schools)
- Sigel Township S/D #3F
- Sigel Township S/D #4F
- Sigel Township S/D #6
- Uby Community Schools
- Unionville-Sebewaing Area S.D.
- Verona Township S/D #1F



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Date July 2020

Income

Median household income is a way to measure wealth that shows a relative measure of a population's willingness and/or ability to pay for infrastructure, housing, and discretionary municipal services. Tables 16a – 16d illustrate the median household income and the per capita income for each community in the County. The per capita income is a measure of the income from all sources in a community. This figure reflects what all people in a community would make if income was equal. This allows planners to compare income among communities, estimate the poverty rate, and gauge low-income housing needs.

Table 16a Income by Jurisdiction (2014 ACS)

	Median Household Income (\$)	Per Capita Income (\$)
Huron County	\$41,290	\$22,793
Michigan	\$47,145	\$24,997
United States	\$51,771	\$27,385

Table 16b Income by Jurisdiction (2014 ACS)

	Median Household Income (\$)	Per Capita Income (\$)
Bad Axe	\$30,675	\$19,000
Caseville	\$31,786	\$27,081
Harbor Beach	\$32,257	\$20,104

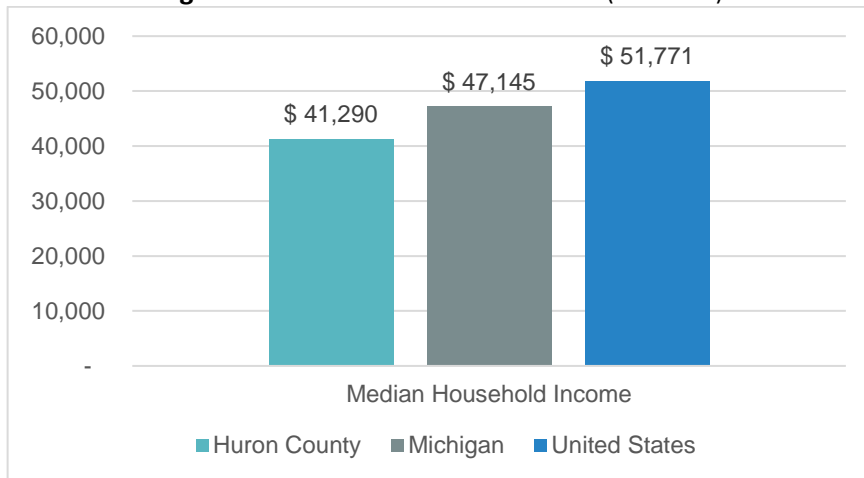
Table 16c Income by Jurisdiction (2014 ACS)

	Median Household Income (\$)	Per Capita Income (\$)
Elkton	\$35,526	\$20,659
Kinde	\$31,354	\$15,158
Owendale	\$35,833	\$15,301
Pigeon	\$36,827	\$22,718
Port Austin	\$29,079	\$19,692
Port Hope	\$36,607	\$23,048
Sebewaing	\$44,107	\$22,953
Udly	\$37,135	\$21,384

Table 16d Income by Jurisdiction (2014 ACS)

	Median Household Income (\$)	Per Capita Income (\$)
Bingham	\$42,981	\$22,414
Bloomfield	\$38,958	\$23,000
Brookfield	\$41,042	\$24,016
Caseville	\$44,306	\$26,547
Chandler	\$50,417	\$21,608
Colfax	\$47,083	\$23,185
Dwight	\$32,135	\$19,078
Fairhaven	\$35,833	\$20,674
Gore	\$42,500	\$23,384
Grant	\$46,250	\$18,790
Hume	\$44,342	\$25,421
Huron	\$37,000	\$22,004
Lake	\$36,500	\$22,689
Lincoln	\$36,734	\$25,224
McKinley	\$45,875	\$24,982
Meade	\$52,500	\$23,512
Oliver	\$37,650	\$19,375
Paris	\$47,083	\$22,749
Pointe Aux Barques	\$43,125	\$42,076
Port Austin	\$37,273	\$23,785
Rubicon	\$39,643	\$23,155
Sand Beach	\$44,773	\$23,138
Sebewaing	\$47,527	\$23,594
Sheridan	\$53,125	\$21,772
Sherman	\$43,224	\$26,169
Sigel	\$49,917	\$26,369
Verona	\$57,578	\$24,463
Winsor	\$40,714	\$23,647

The communities in Huron County with the highest median housing income are Verona, Sheridan, and Meade Townships. In contrast, the communities with the smallest median household income are the Village of Port Austin, the Village of Kinde, and the City of Bad Axe. The median household income for the County is approximately \$6,000 less than the state and \$10,000 less than the country. Figure 10 on the following page is a comparison of these three geographic locations.

Figure 10 Median Household Income (2014 ACS)

Individuals with Income Assistance

In addition to the previous income measurements, another measure of income is to analyze residents who are collecting social security or on government assistance programs. These numbers represent segments of the population that are older or do not have a large household income, which could highlight trends such as willingness to pay for certain services, like road millages or parks and recreation.

Overall, Huron County is very similar to the state and country pertaining to income assistance, the largest difference being the percentage of residents with social security income. Forty-two percent of the population has a social security income, as compared to 33% at the state level, and 29% across the country. This can be attributed to the larger elderly/retiree population in Huron County. Otherwise, the County has the smallest percentage of residents with cash public assistance income and food stamps.

Figure 17 Income Assistance (2014 ACS)

	Huron County		Michigan		United States	
	Number	Percent	Number	Percent	Number	Percent
With Social Security Income	5,890	42.4%	1,264,143	33.0%	34,082,501	29.3%
With Retirement Income	3,333	24.0%	871,667	22.8%	20,738,512	17.8%
With Supplemental Security Income	821	5.9%	231,867	6.1%	6,160,788	5.3%
With Cash Public Assistance Income	341	2.5%	141,242	3.7%	3,274,407	2.8%
With Food Stamps/SNAP Benefits	1,713	12.3%	653,958	17.1%	15,089,358	13.0%

Poverty

Poverty is another factor used in determining the relative economic health of a region. Increases in income can show economic success while increases in the percent of individuals below the poverty level can show economic failure. Income levels are generally related to a community's educational attainment level. Recall from earlier, in Figure 17, Huron County contained the lowest percentage of citizens who have obtained a bachelor's degree or higher, and earn the least amount of income.

In 2010, 15.5% of the individuals in Huron County lived below the poverty line. This is less than the state of Michigan (17.3%) but more than the United States as a whole (14.1%). The poverty line is a threshold defined by the Census based on an individual's income and household. Tables 20a through 20d depict the percentage of individuals who live in poverty in each jurisdiction in Huron County. Overall, the majority of poverty levels throughout the county range from the single digits to the low 20%. The jurisdiction with the highest percentage of people who live in poverty is the Village of Port Austin at 35.1%, and the lowest is Pointe Aux Barques Township at 0%.

These factors must be analyzed by a community in order to identify the special needs of the citizens and provide the appropriate public services.

Table 18a Percent Below Poverty Level by Jurisdiction, Overall (2014 ACS)

	Percent Below Poverty Level
Huron County	15.5%
Michigan	17.3%
United States	14.1%

Table 18b Percent Below Poverty Level by Jurisdiction, by City (2014 ACS)

	Percent Below Poverty Level
Bad Axe	30.1%
Caseville	10.6%
Harbor Beach	23.7%

Table 18c Percent Below Poverty Level by Jurisdiction, by Village (2014 ACS)

	Percent Below Poverty Level
Elkton	25.2%
Kinde	28.2%
Owendale	33.6%
Pigeon	19.3%
Port Austin	35.1%
Port Hope	15.2%
Sebewaing	11.1%
Udly	10.7%

Table 18d Percent Below Poverty Level by Jurisdiction, by Township (2014 ACS)

	Percent Below Poverty Level
Bingham	9.6%
Bloomfield	11.4%
Brookfield	16.2%
Caseville	13.6%
Chandler	5.6%
Colfax	9.4%
Dwight	27.8%
Fairhaven	14%
Gore	23.9%
Grant	12%
Hume	10.2%
Huron	17%
Lake	12.2%
Lincoln	12.1%
McKinley	18.8%
Meade	12.4%
Oliver	21.9%
Paris	11.3%
Pointe Aux Barques	0%
Port Austin	22.2%
Rubicon	10.3%
Sand Beach	18.1%
Sebewaing	9.7%
Sheridan	11.7%
Sherman	13.1%
Sigel	8.7%
Verona	6.3%
Winsor	13.2%

Employment

Labor force characteristics depict how people report their current work status and their intended work status. Labor force characteristics also contribute to land-use decisions. The greater percentage of the population working, the more need for connectivity in the road system and alternative housing types for those who do not want traditional homeownership responsibilities. It is important to note that labor force and income do not always vary directly, and the percentage of unemployed does not necessarily indicate a lower-income community.

The population of the Huron County labor force that is over 16 years of age is made up of 15,228, or 56.8%, of the County population, the remaining 43.2% are individuals who are not in the labor force. This is another indication of the high proportion of senior citizens and retirees in Huron County.

Employment by industry measures the type of industry in a community and the people who travel to a specific destination, such as a large industrial site, or who do not travel at all, such as farmers. From a land planning standpoint, these figures show trends in housing and traffic needs over time. Table 19 indicates the employment by industry for Huron County. Both manufacturing and educational services and health care and social assistance are the largest employment industries in the County, representing 20% of the population each. Retail trade is the third-largest industry at 10.7%, and agriculture, forestry, fishing and hunting and mining is fourth at 9.1%.

Table 19 Employment by Industry (2014 ACS)

	Number	Percent
Educational services, and health care and social assistance	2,874	20.9%
Manufacturing	2,847	20.7%
Retail trade	1,466	10.7%
Agriculture, forestry, fishing and hunting, and mining	1,252	9.1%
Arts, entertainment, and recreation, and accommodation and food services	912	6.6%
Construction	841	6.1%
Professional, scientific, and management, and administrative and waste management services	698	5.1%
Transportation and warehousing, and utilities	656	4.8%
Public administration	609	4.4%
Other services, except public administration	590	4.3%
Finance and insurance, and real estate and rental and leasing	528	3.8%
Wholesale trade	271	2.0%
Information	185	1.3%

The following Tables 20 and 21 represent the top 10 industrial employers in the County, and Table 21 shows the top 10 service/retail employers in the County. This data is current as of May 2017. While Michigan Sugar, Tower Automotive, Huron Casting, Inc., Scheurer Hospital, and Huron Medical Center appear to be the top five employers in the County, the Gemini Group is the top employer in Huron County with ownership of four of the companies in Table 20.

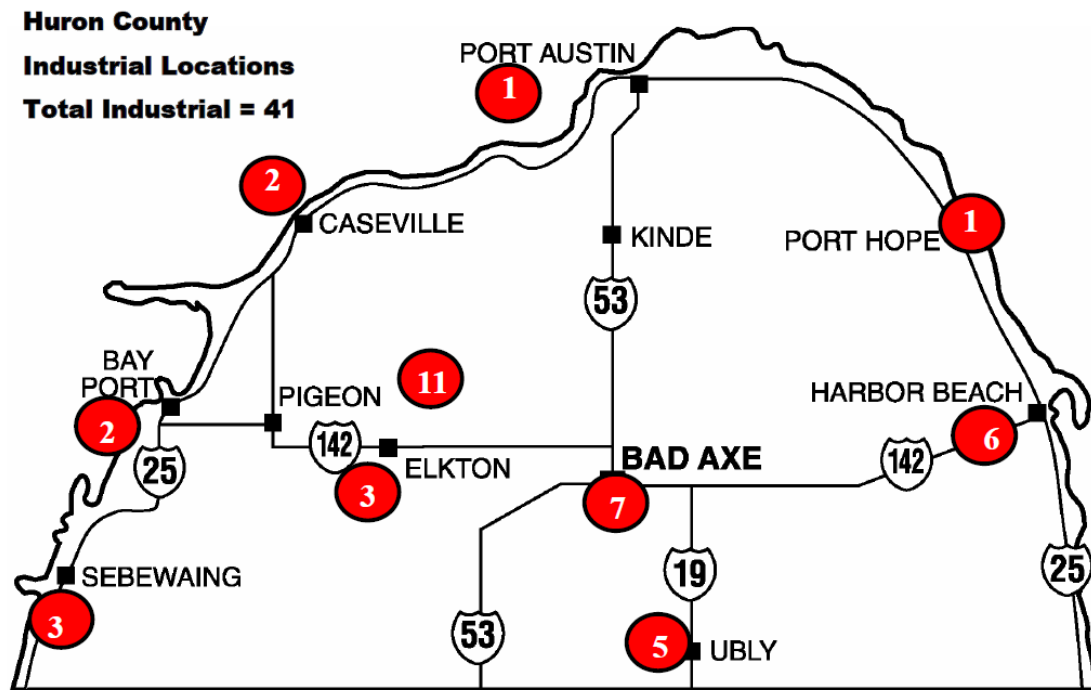
Table 20 Top 10 Industrial Employers (Huron County Economic Development Corporation)

Ranking	Employer	Employees
1	Michigan Sugar	550
2	Tower Automotive	482
3	Huron Casting, Inc.	452
4	Valley Enterprises (Gemini Group)	261
5	Gemini Plastics (Gemini Group)	251
6	Thumb Tool & Engineering (Gemini Group)	226
7	Blue Diamond Steel Casting LLC	223
8	GPMI	155
9	Dow AgroSciences	140
10	Regency Plastics (Gemini Group)	136

Table 21 Top 10 Service/Retail Employers (Huron County Economic Development Corporation)

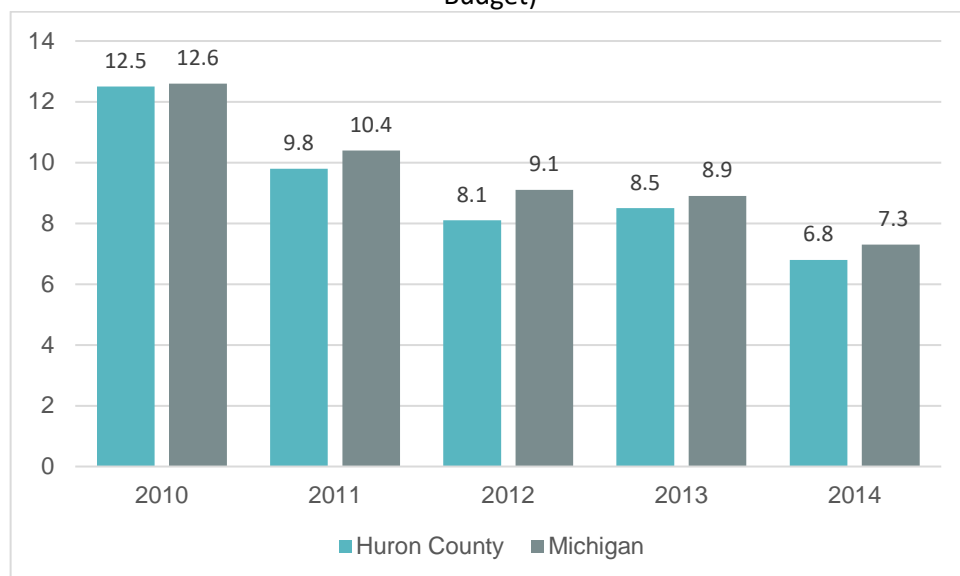
Ranking	Employer	Employees
1	Scheurer Hospital	408
2	Huron Medical Center	392
3	Wal-Mart	255
4	Huron County Medical Care Facility	227
5	Harbor Beach Community Hospital	178
6	Huron County Building	163
7	Huron Intermediate School District	131
8	Northstar Bank	110
9	Huron County Road Commission	96
10	Huron Behavioral Health	92

There are a total of 41 industrial locations in Huron County. The top three jurisdictions with the largest amount of industrial locations are the Village of Pigeon (11), the City of Bad Axe (7), and the City of Harbor Beach (6). Figure 11, on the following page, is a map from Huron County illustrating the location of the industrial sites throughout the County.

Figure 11 Huron County Industrial Locations

Unemployment

A second measure of the economic health of a region is the unemployment rate. It can show a dissatisfaction or frustration with a geography and may lead to a more transient population as people move as they look for work. Over the past five years, the overall unemployment trends in Huron County have reflected those of the State of Michigan. Fortunately, Huron County has always had an unemployment rate that was less than the state, which is illustrated in Figure 12.

Figure 12 Unemployment Rates Percentage (Michigan Department of Technology, Management, and Budget)

State Equalized Value

The following section discusses the State Equalized Value (SEV) of property. This is a measure of the taxable value and property values. SEV is determined by assessing 50% of the property's market value. The basis for SEV is supported in Article IX, Section 3 of the Michigan Constitution, which states that the proportion of true cash value at which property shall be assessed shall not exceed 50%. Property tax values are important indicators of the relative strength of different sectors of the local tax base. Real property is any property that is fixed like land or buildings, and personal property is any property that is movable like belongings exclusive of real property. Appendix B is a chart with a more in-depth SEV analysis.

The following information is from the Michigan Department of Treasury as of July 2016. Figures 12 and 13 are a breakdown of both the real and personal property in Huron County for 2010 and 2015. Referencing real property, agriculture had the largest increase. The other three categories all have a negative trend in taxable value, with residential decreasing the most, at a rate of -10.1%. Overall, real property had an increase in 30.2% of value from 2010 to 2015. Over the past 5 years, personal property experienced an exponential rate of growth, increasing by 465.4% from \$109,548,200 to \$619,397,450. Overall, the total of real and personal property increased by 51.3%.

The following two figures represent the real property by tax class, Figure 13 is for 2010, and Figure 14 depicts 2015. They highlight the changes described above.

Figure 13 2010 Real Property by Tax Class

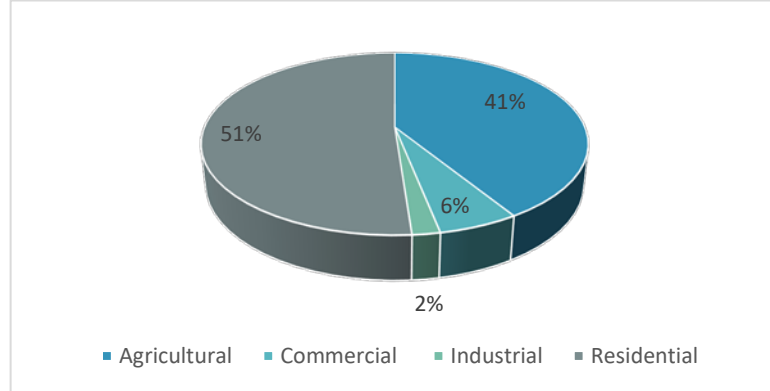
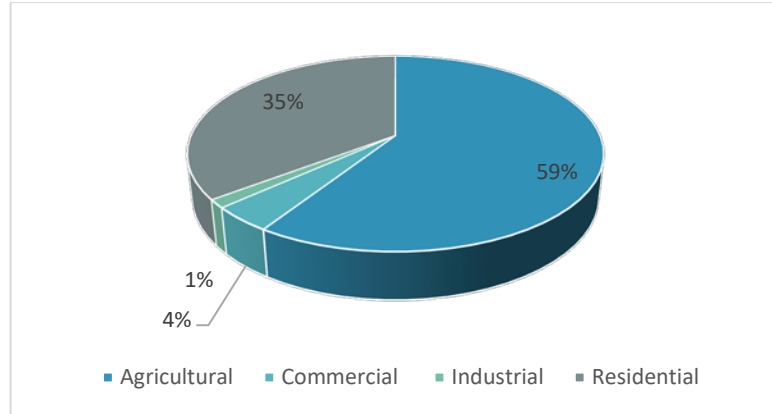


Figure 14 2015 Real Property by Tax Class



The top five jurisdictions with the overall highest real property value of all the tax classes combined are: Caseville Township, Winsor Township, Sherman Township, Port Austin Township, and Sand Beach Township. The following is a listing of the top three jurisdictions which have the highest dollar amount of real property in each tax class as of 2015.

Real Agricultural Property

1. Sherman Township (\$130,556,100)
2. Winsor Township (\$98,305,500)
3. Verona Township (\$89,544,700)

Real Residential Property

1. Caseville Township (\$190,549,300)
2. Port Austin Township (\$103,275,900)
3. Lake Township (\$98,154,000)

Real Commercial Property

1. City of Bad Axe (\$35,988,900)
2. Dwight Township (\$11,298,500)
3. City of Caseville (\$10,075,100)

Real Industrial Property

1. City of Harbor Beach (\$12,375,000)
2. Winsor Township (\$8,650,400)
3. Oliver Township (\$3,997,700)

In regard to tax classes of real property, agriculture was the only class not to have any decrease in value over the past five years. The majority of the jurisdictions in Huron County almost doubled their agricultural values from 2010. The majority of the jurisdictions had a decrease in residential values. However, Bingham Township, Pointe Aux Barques Township, Lincoln Township, Chandler Township, and

Sigel Township were the only jurisdictions with increases in residential property. Commercial changes were split down the middle with jurisdictions that had increases or decreases. However, Bloomfield Township had the largest increase at 198%. The industrial tax class was also split down the middle for jurisdictions with increases or decreases. Still, most notably, Colfax Township had an increase of 4,344.4%, and Sigel Township had an increase of 572.2%.

In regard to the largest value of personal property, the top three jurisdictions are:

1. Chandler Township
2. Winsor Township
3. Sigel Township
4. Oliver Township
5. Brookfield Township

There were several jurisdictions that had over a 1000% increase and several communities with increases over 100% in personal values from 2010 to 2015. The top three were:

1. Chandler Township (24,097.2%)
2. Sigel Township (6,034.8%)
3. Brookfield Township (4,299.8%)

Finally, the top three jurisdictions with the highest dollar value of real and personal property combined are:

1. Chandler Township
2. Winsor Township
3. Caseville Township

The top three jurisdictions with the largest percent change of real and personal property combined are:

1. Chandler Township (321.7%)
2. Sigel Township (222.1%)
3. Brookfield Township (178.8%)

Development Trends

Since Huron County's population patterns have involved stability or slight declines over time, the county is not challenged by rapid development, but the opposite problem of potential stagnation. There has not been significant residential, commercial, or industrial development in the County. The only significant development was the installation of the utility-scale wind turbines.

Utility Scale Wind Turbines are a prominent land use throughout Huron County. The map below depicts the existing utility-scale wind turbines, Thumb Loop 345 kV transmission line, and substations. As of July 2018, Huron County is home to a total of 472 operational wind turbines, totaling 878 megawatts. The County has 32 miles of 345 kV transmission line.

While there are 472 turbines in the County, there are 289 turbines in the County-zoned Townships, meaning 61.2% of the turbines in Huron County are located in County-zoned Townships. The other 38.8% of the turbines are located in locally-zoned townships. The County zoned townships with the most turbines are Winsor (61), Bingham (41), Bloomfield (41), Dwight (35), and Brookfield (32). All of the wind projects in Huron County are rated to generate 878 MW. The County-zoned turbines generate 559.2 MW. Table 26 depicts the operational number of turbines per township as of July 2018. While Winsor Township has the most turbines in the County-zoned Townships, Chandler Township, a locally-zoned township, has the most turbines in the County at 87.

Throughout Huron County, there are a total of 13 wind facilities. Of those, 11 are located within or partially within County-zoned Townships. A full list of projects can be reviewed in Table 29. The County-zoned projects include:

- | | |
|--------------------|-----------------------|
| • • Apple Blossom | • • DTE McKinley |
| • • Big Turtle I | • • DTE Sigel |
| • • Big Turtle II | • • Harvest Wind II |
| • • Deerfield Wind | • • Michigan Wind I |
| • • DTE Brookfield | • • Pheasant Run Wind |
| • • DTE Echo | |

The three power companies operating the wind facilities in Huron County are Consumers Energy, Wolverine, and DTE. However, the facilities are not all owned and operated by the same entity. Other wind facility owners include: Exelon, NextEra, Heritage Sustainable, Terrapin, Algonquin, and Sempra. In Table 27, if the power purchaser is labeled N/A, the owner of that facility is also the power supplier. Table 27 provides greater detail on all the wind facilities operating in Huron County.

In addition to the 472 wind turbines in the County, there are approximately 32 miles of a double circuit 345,000 volt (345 kV) transmission line which was constructed by the International Transmission Company (ITC) as part of the Thumb Loop project. ITC is the owner/operator of the Thumb Loop and does not construct or maintain wind turbines in Huron County.

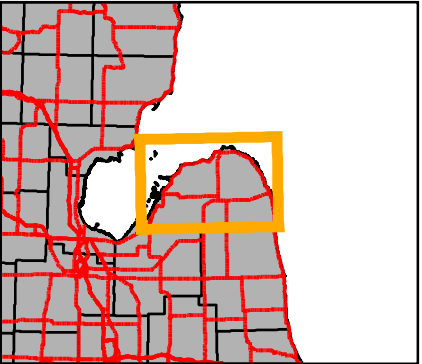
The Thumb Loop project, completed in 2015, is comprised of 140 miles of a 345 kV transmission line and four substations. The line traverses Tuscola, Huron, Sanilac, and St. Clair Counties. The line passes through Winsor, Oliver, Colfax, Verona, Sigel, and Paris Townships in Huron County. This project connects into the overall electrical transmission grid. As part of its transmission planning process for the multi-state region that includes Michigan, the Midwest Independent Transmission System Operator (MISO) approved the Thumb Loop project in 2010.

Regards to emergency management, the following is a summary of events that have occurred since 2015. One wind tower caught fire and burned (the top of the tower burnt off completely— north of Elkton). One tower had blades go out of sync and, within two minutes, had complete failure crashing to the ground (snapped off in the middle of the lower section). Generally, there have been several blade failures such as blades breaking off, pieces of blades breaking off, and becoming projectiles. Luckily, no injuries were caused by any of these events. The averages of these events are approximately one event every other year.

WIND ENERGY FACILITIES

Huron County, Michigan

In 2016 and 2017 Lincoln and Sherman Township residents voted to become self-zoned townships. They currently have a Planning Commission, but have not yet adopted a zoning ordinance.

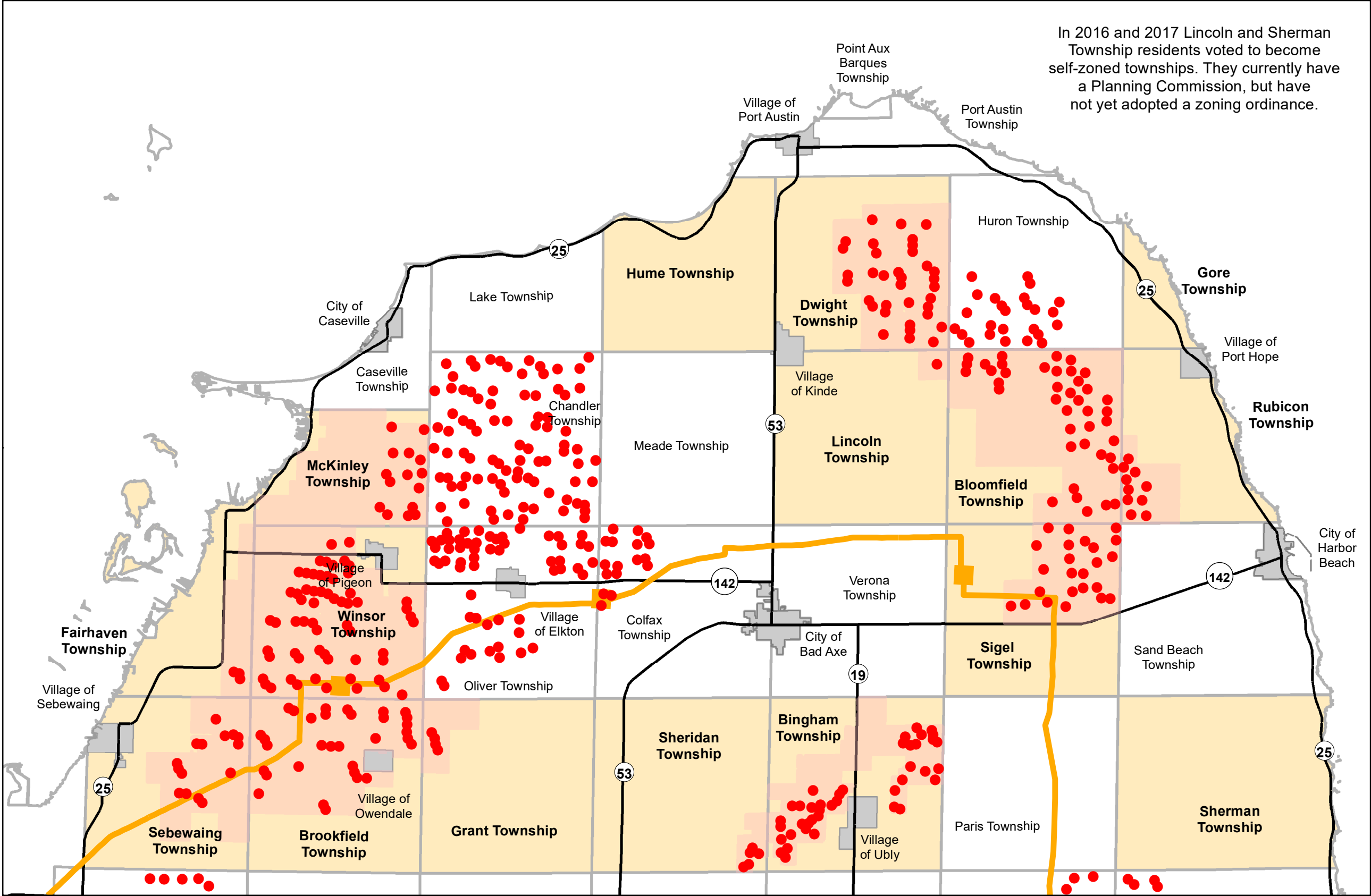


AREA MAP
NOT TO SCALE



LEGEND

- Wind Turbines
- ITC Substation
- ITC Thumb Loop
- Wind Energy Overlay
- County Zoning



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Date November 2019

Physical Infrastructure and Natural Features

This section provides a profile of Huron County's major physical resources. The area's physical factors can have large influences on both the community's vulnerability to certain hazards and its ability to mitigate disasters that may occur. Physical factors include both, natural features and the built environment, such as the transportation system, public infrastructure, development patterns, topography, soils, and watercourses.

Transportation

Roads and Bridges

The road network of Huron County is laid out in the traditional square mile grid-like many other Michigan counties and townships. Huron County is served by several Michigan Department of Transportation (MDOT) roads which provide access to the overall region, county roads, and local roads. The major thoroughfares in the County are the State Routes which include M-25, M-53, M-142, and M-19. M-25 follows the shoreline of Huron County crossing into the County in the southeast and southwest corner. The major north-south road is M-53 which traverses the center of the County from Port Austin to Bad Axe, where it jogs west and then continues south out of the County. The major east-west road is M-142 which begins south of Bay Port and runs through Bad Axe to Harbor Beach on the eastern shores of the County. Finally, there is M-19 which travels through Ubyly north to dead-end into M-142 east of Bad Axe. These roads carry most travelers and seasonal residents to the various destinations throughout the County. Other major east-west roads in the County include Sebewaing Road, Atwater Road, Fillon Road, Kinde Road, and other major north-south roads in the County include Caseville Road, Elkton Road, Pinnebog Road, and Ruth Road.

The Huron County Road Commission is responsible for both the MDOT and county roads, while townships, cities, and villages are responsible for their local roads. The Road Commission is responsible for the construction, maintenance, and improvements of 344 miles of primary roads and 1,279 miles of local roads that lie within 27 townships. The Road Commission also maintains 341 miles of state trunklines under contract with MDOT. Individual townships use road millages for funding improvements to the various local roads within their jurisdictions. According to the MDOT 2016-2020 five Year Transportation Program, there are no planned improvement projects for Huron County.

Map 3 classifies the roads in Huron County and annotates the Average Daily Traffic (ADT) Counts on each of the County and MDOT roads. ADT is a count used to measure the total volume of vehicle traffic on a highway or road for an average day of the year. These numbers are from MDOT and the County Road Commission.

The traffic volumes of the state trunklines range from just over 5,000 vehicles to 7,000 vehicles. Volumes of the county roads are estimated between 100 to 3,000 vehicles. It should be noted that these figures are average volumes and that there are days where the traffic volume could be 20 - 40% more on various sections of roads. These estimates can provide a preliminary indication of how well a roadway is operating. More comprehensive data is needed to make a complete determination if a roadway is operating past capacity. The County Road Commission should consult with the Planning Commission and periodically revisit the Master Plan to guide future action items or policy directions regarding any existing problem areas or future improvements.

In each County in Michigan, there are specific routes that are used for emergency management personnel. Map 4 shows the emergency access roads in Huron County that are the state roads (M-53, M-142, M-25, and M-19) and the major arterials (Class A roads). These access routes provide the most direct access throughout the County. These roads would be the access that is cleared first for snow removal in the winter.

In addition to the road network, there is also a network of bridges maintained by MDOT and the Road Commission. In total, there are 247 bridges in the County. Map 5 shows the bridge inventory.

Public Transportation

The Thumb Area Transit (TAT) is the only public transportation system in Huron County. The system serves residents of Huron County on an on-call basis operating Monday – Saturday. TAT also provides bus shuttles during the Cheeseburger Festival in Caseville. In 2016, TAT provided 386,676 rides. TAT also contracts with most school districts in Huron County to provide in-county transport of students to and from school. This is a cost savings effort on the part of the schools, but also adds mitigation of traffic accidents with school buses and injury prevention in the event of a crash due to better safety features on TAT buses and professional drivers.

Airports

Huron County has five airports of varying sizes and capacities. They are located in Sebawaing, Caseville, Port Austin, Bad Axe, and Port Hope. The Huron County Memorial Airport is located south of the City of Bad Axe. It is a county-owned public airport and is characterized as a general aviation airport, meaning all air operations, aside from scheduled flights and transportation, are for hire. The airport has two paved runways, averages 121 flights per week, and has 18 aircraft based on the field. Sebawaing Airport is another publicly owned airport located to the east of the Village of Sebawaing; it has one paved runway and one turf runway, averages 38 flights per week, and has five aircraft based in the field. Farver Field Airport is a privately-owned airport located south of Caseville. It has one turf runway and three planes based at the field. The fourth airport is Grindstone Air Harbor, which is located east of Port Austin. It is privately owned and open to the public. The airport has one turf runway and does 50 operations per year. Finally, there is an airport southwest of Port Hope which is private, and it has one asphalt runway. These airports provide opportunities for commercial and private air service in the County.

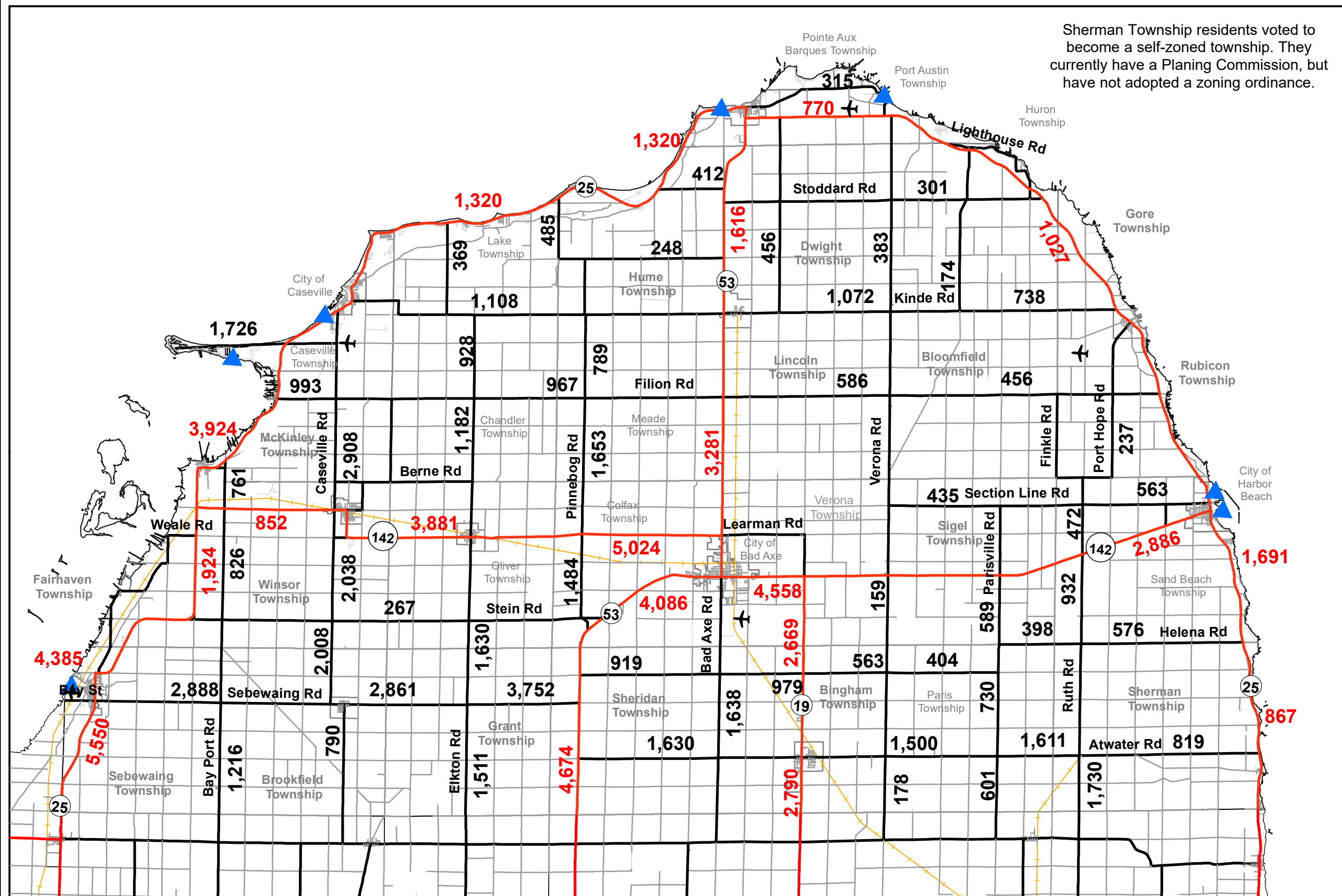
Marinas

There are several marinas located along the Huron County shoreline. While these are not deepwater ports for shipping, there are several commercial fishing operations located in the County which take advantage of these marinas. In addition to commercial fishing, the various marinas and launches are crucial to the recreation infrastructure in the County. They provide boaters from the area and other regions a means to visit Huron County via the water. They give tourists who would like to stay in the area a place to dock, and they provide seasonal dockage for full-time or part-time residents. The following is a list of marinas in the County:

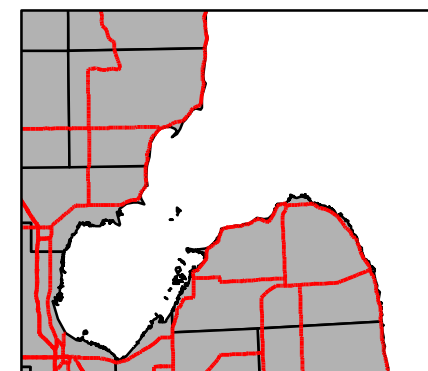
- Bayshore Marina
- Brush's Campground and Marina
- Beadle Bay Marina
- Caseville Municipal Harbor
- Eagle's Marina
- Port Austin Harbor
- Harbor Beach Marina
- Off Shore Marina
- Harbor Marina

TRANSPORTATION (ADT)

Huron County, Michigan



Sherman Township residents voted to become a self-zoned township. They currently have a Planing Commission, but have not adopted a zoning ordinance.



AREA MAP
NOT TO SCALE



LEGEND

-  Airports
-  Marina
-  State Roads
-  Major Arterial
-  Minor Arterial
-  Roads
-  Railroad

ADT (Average Daily Traffic) is used to measure the total volume of vehicle traffic on a highway or road on an average day of the year.

Key:
Black Numbers: 2014 Huron
County Road Commission
Red Labels: MDOT (2016).

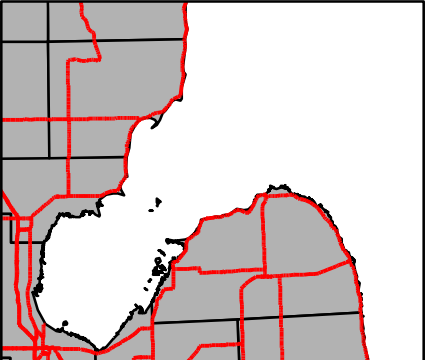
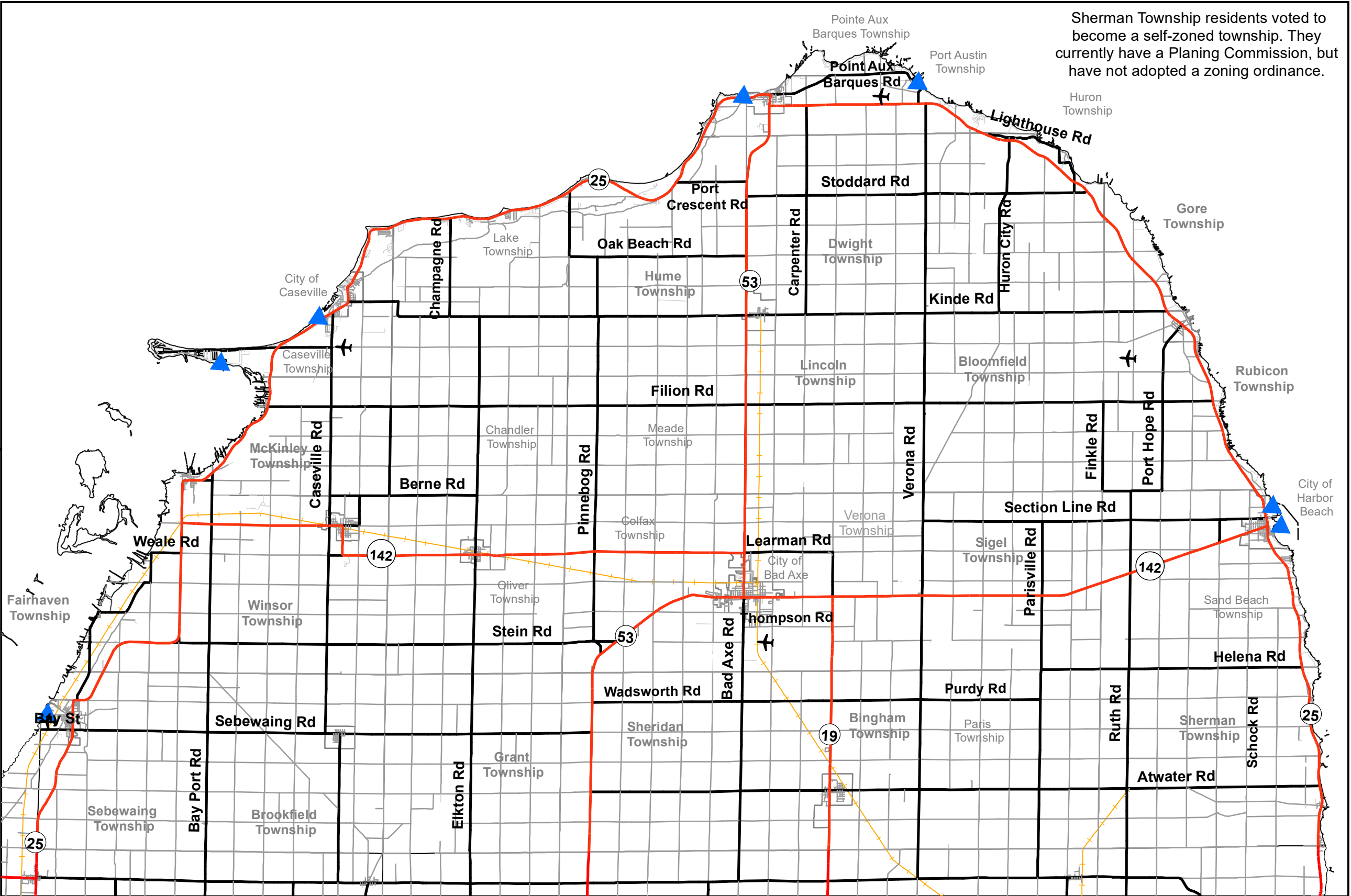
Source:
Michigan Geographic Data Library,
Huron County Road Commission,
& MDOT



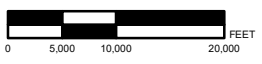
Date November 2019

EMERGENCY ACCESS ROADS

Huron County, Michigan



AREA MAP
NOT TO SCALE



LEGEND

- Airports
- Marina
- State Roads
- Major Arterial
- Minor Arterial
- Roads
- Railroad

Source:
Michigan Geographic Data Library,
Huron County Road Commission,
& MDOT

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Date July 2020

Bridge Load Posting

Weight limit signs on bridges are intended to prevent loads that exceed posted limits from crossing a bridge. The Michigan Manual on Uniform Traffic Control Devices (MUTCD) regulates the signs that can be used to post weight information on bridges. It is important to note that the number of axles shown on each sign is a representative example only. Actual axle configuration may differ.

The first alternative is a single unit vehicle. The sign set vehicle has a power unit and trailer that are detachable from the trailer. The following are examples of vehicles governed by the single unit alternative.

The second alternative is a heavy vehicle. For this vehicle, the power unit or engine unit is detachable from the trailer. The following are examples of vehicles governed by the heavy vehicle alternative.

The third alternative is a three-unit vehicle. This vehicle combination consists of three units that are detachable from one another, including any power unit with two trailers. The following are examples of vehicles governed by the three-unit alternative.

Other Sign Configurations

The signs shown in Figure 4 can be used to combine the load posting information from both Figure 2 and Figure 3.

The signs in Figure 4 are typical configurations to show easily recognizable vehicles, as it is not possible for signs to represent every vehicle configuration. It is important to note that the number of axles shown on each sign is a representative example only. Actual axle configuration may differ.

Bridge Load Posting

Figure 4 is the modified version of the sign. The first alternative has been updated to represent a truck with multiple trailers more clearly. As a result of a planned implementation to update all signs, both versions of the sign will be used on posted bridges today. Both are intended to provide one-unit, two-unit and three-unit weight limits.

Figure 1

Figure 2

Figure 3

WEIGHT LIMIT 10 TONS

AXLE WEIGHT LIMIT 5 TONS

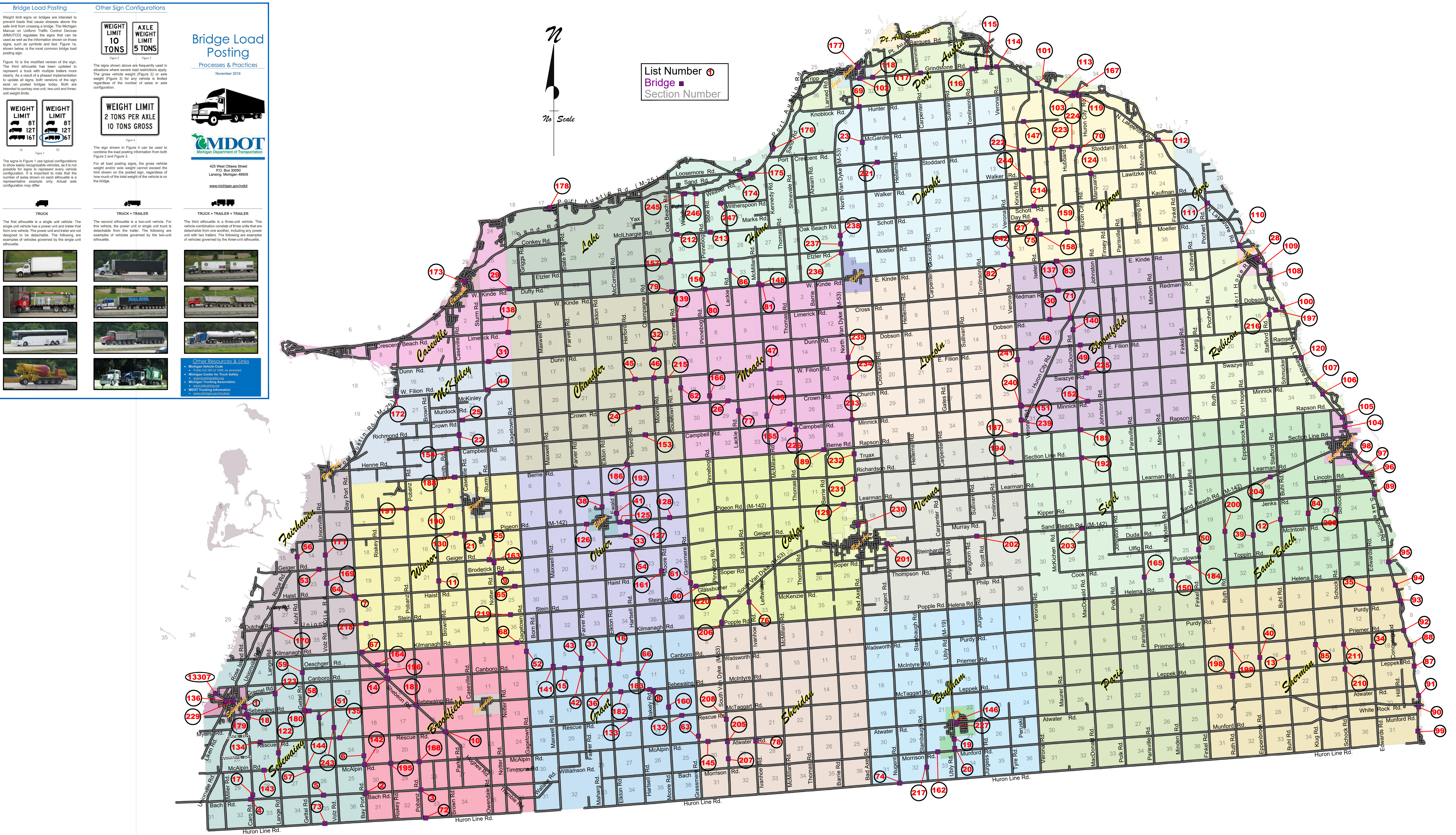
WEIGHT LIMIT 2 TONS PER AXLE 10 TONS GROSS

MDOT

Michigan Department of Transportation

425 West Ottawa Street
PO Box 30050
Lansing, Michigan 48909

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Map #	Feature Crossed	Road Name	Location	Comments	Posted Loading	Posting	Structure ID	Map #	Feature Crossed	Road Name	Location	Comments	Posted Loading	Posting	Structure ID	Map #	Feature Crossed	Road Name	Location	Comments	Posted Loading	Posting	Structure ID	Map #	Feature Crossed	Road Name	Location	Comments	Posted Loading	Posting	Structure ID
1	Sebewaing River	Anton St.	0.4 MI. east of M-25		27 MI. 0.1	AI/Above Legal Loads	3681	39	Rock Falls Creek	Eppendorf Rd.	Sec. 28-29 Sand Beach Twp.		27 MI. 0.1	AI/Above Legal Loads	3641	77	E. Br. Pinnegob River	Lackie Rd.	Sec. 28-29 Meade Twp.		27 MI. 0.1	AI/Above Legal Loads	3628	115	No Name	Grindstone Rd.	3710 West Of Pearson Rd.		27 MI. 0.1	AI/Above Legal Loads	3509
2	Douglas/Crofton Drain	Bach Rd.	Sec. 20-21 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3682	40	Pinnebog River	Ewald Rd.	Sec. 10 Oliver Twp.		27 MI. 0.1	AI/Above Legal Loads	3634	78	Pinnebog River	W. Kind Rd.	Sec. 1 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3527	116	No Name	Grindstone Rd.	3607 West Of Pearson Rd.		27 MI. 0.1	AI/Above Legal Loads	3508
3	Brookfield I/C Drain	Bach Rd.	Sec. 28-29 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3683	41	West Br. Pigeon River	S. Farrow Rd.	Sec. 8-9 Grand Twp.		27 MI. 0.1	AI/Above Legal Loads	3597	79	Pinnebog River	W. Kind Rd.	Sec. 32 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3528	117	Baranski Drain	Grindstone Rd.	1240 East Of Thuermer Rd.		27 MI. 0.1	AI/Above Legal Loads	3511
4	Kemp Drain	Bach Rd.	Sec. 28-29 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3684	42	West Br. Pigeon River	S. Farrow Rd.	Sec. 8-9 Grand Twp.		27 MI. 0.1	AI/Above Legal Loads	3598	80	Tell Drain	W. Kind Rd.	Sec. 34 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3529	118	Grain Creek	Grindstone Rd.	0.8 MI. E. Of M-53		27 MI. 0.1	AI/Above Legal Loads	3512
5	State Drain	Bach Rd.	Sec. 28-29 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3685	43	Pigeon River	S. Farrow Rd.	Sec. 8-9 Grand Twp.		27 MI. 0.1	AI/Above Legal Loads	3599	81	Moore Creek	W. Kind Rd.	Sec. 34 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3530	119	Branch Willow Creek	Lakeshore Rd.	2007 W. Of Huron City Rd.		27 MI. 0.1	AI/Above Legal Loads	3513
6	Columbia Drain	Bay Port Rd.	Sec. 24 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3686	44	Pigeon River	W. Farrow Rd.	Sec. 13-24 McKinley Twp.		27 MI. 0.1	AI/Above Legal Loads	3520	82	Lincoln Drain	E. Kind Rd.	Sec. 36 Dwight Twp.		27 MI. 0.1	AI/Above Legal Loads	3531	120	Harbor Beach Creek	Lakeshore Rd.	290 South Of Seaway Rd.		27 MI. 0.1	AI/Above Legal Loads	13590
7	Shebeon Drain	Bay Port Rd.	Sec. 30 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3687	45	Pinnebog River	W. Farrow Rd.	Sec. 14-23 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3521	83	Willow River	E. Kind Rd.	Sec. 32 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3532	121	Diamond Creek	Lakeshore Rd.	In Port Hope @ Dean St.	Duplicate of #28	27 MI. 0.1	AI/Above Legal Loads	13683
8	East Br. Pigeon River	Bach Rd.	Sec. 14-23 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3688	46	E. Branch Pinnegob River	W. Farrow Rd.	Sec. 14-23 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3522	84	Rock Falls Creek	W. Kind Rd.	Sec. 28-29 Sand Beach Twp.		27 MI. 0.1	AI/Above Legal Loads	3533	122	State Drain	Lange Rd.	Sec. 17-20 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3634
9	Pigeon River	Bach Rd.	Sec. 24 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3689	47	Tell Drain	W. Farrow Rd.	Sec. 15-22 Meade Twp.		27 MI. 0.1	AI/Above Legal Loads	3523	85	Bin Creek	W. Kind Rd.	Sec. 14-15 Sherman Twp.		27 MI. 0.1	AI/Above Legal Loads	3635	123	Columbia Drain	Lange Rd.	Sec. 18 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3635
10	Shebeon Drain	Bach Rd.	Sec. 15-22 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3690	48	Pinnebog River	E. Farrow Rd.	Sec. 16-21 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3524	86	Moore Creek	W. Kind Rd.	Sec. 32-33 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3636	124	Timney Drain	Lange Rd.	Sec. 15-22 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3616
11	West Branch Drain	Bach Rd.	Sec. 21-22 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	12647	49	East Br. Willow River	E. Farrow Rd.	Sec. 16-21 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3525	87	White River	S. Lakeshore Rd.	Sec. 20 East Sherman Twp.		27 MI. 0.1	AI/Above Legal Loads	3480	125	Pinnegob River	M-142	0.5 MI. E. Of Elston		27 MI. 0.1	AI/Above Legal Loads	3455
12	Rock Falls Creek	Bach Rd.	Sec. 15-21 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3691	50	Pinnebog River	W. Farrow Rd.	Sec. 20-21 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3526	88	Bin Creek	S. Lakeshore Rd.	Sec. 17 East Sherman Twp.		27 MI. 0.1	AI/Above Legal Loads	3481	126	Squaw Creek	M-142	0.5 MI. W. Of Elston		27 MI. 0.1	AI/Above Legal Loads	3457
13	Bin Creek	Bach Rd.	Sec. 15-21 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3692	51	Columbia Drain	Quinn Rd.	Sec. 19 East Sand Beach Twp.		27 MI. 0.1	AI/Above Legal Loads	3527	89	Rock Falls Creek	S. Lakeshore Rd.	Sec. 19 East Sand Beach Twp.		27 MI. 0.1	AI/Above Legal Loads	3482	127	Clints Drain	M-142	0.9 MI. E. Of Elston		27 MI. 0.1	AI/Above Legal Loads	3458
14	Shebeon Drain	Canboro Rd.	Sec. 5-8 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3572	52	Pigeon River	Capitown Rd.	Sec. 6 Grant Twp.		27 MI. 0.1	AI/Above Legal Loads	3595	90	White Rock Creek	S. Lakeshore Rd.	Sec. 29 East Sherman Twp.		27 MI. 0.1	AI/Above Legal Loads	3483	128	Nettle Run	M-142	Sec. 13-13 Oliver Twp.		27 MI. 0.1	AI/Above Legal Loads	3459
15	West Br. Pigeon River	Canboro Rd.	Sec. 5-8 Grant Twp.		27 MI. 0.1	AI/Above Legal Loads	3593	53	Shebeon Drain	Capitown Rd.	Sec. 14-23 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3596	91	Islebrook Creek	S. Lakeshore Rd.	Sec. 20 East Sherman Twp.		27 MI. 0.1	AI/Above Legal Loads	3484	129	Bad Axe Creek	M-142	Sec. 13-13 Oliver Twp.		27 MI. 0.1	AI/Above Legal Loads	3460
16	East Br. Pigeon River	Canboro Rd.	Sec. 3-10 Grant Twp.		27 MI. 0.1	AI/Above Legal Loads	3594	54	Pinnebog River	Capitown Rd.	Sec. 14-23 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3597	92	No Name	S. Lakeshore Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3485	130	Pigeon River	Wale Rd.	Sec. 10-15 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3512
17	Kemp Drain	Canboro Rd.	Sec. 28-29 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3652	55	Pigeon River	Capitown Rd.	Sec. 14-23 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3677	93	No Name	S. Lakeshore Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3486	131	Shebeon Drain	Rescue Rd.	Sec. 15-22 Bloomfield Twp.	Duplicate of #10	27 MI. 0.1	AI/Above Legal Loads	3571
18	State I/C Drain	Canboro Rd.	Sec. 15-17 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3653	56	Shebeon Drain	Capitown Rd.	Sec. 14-23 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3598	94	Buckley Creek	S. Lakeshore Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3487	132	East Br. Pigeon River	Rescue Rd.	Sec. 15-22 Grant Twp.		27 MI. 0.1	AI/Above Legal Loads	3592
19	Casa River	M-19	0.1 MI. South Of City		27 MI. 0.1	AI/Above Legal Loads	3478	57	Pinnebog River	Capitown Rd.	Sec. 20-21 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3528	95	No Name	S. Lakeshore Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3488	133	Little Pigeon River	Rescue Rd.	Sec. 15-22 Grant Twp.		27 MI. 0.1	AI/Above Legal Loads	3503
20	Town Drain	M-19	0.9 MI. S. Of City		27 MI. 0.1	AI/Above Legal Loads	3479	58	Columbia Drain	Capitown Rd.	Sec. 10-11 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3627	96	Spring Creek	S. Lakeshore Rd.	Sec. 450 North Of Lincoln Rd.		27 MI. 0.1	AI/Above Legal Loads	3489	134	State Drain	Rescue Rd.	Sec. 16-21 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3650
21	Pigeon River	N. Cassville Rd.	Sec. 14-15 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3539	59	Gettel Drain	Capitown Rd.	Sec. 2-3 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	12602	97	Spring Creek	S. Lakeshore Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3490	135	Columbia Drain	Rescue Rd.	Sec. 15-22 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3651
22	Pigeon River	N. Cassville Rd.	Sec. 20-21 McKinley Twp.		27 MI. 0.1	AI/Above Legal Loads	3540	60	Pinnebog River	Glassboro Rd.	Sec. 30 Colfax Twp.		27 MI. 0.1	AI/Above Legal Loads	3595	98	No Name	S. Lakeshore Rd.	Sec. 0.7 MI. S. M-142 @ Golf Course		27 MI. 0.1	AI/Above Legal Loads	3491	136	Sebewaing River	Capitown Rd.	Sec. 15-22 Sebewaing Twp.	@ Sebewaing Center St. Inter.	27 MI. 0.1	AI/Above Legal Loads	3692
23	Bin Creek	Canboro Rd.	Sec. 7-8 Dwight Twp.		27 MI. 0.1	AI/Above Legal Loads	3588	61	Pinnebog River	S. Cassinette Rd.	Sec. 30 Oliver Twp.		27 MI. 0.1	AI/Above Legal Loads	3596	99	State Stone Creek	S. Lakeshore Rd.	Sec. 0.6 MI. S. Of Munford Rd.		27 MI. 0.1	AI/Above Legal Loads	3492	137	Willow River	Rescue Rd.	Sec. 5-8 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3554
24	Pinnegob River	Crown Rd.	Sec. 23-28 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3581	62	E. Br. Pinnegob River	S. Cassinette Rd.	Sec. 19 Meade Twp.		27 MI. 0.1	AI/Above Legal Loads	3627	100	Ocha Creek	S. Lakeshore Rd.	Sec. 15 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3494	138	Pigeon River	Linnecks Rd.	Sec. 1-12 Cassville Twp.		27 MI. 0.1	AI/Above Legal Loads	3578
25	Pigeon River	Crown Rd.	Sec. 23-28 McKinley Twp.		27 MI. 0.1	AI/Above Legal Loads	3623	63	East Br. Pigeon River	S. Cassinette Rd.	Sec. 19 Sheldon Twp.		27 MI. 0.1	AI/Above Legal Loads	3661	101	New River	N. Lakeshore Rd.	Sec. 32 East Port Austin Twp.		27 MI. 0.1	AI/Above Legal Loads	3495	139	Pinnegob River	Linnecks Rd.	Sec. 1-12 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3583
26	E. Br. Pinnegob River	Crown Rd.	Sec. 15 Oliver Twp.		27 MI. 0.1	AI/Above Legal Loads	3613	64	Pinnebog River	Harris Rd.	Sec. 24-25 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3662	102	Red Creek	N. Lakeshore Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3496	140	Pinnebog River	Linnecks Rd.	Sec. 1-12 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3584
27	New River	Day Rd.	Sec. 30 Huron Twp.		27 MI. 0.1	AI/Above Legal Loads	3613	65	Pigeon River	Harris Rd.	Sec. 24-25 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3675	103	Willow River	N. Lakeshore Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3497	141	Pigeon River	Linnecks Rd.	Sec. 5-8 Grant Twp.		27 MI. 0.1	AI/Above Legal Loads	3596
28	Diamond Creek	Dean St.	In Port Hope @ Dean St.	Duplicate of #121	27 MI. 0.1	AI/Above Legal Loads	13683	66	East Br. Pigeon River	Harris Rd.	Sec. 10-11 Grant Twp.		27 MI. 0.1	AI/Above Legal Loads	3676	104	Park Drain	N. Lakeshore Rd.	Sec. 0.6 MI. N. Of Harbor Beach		27 MI. 0.1	AI/Above Legal Loads	3498	142	Columbia Drain I/C Drain	McAlpin Rd.	Sec. 13-30 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3670
29	Pigeon River	Dunn Rd.	Sec. 12 Lake Twp.		27 MI. 0.1	AI/Above Legal Loads	3526	67	Pinnebog River	Kilmarnock Rd.	Sec. 31 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3677	105	No Name	N. Lakeshore Rd.	Sec. 1.0 MI. N. Of Harbor Beach		27 MI. 0.1	AI/Above Legal Loads	3499	143	Kemp I/C Drain	McAlpin Rd.	Sec. 21-28 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3648
30	Pinnebog River	Dobson Rd.	Sec. 8-17 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3563	68	Pinnebog River	Kilmarnock Rd.	Sec. 30 Winsor Twp.		27 MI. 0.1	AI/Above Legal Loads	3678	106	Hazel Creek	N. Lakeshore Rd.	Sec. 0.9 MI. S. Of Harbor Beach		27 MI. 0.1	AI/Above Legal Loads	3500	144	State Drain	McAlpin Rd.	Sec. 22-27 Sebewaing Twp.		27 MI. 0.1	AI/Above Legal Loads	3649
31	Pigeon River	Dunn Rd.	Sec. 12 Cassville Twp.		27 MI. 0.1	AI/Above Legal Loads	3577	69	E. Br. Pinnegob River	Huron City Rd.	Sec. 31 Pioneer Twp.		27 MI. 0.1	AI/Above Legal Loads	3679	107	No Name	N. Lakeshore Rd.	Sec. 0.9 MI. S. Of Harbor Beach		27 MI. 0.1	AI/Above Legal Loads	3501	145	Aspen I/C Drain	Atwater Rd.	Sec. 13-30 Sheldon Twp.		27 MI. 0.1	AI/Above Legal Loads	3680
32	Pinnebog River	Dunn Rd.	Sec. 12-13 Chandler Twp.		27 MI. 0.1	AI/Above Legal Loads	3582	70	Timney Drain	Huron City Rd.	Sec. 16 Huron Twp.		27 MI. 0.1	AI/Above Legal Loads	3679	108	No Name	N. Lakeshore Rd.	Sec. 0.9 MI. S. Of Harbor Beach		27 MI. 0.1	AI/Above Legal Loads	3502	146	North Branch Case River	Atwater Rd.	Sec. 13-30 Sheldon Twp.		27 MI. 0.1	AI/Above Legal Loads	3681
33	Pinnebog River	Ely Rd.	Sec. 15 Oliver Twp.		27 MI. 0.1	AI/Above Legal Loads	3613	71	East Br. Willow River	Huron City Rd.	Sec. 8-17 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3680	109	No Name	N. Lakeshore Rd.	Sec. 0.4 MI. SE Of Port Hope		27 MI. 0.1	AI/Above Legal Loads	3503	147	New River	McAlpin Rd.	Sec. 5-7 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3617
34	Bin Creek	Edwards Rd.	Sec. 13-18 Sherman Twp.		27 MI. 0.1	AI/Above Legal Loads	3668	72	Brookfield Drain	Huron City Rd.	Sec. 33 Bloomfield Twp.		27 MI. 0.1	AI/Above Legal Loads	3667	110	No Name	N. Lakeshore Rd.	Sec. 0.4 MI. SE Of Port Hope		27 MI. 0.1	AI/Above Legal Loads	3504	148	Moore Creek	N. Lakeshore Rd.	Sec. 33-34 Hume Twp.		27 MI. 0.1	AI/Above Legal Loads	3610
35	Buckley Creek	Edwards Rd.	Sec. 1-6 Sheldon Twp.		27 MI. 0.1	AI/Above Legal Loads	12603	7																							

Land Use and Development Patterns

The predominant land use within Huron County is agriculture; within the agriculture land there are single-family homes and farmsteads. Most residential development is concentrated near existing villages and cities, as well as along the coastline of Saginaw Bay and Lake Huron. This extensive shoreline will undoubtedly see continued development in the future. This could play a significant impact on the extensiveness of flooding events in Huron County. Commercial and industrial areas are also situated inside and around the cities and villages of the County. The natural features in the County, including wetlands and woodlands, are spread in clusters throughout the County. Map 6 is a representation of the existing land use in the County.

Natural Features

Topography and Soils

The topography of Huron County is generally flat to gently rolling, which is illustrated on Map 7. The southeast and eastern portions of the County have the highest elevation, and the lowest elevations can be found along the shoreline. Slight changes in elevation are also prominent around the water features in the inland portion of the County.

Map 8 depicts the different soil types within Huron County. In each of these different types, there are various soil associations. For the purpose of this plan, the map illustrates the qualities of the soil, rather than the specific names. In regard to development, it is important to understand qualities such as drainage, runoff potential, and sand content. The information for this map was compiled using the USDA, Soil Conservation Service (now the Natural Resources Conservation Service), and Michigan Agricultural Experiment Station 1980 Soil Survey for Huron County.

The majority of the soils in Huron County are of a loam variety and vary from somewhat poorly drained to poorly drained. Agriculture is an integral component of Huron County, and the best farming land in the County is found in the loam variety of soils. The second most common type of soil is the sand varieties, and the third is the various varieties of muck which can be found along the coastline and in wetlands. Sandy soils allow surface drainage to penetrate groundwater tables; therefore, the County should remain alert to the protection of groundwater supplies in relation to the proposed development. Finally, muck soils with high concentrations of organic material are very poorly drained and are often wet areas.

Drainage and Water Features

There is an extensive network of water features throughout Huron County. Lake Huron borders the eastern tip of the Thumb, and Saginaw Bay borders the western tip. In addition to the vast amounts of coast, there are also 942 miles of inland rivers and streams. The coast serves as a natural draw for tourism, the rivers and streams are also popular for fishing, canoeing, or kayaking. The majority of Huron County's watershed flows to Lake Huron/Saginaw Bay watershed. A small section in the south-central portion of the County drains to the Cass River. The quality of groundwater, surface water, and wetlands directly correlates to the quality of the runoff for the entire watershed. Because Huron County

is such an environmentally sensitive area, where the most highly desired places are also the most environmentally sensitive places, it is essential to consider the impacts developments will have on the water within the region.

In Huron County, the vast majority of farm fields are tiled to assist in water runoff and drainage. This tiling of farm fields has advantages and disadvantages. An advantage is the rapid removal of water from acres of farmland that reduce crop damage. A disadvantage is that rapid draining of farm fields can sometimes overwhelm the ditches and rivers that move the water to the bays and lakes. The Huron County Drain Commission and township governments work together to ensure the drains in the county work properly and are maintained.

Waterfront areas are constantly undergoing change due to erosion caused by Lake Huron. Because shorelines are continually changing, great care should be taken when considering the development of lakefront properties. In addition to water resources like streams and drains, the County is also home to many areas of wetlands. According to the National Wetlands Inventory, Huron County contains a vast network of wetlands, which is logical due to the low elevation and the location of numerous rivers and streams as well as the adjacency to the Great Lakes. The wetlands in Huron County can be found along the coast of the County, to the south and southeast of Bad Axe, throughout the center of the southern portion of the County, and pockets scattered throughout the rest of the County. Map 9 shows the major rivers, lakes, and wetlands in Huron County on the following pages.

Climate

Climate, the average weather conditions occurring in a particular area over time, has a major effect on the natural and cultural environment. This information is helpful in assessing weather-related hazards. Climatic data for Huron County is illustrated in the table below.

Table 22 Huron County Climate

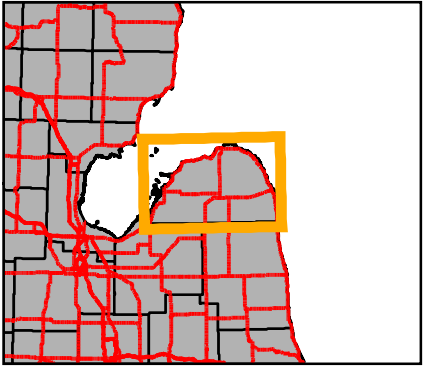
Climate		
Month	Average Minimum Temperature	Average Maximum Temperature
January	14F	28F
July	58F	80F
Precipitation	Rainfall	Snowfall
Average Annual	33 inches	43 inches
Source: NOAA Climate Summary		

Like most of Michigan's Lower Peninsula, Huron County is affected by prevailing westerly winds. The tempering effect as these winds pass over Lake Michigan creates a warmer temperature during the winter months than would otherwise be normal for an area at this latitude. Conversely, winds moving over Lake Michigan during the summer have a cooling effect.

EXISTING LAND USE

Huron County, Michigan

Sherman Township residents voted to become a self-zoned township. They currently have a Planing Commission, but have not adopted a zoning ordinance.



AREA MAP
NOT TO SCALE



LEGEND

- Agriculture
- Commercial/ Industrial/ Transportation
- Residential
- Transitional
- Woodlands
- Grasslands
- Wetlands
- Open Water
- Gravel Pits
- Bare Rock/Sand

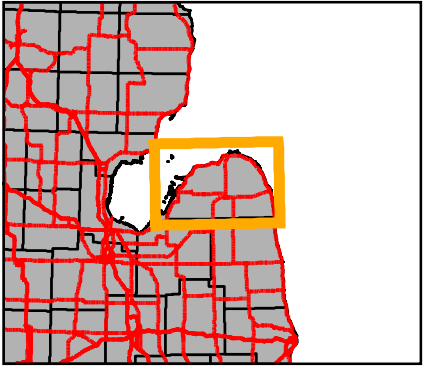
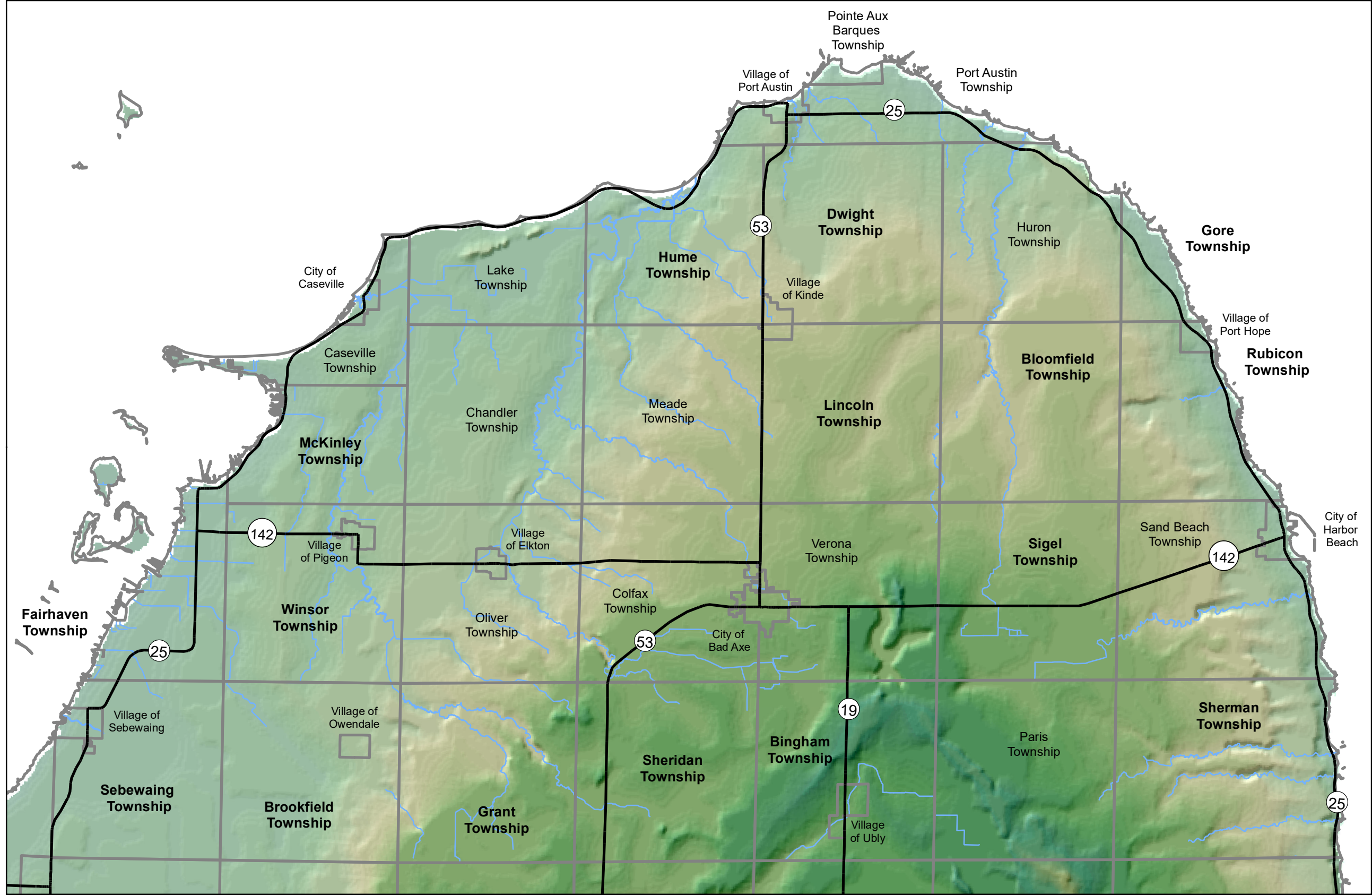
Source:
Michigan Geographic Data Library

Spicer group
SAGINAW'S OFFICE
230 S Washington Ave
Saginaw, MI 48607
Tel. 989-754-4747
www.SpicerGroup.com

Date November 2019

TOPOGRAPHY

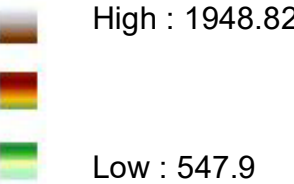
Huron County, Michigan



AREA MAP
NOT TO SCALE



ELEVATION (IN FEET)



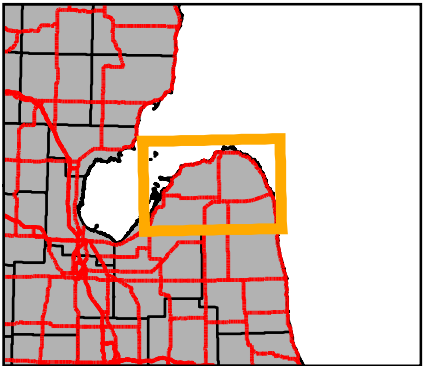
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Date November 2019

SOIL TYPE

Huron County, Michigan



AREA MAP
NOT TO SCALE



LEGEND

- Aquents and Histosols, ponded
- Aurelius Muck
- Bouldery Sandy Loam
- Cobbly Loam
- Cobbly Sandy Loam
- Fine Sandy Loam
- Fluvaquents, loamy
- Gravelly Loamy Sand
- Loam
- Loamy Sand
- Muck
- Mucky Sandy Loam
- Pits
- Sand
- Sandy Loam
- Sandy Muck
- Silt Loam
- Silty Clay Loam
- Stony Loam
- Udipsamments
- Water

Source:
Michigan Geographis Data Library

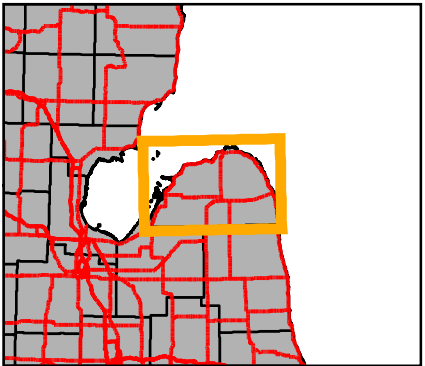
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Date November 2019

PATH: Q:\PRO\2016\1231623G2016-HURON COUNTY MASTER PLAN\MAPPING\1X17 TEMPLATE SOIL.MXD, PRINTED ON: 11/13/2019, BY: JENNIFER CLAWSON

WETLANDS AND WATERWAYS



Huron County, Michigan



AREA MAP
NOT TO SCALE



LEGEND

-  Wetlands
-  Water Features

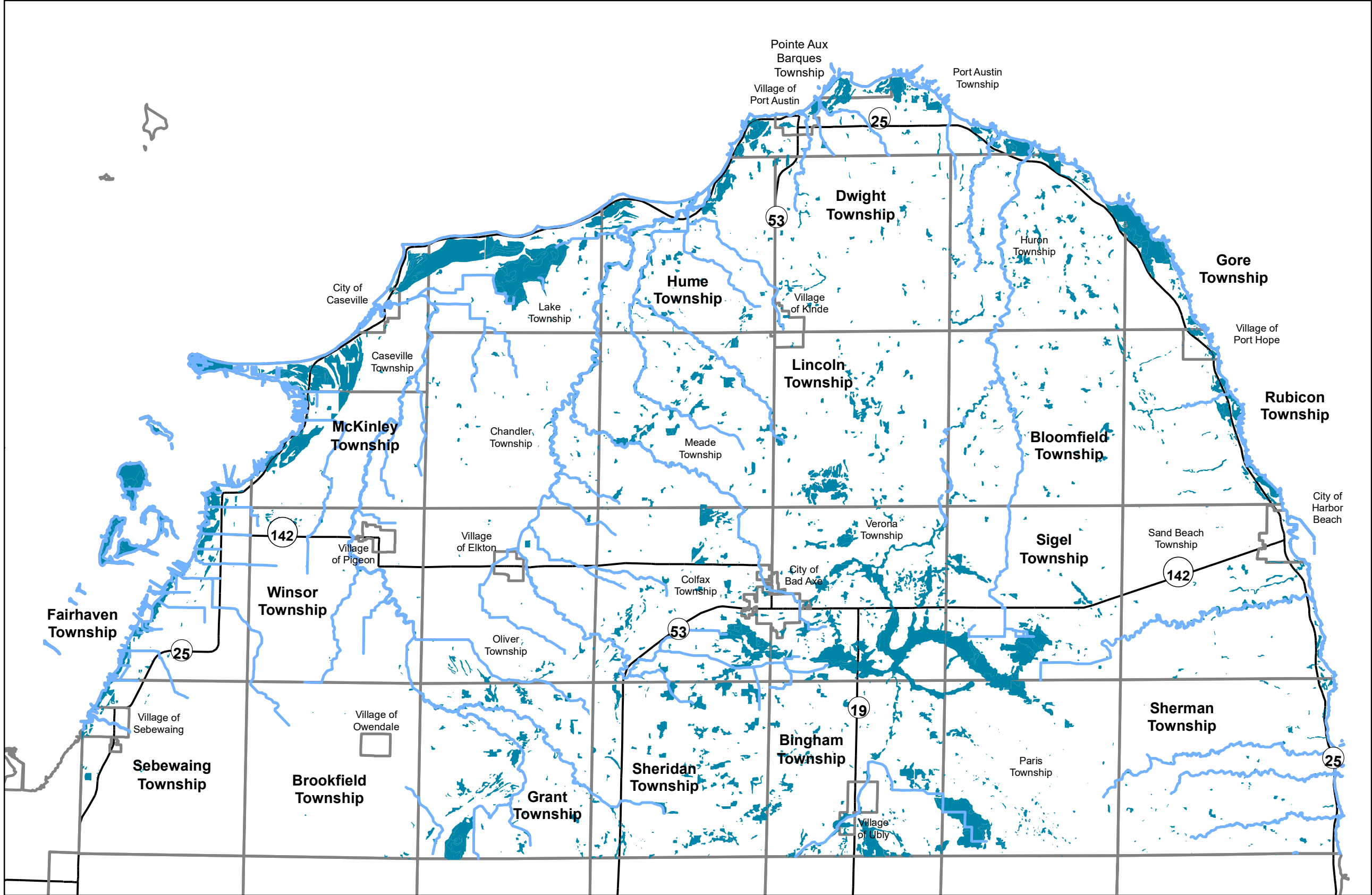
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Public Safety, Municipal Services, and Critical Facilities

Public Safety

Police

Police protection is provided by fourteen different agencies throughout the County, including the Sheriff's Department, which is responsible for all of Huron County, and the smaller local departments which work with only a few communities. The Huron County Sheriff's Department provides services throughout the County and is also responsible for other duties such as the County Jail, working with the Court systems, and patrol of the land and water. The Sheriff's department is located in Bad Axe, and they have three satellite stations in Pigeon, Harbor Beach, and Caseville. The Sheriff and the Bad Axe Police Department are the only 24/7 agencies in the County, and the Sheriff provides dedicated deputies in Caseville Township. In addition to regular patrol, the Sheriff's Department also has a safety education program, full-time jail staff, a detective bureau, marine patrol, and a dive team. The Huron County Jail is located in downtown Bad Axe, next to the County municipal offices. In addition to the services offered by the Sheriff's Department, there is a Sheriff's Office tip line.

There are also various other cities and villages in the County that have their own police services. Often these departments contract with the surrounding townships and provide services to that geographical area. These departments are an additional police presence on top of the work done by the Sheriff Department. These departments include Fairhaven Township which covers the entire Township, Ubyly Police which covers the Village and Bingham Township, and Port Austin Police which covers the Village and Port Austin Township. Aside from Port Hope, which the Sheriff's office covers, the remaining cities and villages in the County have their own police departments that do not serve additional jurisdictions. See Map 10 which outlines the different policing jurisdictions in the County.

Fire

In addition to police services, there are also various fire departments located throughout the County. Unlike the police, there is not a County-wide agent, instead each local unit is responsible for their own fire protection. Small communities often contract with adjacent townships to provide services to a coalition of communities. There are 14 separate volunteer fire departments interconnected by a mutual aid agreement that includes the neighboring Sanilac and Tuscola Counties. Generally, most townships have their own departments, the exceptions are an area north of Sebewaing in Fairhaven Township where both Fairhaven and Sebewaing Fire Departments cover, and Cass City's Fire Department from Tuscola County covers several sections of Grant Township. Map 11 illustrates where the fire stations are located and Tables 23a and 23b explain what each code on the maps represent.

The County also has a system of warning sirens in place that are located at all Fire Departments within Huron County. A map of the locations of all warning siren locations is found in Map 12. Warning sirens are owned and maintained by the local fire departments. The sirens provide tornado warnings to the community within range of the audio signal. The sirens can and are remotely activated by Huron County Central Dispatch as part of the tornado warning procedure within Huron County. The warning sirens are part of an overall process of public warning procedures in Huron County.

EMS

Ambulance service is available throughout the County. Ambulance services are provided by Central Huron EMS, East Huron EMS, Elkton EMS, Scheurer EMS, and Sebewaing EMS. Huron Behavioral Health provides mental health services in Huron County. Map 13 shows the EMS locations and districts.

Table 23a Police, Fire, and EMS Jurisdictions

Community	Police	Fire	EMS
Cities			
Bad Axe	BX01	3A01	A301
Caseville	ZYVC	3C01	A701
Harbor Beach	ZYHB	3G01	A501
Villages			
Elkton	ZYEV	3I01	A601
Kinde	ZYKV	3H01	A401
Owendale	ZYOV	3J01	A701
Pigeon	ZYPV	3I01	A701
Port Austin	ZYPA	3K01	A401
Port Hope	ZYPH	3L01	A501
Sebewaing	ZYSV	3M01	A801
Ubley	ZYUV	2B01	A201

Table 23b Police, Fire, and EMS Jurisdictions

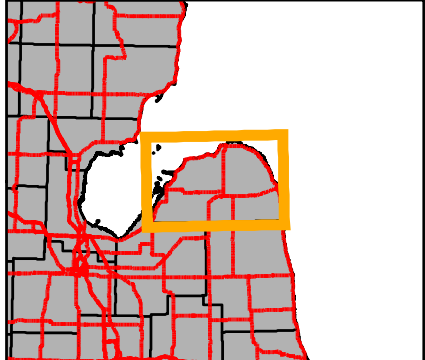
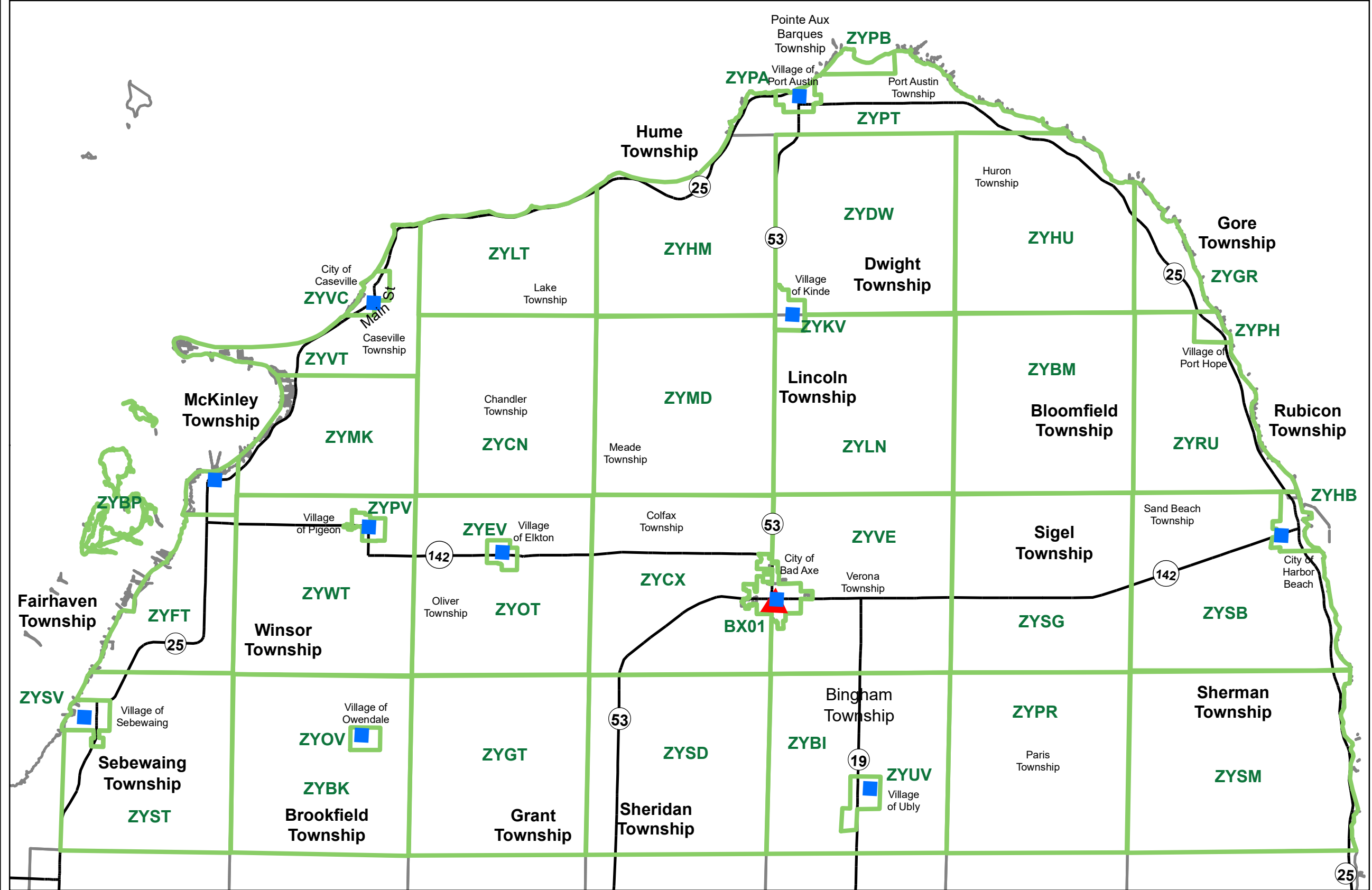
Community	Police	Fire	EMS
Townships			
Bingham	ZYBI	3B01	A201
Bloomfield	ZYBM	3L01	A501
Brookfield	ZYBK	3J01	A701/A801
Caseville	ZYVT	3C01	A701
Chandler	ZYCN	3I01/3P01/ 3C01	A601/A701
Colfax	ZYCX	3A01	A301
Dwight	ZYDW	3H01	A401
Fairhaven	ZYFT	3F01/3F02	A701/A801
Gore	ZYGR	3L01	A501
Grant	ZYGT	3I01/3D01	A601
Hume	ZYHM	3K01	A401
Huron	ZYHU	3L01	A501
Lake	ZYLT	3C01	A601
Lincoln	ZYLN	3H01	A301
McKinley	ZYMK	3P01	A701
Meade	ZYMD	3H01	A301
Oliver	ZYOT	3I01	A601
Paris	ZYPR	3N01	A201
Pointe Aux Barques	ZYPB	3K01	A401
Port Austin	ZYPT	3K01	A401
Rubicon	ZYRU	3L01	A501
Sand Beach	ZYSB	3G01	A501
Sebewaing	ZYST	3M01	A801
Sheridan	ZYSD	3B01	A201/A301
Sherman	ZYSM	3N01	A501
Sigel	ZYSG	3O01	A301/A501
Verona	ZYVE	3A01	A301
Winsor	ZYWT	3P01	A701

In addition to these emergency services, an enhanced 911 Authority was established 1994. The authority is made up of representatives from the State Police, Sheriff's Department, a Township representative, a citizen at large, a municipal representative, and a representative from the County Board of Commissioners.

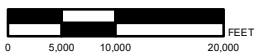
The 911 Facility/Dispatch and Huron County Emergency Services is located in the Sheriff's Department in Bad Axe. The charts above list the computer-aided dispatch codes indicating the jurisdiction for reporting purposes and statistical analysis.

LAW ENFORCEMENT DISTRICTS AND STATION LOCATIONS




Huron County, Michigan



AREA MAP
NOT TO SCALE



LEGEND

-  Huron County Sheriff
-  Local Police Stations
-  Law Enforcement Districts

Source:
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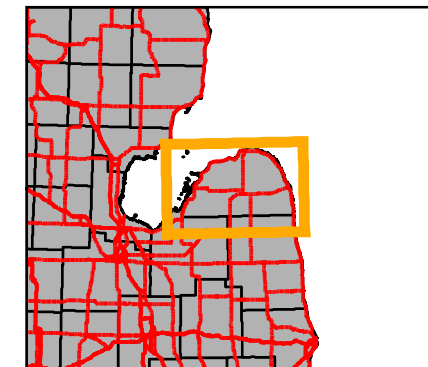
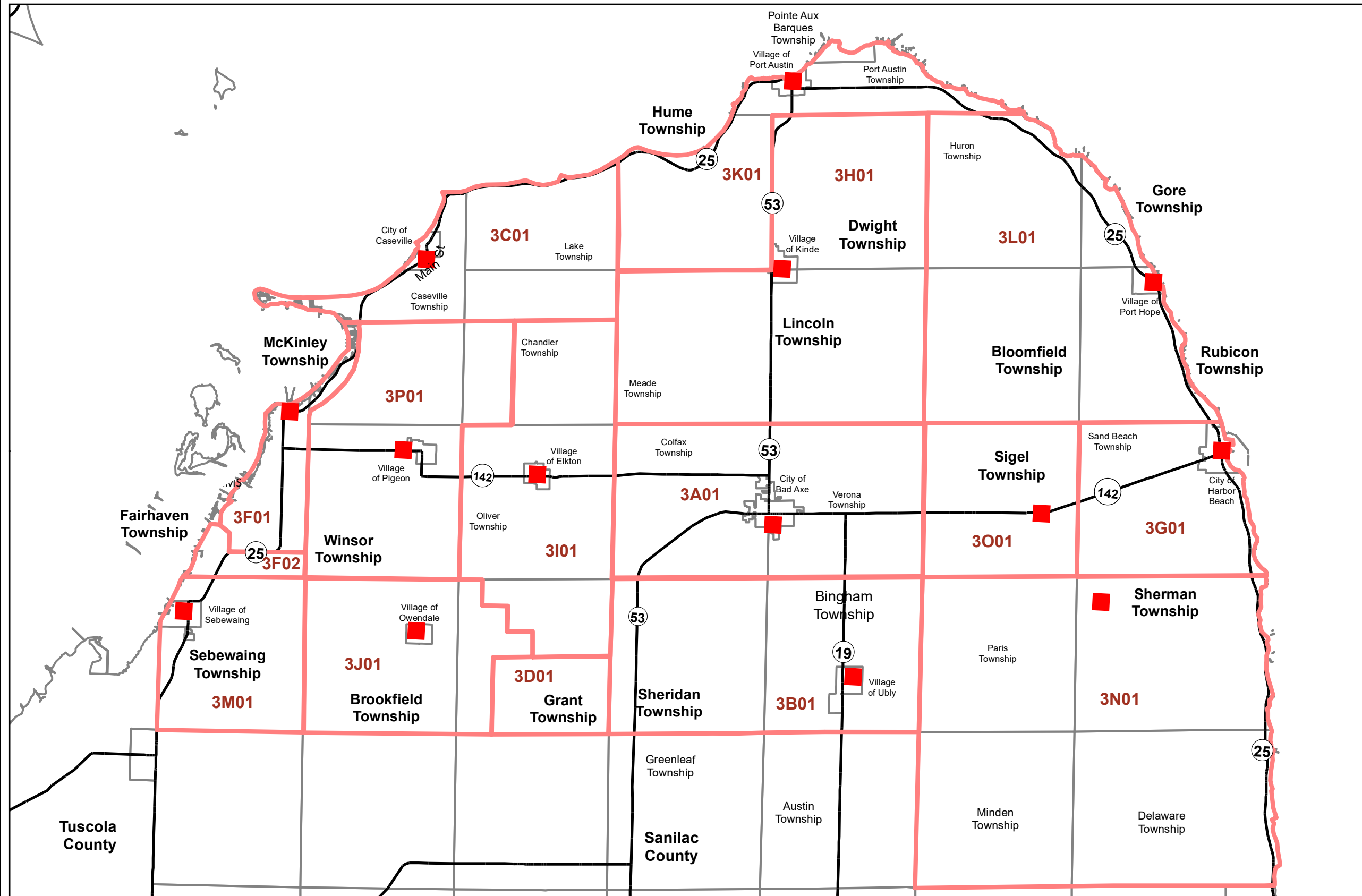


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FIRE DEPARTMENT DISTRICTS AND STATION LOCATIONS

Huron County, Michigan



AREA MAP
NOT TO SCALE



LEGEND

- Fire Stations
- Fire Districts

Key

- 3A01** - Sebewaing FD
- 3B01** - Bingham Twp FD
- 3C01** - Caseville Twp FD
- 3D01** - Cass City FD
- 3F01** - Fairhaven FD
- 3F02** - Fairhaven FD & Sebewaing FD
- 3G01** - Harbor Beach Area FD
- 3H01** - Kinde Area FD
- 3I01** - Oliver Twp FD (Elkton)
- 3J01** - Owendale FD
- 3K01** - Port Austin FD
- 3L01** - Port Hope FD
- 3M01** - Sebewaing FD
- 3N01** - Sherman Twp FD
- 3O01** - Sigel Twp FD
- 3P01** - Winsor Twp FD (Pigeon)

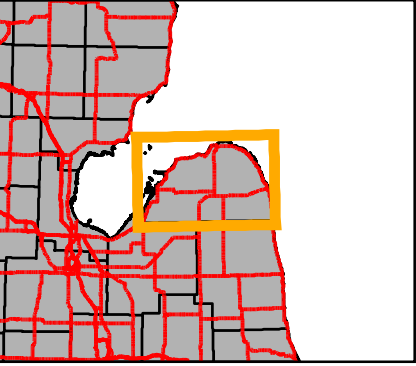
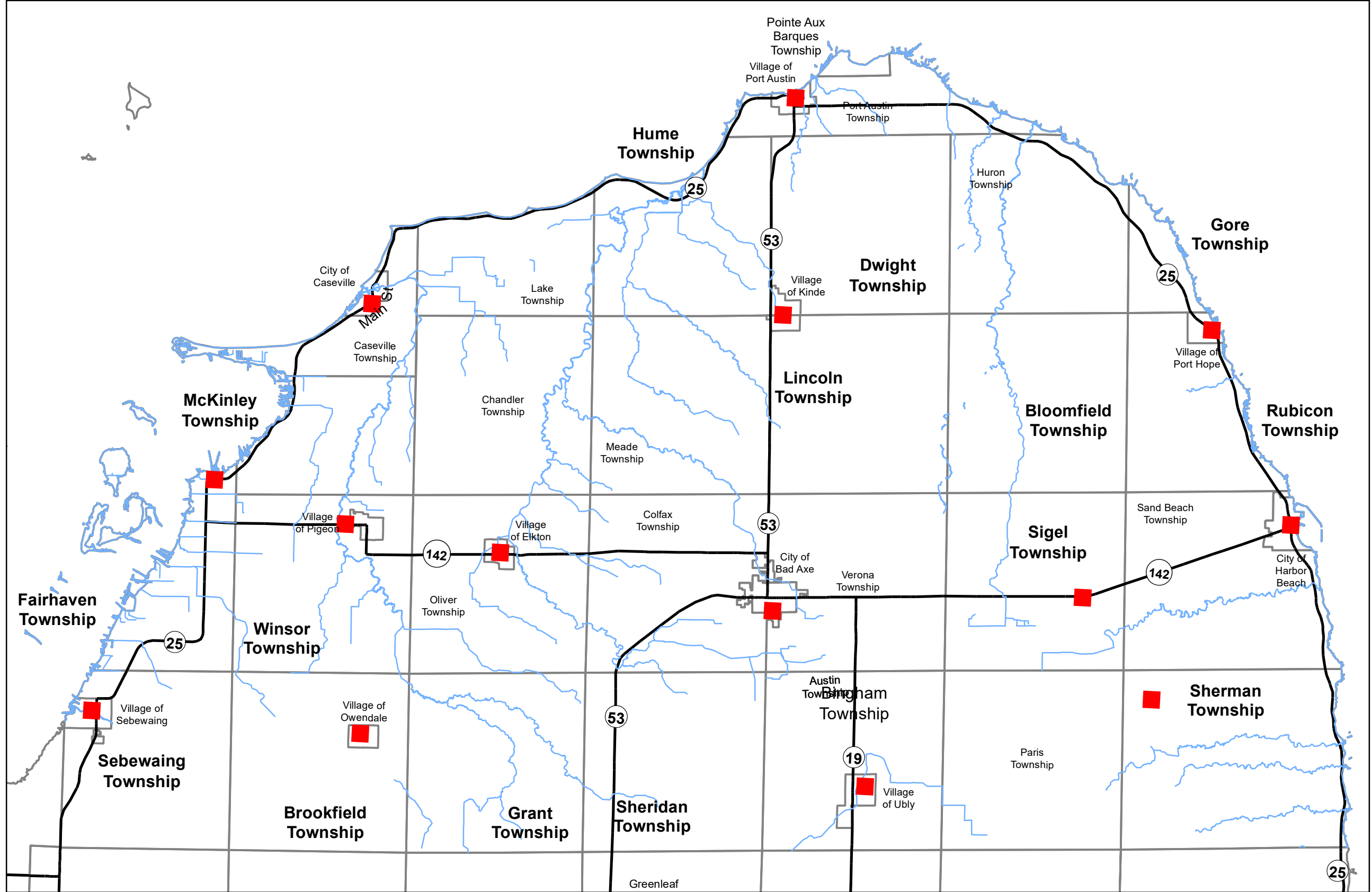
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TORNADO SIRENS

Huron County, Michigan



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LEGEND

■ Tornado Sirens

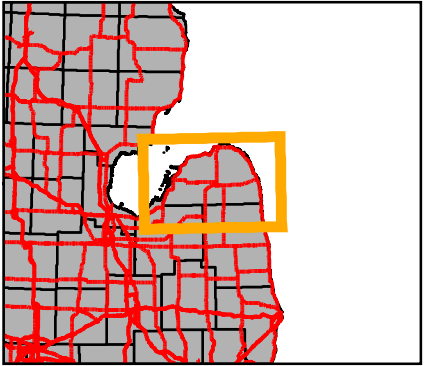
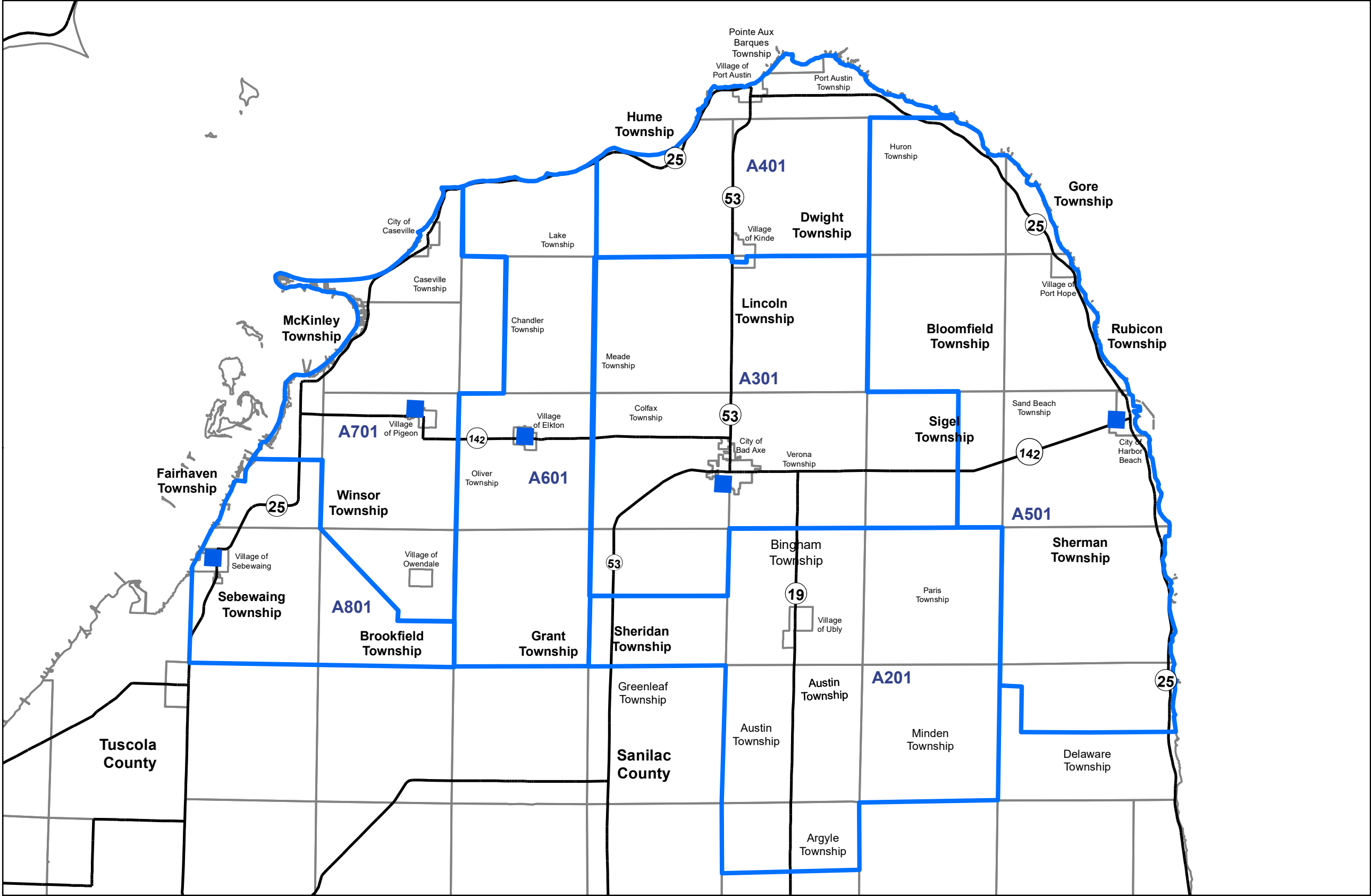
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EMS DISTRICTS AND LOCATIONS

Huron County, Michigan



AREA MAP
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LEGEND

- EMS Locations
- EMS Districts

Key

- A201 - Central Huron EMS
- A301 - Central Huron EMS
- A401 - Central Huron EMS
- A501 - East Huron EMS
- A601 - Elkton EMS
- A701 - Scheurer EMS
- A801 - Sebewaing EMS

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Water, Sewer, and Other Utilities

Water Service

Public water service is available in almost all the villages and cities in Huron County; each is maintained by a local DPW department and serves the local jurisdiction. In some cases, the water system extends outside of the municipality boundaries. In those instances, this results in water services for the following townships: Caseville, Gore, Huron, Pointe Aux Barques, Port Austin, Rubicon, Sand Beach, and Sebewaing. All the other areas in the townships are served by private wells. In the past, there has been discussion on extending the existing water systems further along the coast to serve the large residential population along M-25. In the future, if there were ever to be an expansion of water services in the County, these are the areas in which it would most likely occur.

Wastewater Service

Public wastewater systems are less readily available in the County. Almost all of the cities and villages have their own wastewater systems. However, none of the townships in the County have any. Personal septic systems serve all residents and businesses outside of a city or village limit. There are no plans to expand wastewater systems into any new townships in the future. Table 24 illustrates which community provides each service. Map 14 shows the location of the water and wastewater treatment facilities in the County.

Table 24a Water and Wastewater Services

Community	Water	Sewer
Cities and Villages		
Bad Axe	✓	✓
Caseville	✓	✓
Harbor Beach	✓	✓
Elkton	✓	✓
Kinde	✓	✓
Owendale	✓	✓
Pigeon	✓	✓
Port Austin	✓	✓
Port Hope	✓	✓
Sebewaing	✓	✓
Ubly	✓	

Table 24b Water and Wastewater Services

Community	Water	Sewer
Townships		
Bingham		
Bloomfield		
Brookfield		
Caseville	✓	
Chandler		
Colfax		
Dwight		
Fairhaven		
Gore	✓	
Grant		
Hume		
Huron	✓	
Lake		
Lincoln		
McKinley		
Meade		
Oliver		
Paris		
Pointe Aux Barques	✓	
Port Austin	✓	
Rubicon	✓	
Sand Beach	✓	
Sebewaing	✓	
Sheridan		
Sherman		
Sigel		
Verona		
Winsor		

Utilities

There are several utility providers in Huron County. The companies that provide Natural Gas to the County are Michigan Consolidated Gas (a subsidiary of DTE), Thumb Electric Cooperative, and Consumers Energy. Electric is provided by Consumers Energy, DTE Energy- Electric, and Thumb Electric Cooperative. Agri-Valley Communications, Ameritech, Verizon, Pigeon Telephone Company, Centurylink, provide local phone and internet services. Sebewaing Light and Water also provides electric, water, and internet to the village.

In addition to these providers, Huron County is also home to the ITC Thumb Loop, which is a high-capacity transmission line that was installed to meet the demand for wind energy transmission in the Thumb region. The line is approximately 140 miles and traverses through Sebewaing, Brookfield, Winsor, Oliver, Colfax, Verona, Sigel, and Paris Townships in Huron County. The line also extends into Tuscola, Sanilac, and St. Clair Counties. There are also four new substations that serve the transmission line, one of which is in Huron County.

Health Facilities

There are three hospitals in Huron County, Huron Memorial Hospital, Harbor Beach Community Hospital, and Scheurer Hospital, see Map 15. Huron Memorial Hospital, located in Bad Axe, is part of the Huron Medical Center that is composed of the hospital, specialty clinics, and associations with the Seton Cancer Institute, St. Mary's of Michigan, and Pontiac Osteopathic Hospital. Huron Medical Center is the only acute care hospital in the County. The hospital has a 24-hour emergency room and the facility has a total of 64 beds. Harbor Beach Community Hospital, located in Harbor Beach, is a critical access hospital with 64 beds that has a medical clinic in Port Austin. The third hospital in the County is Scheurer Hospital, located in Pigeon, which is part of the Scheurer Health Network. The hospital is a critical access hospital with 54 beds. The Scheurer Health network recently opened a primary care facility in Bad Axe. Together these three hospitals have a combined capacity of 182 beds.

The County Health Department is located in Bad Axe and provides a variety of services, including home care services, immunization, and nutrition education, to name a few. The Health Department's Environmental Section processes permits food establishment inspections, and inspections for on-site water wells and septic/drain field systems.

There are also several dozen nursing home facilities, assisted living facilities, and senior centers in the County; Map 16 illustrates the locations of these facilities at the end of this section. It is important to have an awareness of these facilities because these are vulnerable populations that will require special care in the case of an emergency.

Finally, Map 17 highlights the location of all the Red Cross Shelters in the County. In the time of an emergency, the Red Cross has several designated locations in the County where emergency shelters will be set up to house dispersed populations. These locations are facilities such as schools, churches, and facilities like American Legion halls.

Special Events

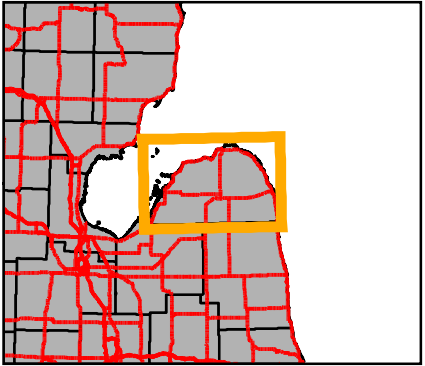
Tourism plays an important role in Huron County's economy. The following festivals take place each year in the County: Huron Community Fair, Bad Axe (early August); Perch Festival, Caseville (April); Bow Fishing Championship (May) and Walleye Tournament (July), Caseville; Caseville's Art Show and Sale (July); Caseville Slide; Cheeseburger Festival, Port Hope 4th of July Festival, Harbor Beach Maritime Festival, Pigeon Summer Fest and Wing Fling, and Fish Sandwich Festival in Bay Port.

There are several natural areas that draw crowds to the County, including Wildfowl Bay Wildlife Area near Bay Port; Rush Lake State Game Area near Caseville; Frank Murphy Memorial Museum, Harbor

Beach; restored lumbering town - Pioneer Huron City, Huron City; Gagetown State Game Area; Albert E. Sleeper State Park; Port Crescent State Park; Point Aux Barques, Port Austin lighthouses; public beaches; Thumb Area Great Lakes Bottomland Reserve (for diving); Wagener & Stafford and lighthouse; Sailboat Championship (June); boating resources (942 stream mileage, 92.5 Lake Huron shoreline mileage, access sites).

WATER AND WASTEWATER INFRASTRUCTURE


Huron County, Michigan

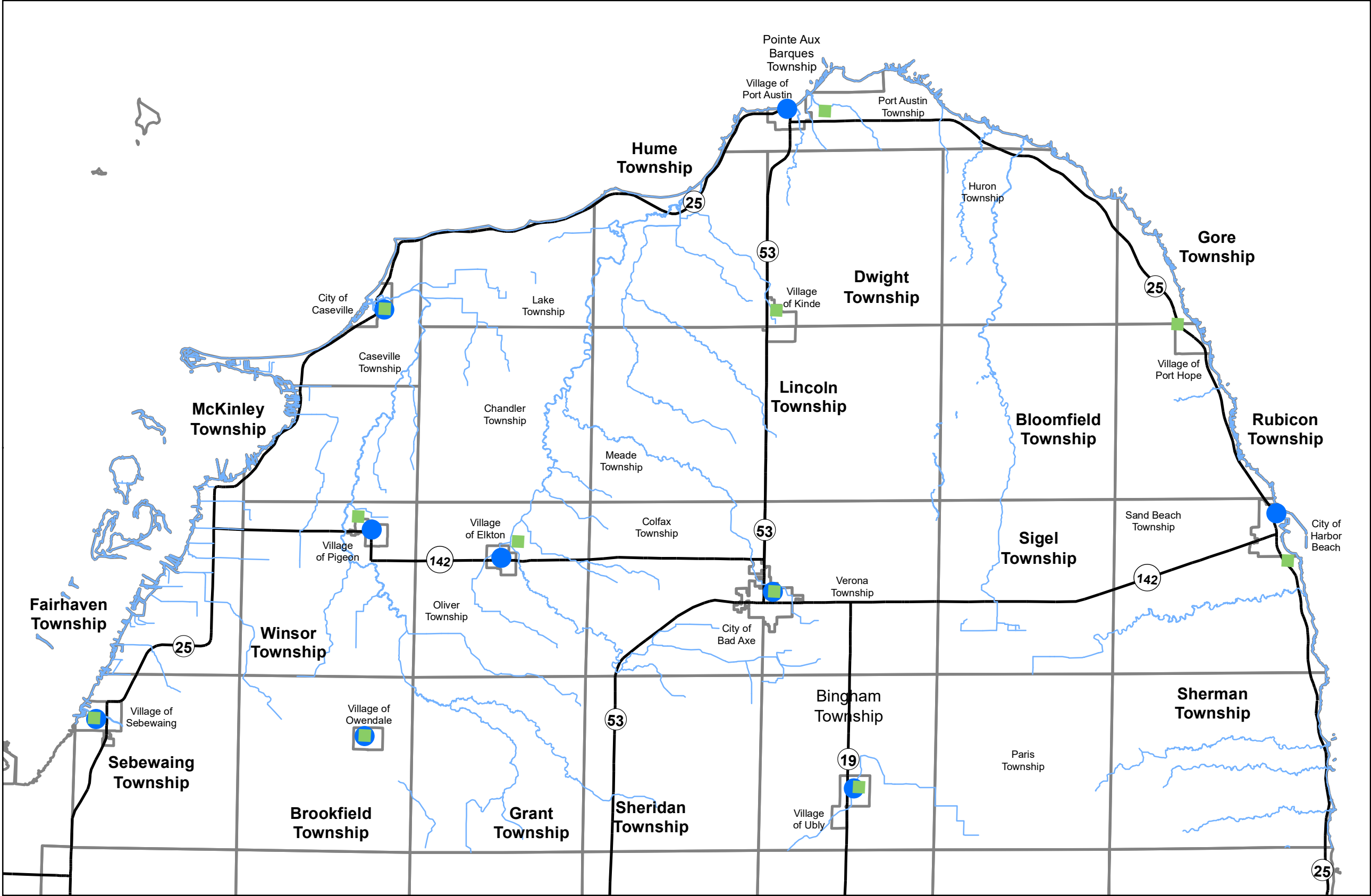


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LEGEND

-  Water Treatment Facilities
-  Wastewater Treatment Facilities



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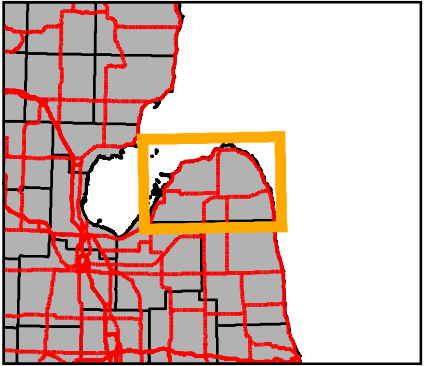
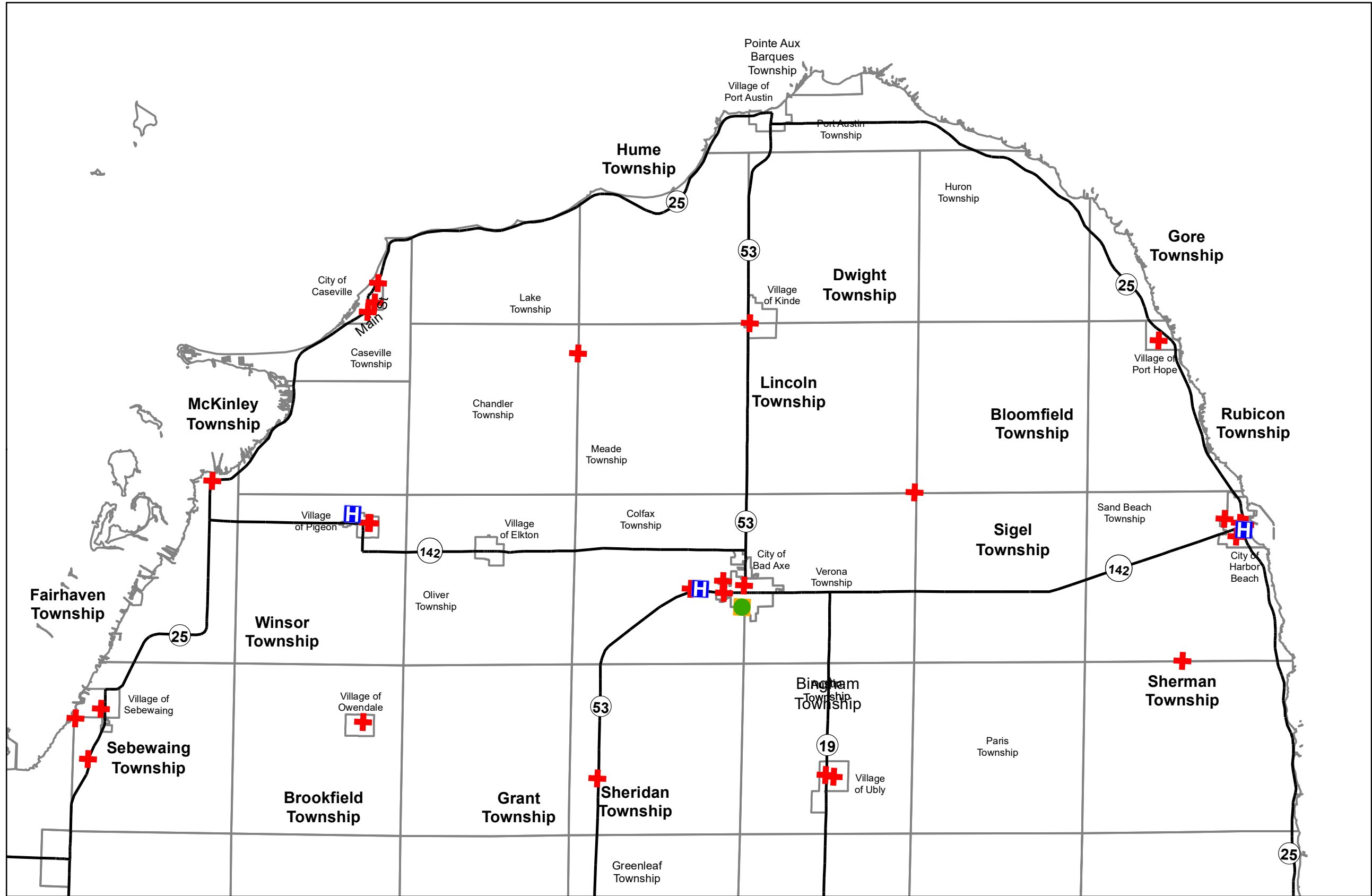
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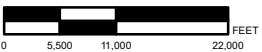
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EMERGENCY SERVICES

Huron County, Michigan



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LEGEND

- Huron County Emergency Services
- Hospitals
- Huron County 911/Dispatch
- Red Cross Shelters

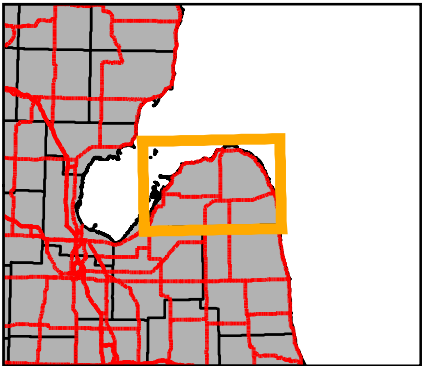
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ASSISTED LIVING FACILITES AND SENIOR CENTERS

Huron County, Michigan

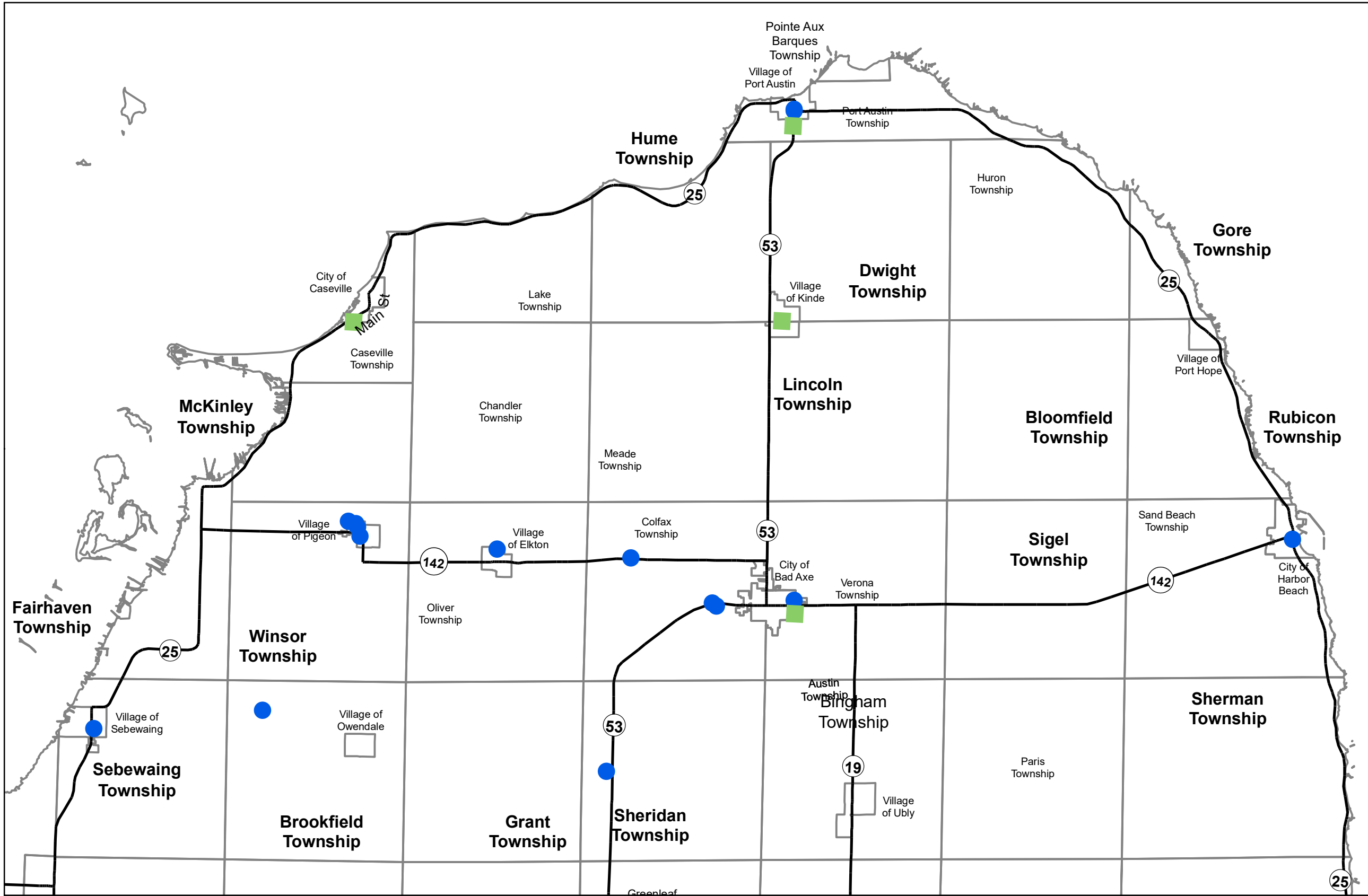


AREA MAP
NOT TO SCALE



LEGEND

- Assisted Living Facilities
- Senior Centers



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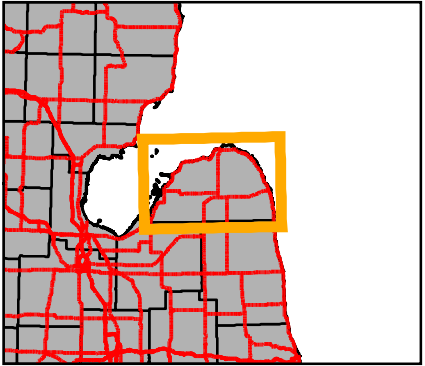
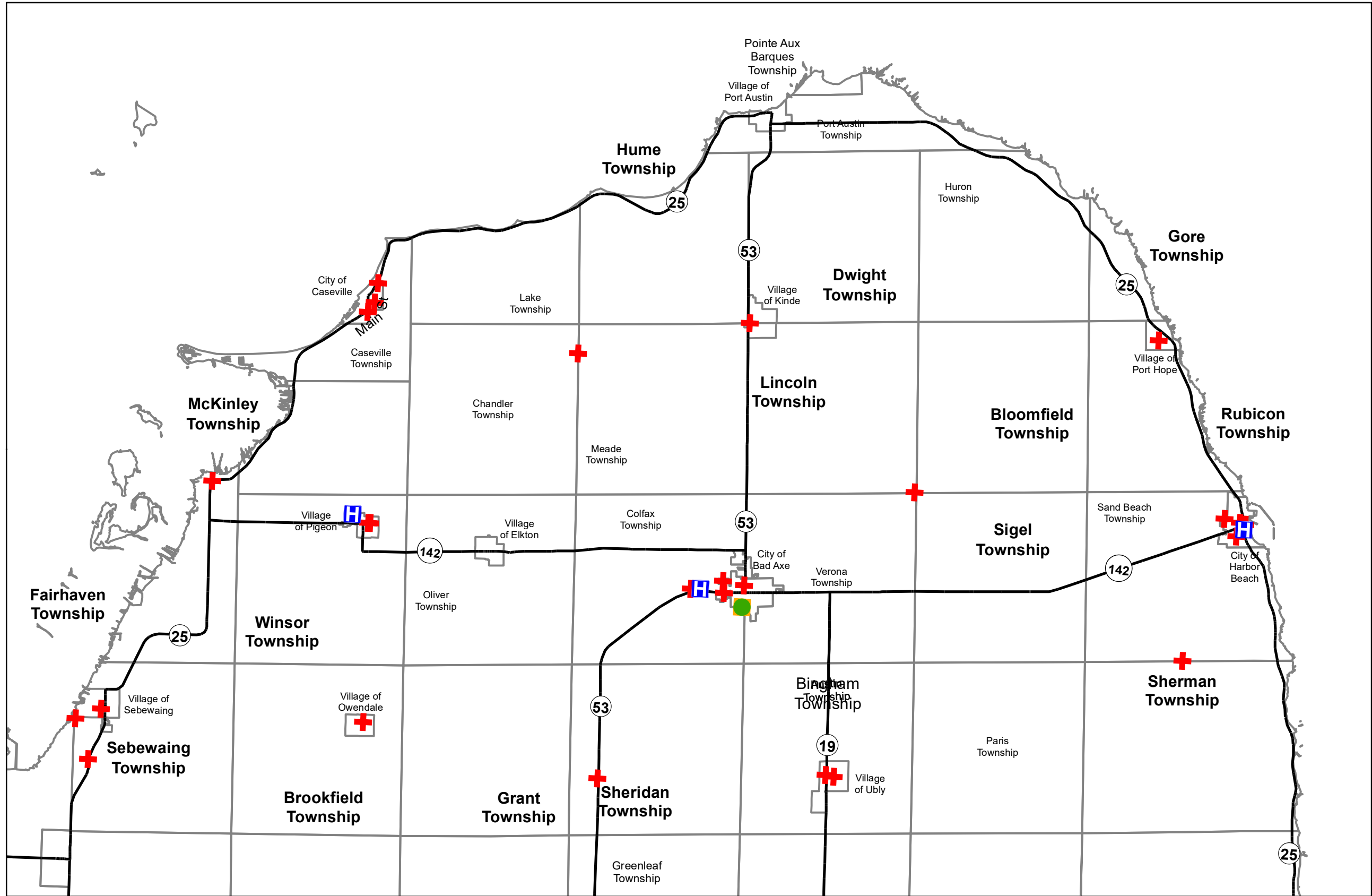
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EMERGENCY SERVICES

Huron County, Michigan



AREA MAP
NOT TO SCALE



LEGEND

- Huron County Emergency Services
- Hospitals
- Huron County 911/Dispatch
- Red Cross Shelters

Source:
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Hazard Assessment

Huron County is susceptible to a variety of natural, technological, and societal hazards. This section evaluates the hazards and takes into consideration the at-risk populations, buildings, transportation routes, and other key facilities described in the Community Profile.

Hazard Ranking Methodology

Risks were ranked on the basis of most likely scenario data collected for likelihood of occurrence, significance of threat, frequency of occurrence, geographic area impacted, and total population impacted. Information to rank the hazards was gathered from historical data, workgroup discussions, and emergency management professionals.

Members of the Huron County LEPC assisted with the hazard criteria and weighting process. The following list shows the rankings of which are most important to them. The six criteria which were ranked the most important were: Likelihood of Occurrence, Capacity to Cause Physical Damages, Percent of Population Affected, Speed of Onset, Duration of Threat from Hazard, and Potential for Causing Casualties. The LEPC did not change the criteria and ranking process from the past plan.

Multiple inputs were used to compile the hazard rankings, including an online survey, a paper survey, past events, and historical data. The online community input survey was made available to the general public at www.huroncountysurvey.com. The planning consultant, assisted by the LEPC, produced a press release announcing the survey and mailed it to various local media outlets. Print surveys were also made available at local libraries in Huron County. A copy of the press release is in Appendix B.

In addition to sharing information about what they thought were specific hazards and concerns to their home in Huron County, respondents were also asked to name the top three hazards that were of most concern to their home or neighborhood. The top five hazards of concern were: Strong winds, Thunderstorms, Winter Weather, Tornadoes, and Flooding. Respondents were also asked whether they had homeowners insurance, if they were located in the floodplain, what activities they had done to prepare for a potential hazard or disaster, and the importance of certain community-wide activities that could be done to reduce Huron County's risk from hazards. Finally, respondents were asked in which ways they would like to receive information from the community about how to make their homes and neighborhood more resistant to hazards. In total, at least one response was received from the 37 of the 39 governmental units in Huron County. For further review on the public outreach process for this Hazard Mitigation Plan, please see the compiled survey results and summary in Appendix D.

Each community in Huron County and all the residents were able to participate in a public input survey which began in January 2019 and lasted through March of 2019. When the survey was launched, a companion website was made available at <https://huronhazmit.blogspot.com> and publicized through Facebook. In addition to the online version of the survey, there were hard copies available at the local libraries (see example press release in Appendix D for exact locations) and at the Huron County Planning, Building, and Zoning Department. A summary of the survey results and a full compilation of the results are available for review in Appendix D. In total, there were 298 survey respondents from 37 of the 39 County jurisdictions.

Additionally, opportunities for general public input were available with the County Board of Commissioners, during its regular open meetings, authorized and publicized the meetings of the (Huron County Planning Commission) and the LEPC that related to the update of this hazard mitigation plan. The following is the list of communities that participated in the online survey:

- City of Bad Axe
- City of Caseville
- City of Harbor Beach
- Village of Elkton
- Village of Kinde
- Village of Pigeon
- Village of Port Austin
- Village of Port Hope
- Village of Sebewaing
- Village of Ubly
- Bingham Township
- Bloomfield Township
- Brookfield Township
- Caseville Township
- Chandler Township
- Colfax Township
- Dwight Township
- Fairhaven Township
- Gore Township
- Grant Township
- Hume Township
- Huron Township
- Lake Township
- Lincoln Township
- McKinley Township
- Meade Township
- Oliver Township
- Paris Township
- Port Austin Township
- Rubicon Township
- Sand Beach Township
- Sebewaing Township
- Sheridan Township
- Sherman Township
- Sigel Township
- Verona Township
- Winsor Township

Responses were not returned from Pointe Aux Barques Township and the Village of Owendale.

The following table (Table 25 Risk & Vulnerability Assessment) shows the resulting ranking chart that was developed by the LEPC.

Table 25 Risk and Vulnerability Assessment

Hazard	Likelihood of occurrence (0.25)	Capacity to cause physical damages (0.20)	Percent of Population affected (0.15)	Speed of onset (0.10)	Duration of threat from Hazard (0.10)	Potential for causing casualties (0.20)	Total	Rank
FLOODING	10	4	4	4	10	2	5.7	1
THUNDERSTORM HAZARDS	10	4	6	6	4	2	5.6	2
STRUCTURAL FIRES	10	2	2	10	3	2	4.9	3
SEVERE WINTER STORM HAZARDS	4	2	10	4	8	2	4.5	4
TRANSPORTATION ACCIDENTS	10	0	0	10	4	2	4.3	5
EXTREME TEMPERATURES	4	2	6	4	6	4	4.1	6
HAZARDOUS MATERIALS – TRANSPORTATION	4	2	2	10	6	2	3.7	7
PUBLIC HEALTH EMERGENCIES	2	0	6	0	10	6	3.6	8
WILDFIRES	2	4	2	10	4	3	3.6	9
PIPELINE ACCIDENTS	2	2	2	10	10	2	3.6	10
INVASIVE SPECIES	3	2	7	4	10	0	3.6	11
DROUGHT	2	2	10	0	10	1	3.6	12
HAZARDOUS MATERIALS – FIXED (Including Oil and Gas Wells)	2	2	2	10	10	2	3.6	13
INFRASTRUCTURE FAILURES	2	3	1	4	4	5	3.1	14
SABOTAGE/ TERRORISM	1	4	1	1	5	5	2.8	15
CIVIL DISTURBANCES	2	4	1	7	5	0	2.7	16
SUBSIDENCE	0	3	1	10	7	1	2.7	17
EARTHQUAKE	0	2	3	10	3	2	2.6	18
NUCLEAR POWER PLANT ACCIDENTS/Nuclear Attack	0							19

Ranking Criteria

Likelihood of Occurrence

- 10= Will occur within one year
- 8= Will occur within two years
- 6= Will occur within three years
- 4= Will occur within four years
- 2= Will occur within five years
- 0= Unlikely to occur

Capacity to Cause Physical Damages

- 10= Extreme physical damages (80+ % of structures damaged)
- 8= Significant physical damages (60+ % of structures damaged)
- 6= Sizeable physical damages (40+ % of structures damaged)
- 4= Some physical damages (30+ % of structures damaged)
- 2= Minor physical damages (0-10% of structures affected)
- 0= Unlikely to cause physical damages

Percent of Population Affected

- 10 = 80% to 100%
- 8 = 60% to 80 %
- 6 = 40% to 60%
- 4 = 20% to 40%
- 2 = 1% to 20% of structures affected
- 0= Unlikely to have any effect

Speed of Onset (Amount of Warning Time)

- 10 = No warning time
- 8 = 15 minutes or less
- 6 = about one hour
- 4 = 1 or 2 days
- 2 = 3 or 4 days
- 0= One week or more

Duration of Threat

- 10 = One week or more
- 8 = 3 or 4 days
- 6 = 1 or 2 days
- 4 = about one hour
- 2 = 15 minutes or less
- 0 = 1 minute or less

Potential for Causing Casualties

- 10 = 1000 people or more
- 8 = 200 - 1000 people
- 6 = 100 -200 people
- 4 = 11 to 50 people
- 2 = 10 people or less
- 0 = Unlikely to cause casualties

Many of the scores and rankings for 2020 hazards have shifted considerably compared to the 2008 Plan. The table below shows the hazard rankings from the past plan and this update.

Flooding is now the top-ranked hazard, up from 20 in the 2008 plan. However, the ranking for Thunderstorm hazards and Structural fires remain unchanged. The ranking for severe winter storm hazards dropped to number four from number one. Transportation accidents dropped slightly to fifth from being ranked fourth in 2008. Extreme temperatures had a small rise, now at the sixth ranking spot, up from seventh in 2008. Hazardous materials – transportation rose to the seventh ranking spot, up from ninth in 2008. Public health emergencies slipped to the eighth spot, which was ranked fifth in 2008. Wildfires rose to the ninth ranking spot, up from tenth in 2008. Pipeline accidents rose to the tenth ranking spot, up from 18th in 2008. Invasive species is a new hazard, ranked at number 11. Drought rose to the 12th ranking spot, up from 15th in 2008. Hazardous materials fixed (including oil and gas wells) fell slightly to the 13th ranking spot, down from 12th in 2008. Infrastructure failures fell to the 13th ranking spot, down from eight in 2008. Sabotage/Terrorism fell to the 15th ranking spot, down from 11th in 2008. Subsidence rose to the 16th ranking spot, up from 23 in 2008. Earthquakes were unchanged and remain at the 17th spot. Nuclear power plant/Nuclear attack fell to the 18th ranking spot, down from 14th in 2008.

And finally, there are three hazards that no longer have rankings. The explanation for this can be found in the upcoming Risk and Vulnerability Assessment chapter.

In addition to the public input survey, a website, huronhazmit.blogspot.com, was also created to keep people informed of the process and other important information. The website is open to the public and designed to inform citizens and help them be involved in the update.

It is important that not only local stakeholders be included in this process but that other neighboring counties have the opportunity to comment a participate in the update of the Huron County Hazard Mitigation Plan. The following is a list of the local governments that were given a copy for review:

City of Bad Axe	Caseville Township	Paris Township
City of Caseville	Chandler Township	Pointe Aux Barques
City of Harbor Beach	Colfax Township	Township
Village of Elkton	Dwight Township	Port Austin Township
Village of Kinde	Fairhaven Township	Rubicon Township
Village of Owendale	Gore Township	Sand Beach Township
Village of Pigeon	Grant Township	Sebewaing Township
Village of Port Austin	Hume Township	Sheridan Township
Village of Port Hope	Huron Township	Sherman Township
Village of Sebewaing	Lake Township	Sigel Township
Village of Ubly	Lincoln Township	Verona Township
Bingham Township	McKinley Township	Winsor Township
Bloomfield Township	Meade Township	Tuscola County
Brookfield Township	Oliver Township	

Each of these communities was requested to participate in the public meetings, fill out the survey, and review a draft of the plan. Tuscola County Emergency Management and Sanilac County both worked closely with the Huron county Emergency Management staff throughout the process providing comments on the plan and recommendations for the process. Tuscola County also participated in the local meeting efforts. The documentation for the local meetings is included in Appendix D.

In the following chapter, the Risk and Vulnerability Assessment, hazards that may occur in Michigan are listed. However, those relevant to Huron County are detailed and described further and are included to indicate possible hazards that have been addressed for the local communities. Most of the communities in Huron County have the same level of risk as each other for most of the Hazards which have been identified. Differences between jurisdictions are described further in the Risk and Vulnerability Assessment Chapter.

Table 26 Past and Current Hazard Rankings

Hazard	2020 Total Score	2020 Ranking	2008 Ranking
FLOODING	5.7	1	20
THUNDERSTORM HAZARDS	5.6	2	2
STRUCTURAL FIRES	4.9	3	3
SEVERE WINTER STORM HAZARDS	4.5	4	1
TRANSPORTATION ACCIDENTS	4.3	5	4
EXTREME TEMPERATURES	4.1	6	7
HAZARDOUS MATERIALS – TRANSPORTATION	3.7	7	9
PUBLIC HEALTH EMERGENCIES	3.6	8	5
WILDFIRES	3.6	9	10
PIPELINE ACCIDENTS	3.6	10	18
INVASIVE SPECIES	3.6	11	-
DROUGHT	3.6	12	15
HAZARDOUS MATERIALS – FIXED (Including Oil and Gas Wells)	3.6	13	12 (21)
INFRASTRUCTURE FAILURES	3.1	14	8
SABOTAGE/ TERRORISM	2.8	15	11
CIVIL DISTURBANCES	2.7	16	16
SUBSIDENCE	2.7	17	23
EARTHQUAKE	2.6	18	17
NUCLEAR POWER PLANT ACCIDENTS/Nuclear Attack		19	14 (6)
SCRAP TIRE FIRES	-	-	19
DAM FAILURES	-	-	22

Risk and Vulnerability Assessment

Introduction

In the following section, each hazard has a dedicated subsection. The subsection includes a general description of the hazard, a list of known historical occurrences, location, severity, and impacts, and a summary description of the County's vulnerability to each hazard, including expected frequency of occurrence in the future. Information has also been included regarding local jurisdictions where the hazard vulnerability is higher than that of the County.

The information was obtained from various sources including: local input, the Huron County Emergency Management coordinator, the LEPC, the Law Enforcement Information Network, National Climate Data Center internet database, National Flood Insurance Program, Flood Insurance Rate Maps, facilities, and mapping information from the Huron County Planning Department, guidance materials from the Michigan State Police Emergency Management, and Homeland Security Division (Michigan Hazard Analysis, Michigan Hazard Mitigation Plan, FEMA Hazard Mitigation Planning Workbook). Please note all-natural hazard event information was obtained from the Climate Data Center.

Likelihood of Occurrence

FEMA requires the Risk Assessment portion of this Plan to include an analysis of the likelihood of occurrence of each hazard described in this chapter. For future reference, the hazard's probability of occurrence is ranked on the following scale:

Table 27 Hazard Occurrences

Likelihood	Average Occurrences per Year
Extremely likely	More than one time per year
Likely	At least one time per year
Frequently	One occurrence every 5 years
Periodically	One occurrence every 5 – 10 years
Possibility	One occurrence every 10 – 20 years
Unlikely	One occurrence every 50 years

Changes to Hazards

There are two hazards that are no longer ranked or included in this plan, and they are Scrap Tire Fires and Dam Failures. The following paragraphs describe the reasoning behind the LEPC's decision to eliminate these hazards from the plan.

According to the Michigan Hazard Analysis document and the State of Michigan Hazard Mitigation Plan, the threat of Scrap Tire Fires has been almost completely eliminated statewide, and there are no longer any stockpiles in Huron County; therefore, the threat within the County is almost nonexistent. The committee thinks that because the stockpiles are depleted and there are sufficient strategies to deal

with the incoming tides, there is no need to include this hazard in the 2020 update of the plan. Dam failures was removed from the plan because there are no dams in Huron County; therefore, the threat of failure is nonexistent.

Hazard Types

FLOODING

The overflowing of rivers, streams, drains and lakes due to excessive rainfall, rapid snowmelt or ice.

Most Vulnerable Jurisdictions: Sebewaing Township, the Village of Sebewaing, Fairhaven Township, McKinley Township, Caseville Township, City of Caseville, Lake Township, Hume Township, Village of Port Austin, Port Austin Township, Pointe Aux Barques Township, Huron Township, Gore Township, Village of Port Hope, Rubicon Township, City of Harbor Beach, Sand Beach Township, Sherman Township, Brookfield Township, Winsor Township, Chandler Township, Meade Township, Colfax Township, City of Bad Axe, Sheridan Township, Dwight Township, Lincoln Township, Verona Township, Bingham Township, Bloomfield Township, and Sigel Township.

Floods can damage or destroy public and private property, disable utilities, make roads and bridges impassable, destroy crops and agricultural lands, cause disruption to emergency services, and result in fatalities. People may be stranded in their homes for several days without power or heat, or they may be unable to reach their homes at all. Long-term collateral dangers include the outbreak of disease, widespread animal death, broken sewer lines causing water supply pollution, downed power lines, broken gas lines, fires, and the release of hazardous materials.

Flood-prone areas are found throughout the state, as every lake, river, stream, and county drain has a floodplain. The type of development that exists within the floodplain will determine whether or not flooding will cause damage. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) estimates that about 6% of Michigan's land is flood-prone, which includes about 200,000 buildings.

Floodplain areas are identified based on hydrologic studies and topographic surveys, as well as, soil studies and land cover characteristics. The result of this research is a statistical model that indicates an area vulnerable to the "100-year flood". This is the elevation that has a 1% chance of being equaled or exceeded each year. It is also referred to as the "1% annual chance flood."

The 100-year flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance. Structures located in the flood hazard area have a 26% chance of suffering flood damage during the term of a 30-year mortgage. This means a home in the mapped flood hazard area is five times more likely to be damaged by flood than to have a major fire. Huron County requested official information from FEMA about the NFIP-designated "repetitive loss properties" in August of 2020. Michigan State Police also requested information from FEMA in early 2022. Since updated information was not received in time to be incorporated into this plan update within the designated planning grant performance period, this plan had to consider some older data instead, as the "best

available" information. According to a spreadsheet from 2017 that was obtained from MSP/EMHSD, Huron County does at least have one Severe Repetitive Loss property located in Fairhaven Township. This property is of single-family residential type, and suffered multiple flood losses during the 1980s. According to this 2017 data, the property's risks had not been mitigated, but the property was also listed as not insured at time, but consideration should be given to verify this information. The viability of flood mitigation will then be considered after the newest information has been obtained and assessed at that time.

The southern half of the Lower Peninsula contains the areas with the most flood damage potential. The primary flooding sources include the Great Lakes and connecting waters, thousands of miles of rivers and streams, and hundreds of inland lakes. Michigan is divided into 63 major watersheds. All of these watersheds experience flooding, although the Saginaw River Watershed, and many others in the state, have experienced the most extensive flooding problems or have significant damage potential.

Riverine Flooding

The periodic occurrence of over bank flows of rivers and streams resulting in partial or complete inundation of the adjacent floodplain.

Riverine floods are generally caused by prolonged, intense rainfall, snowmelt, ice jams, dam failures, or any combination of these factors. Such overbank flows are natural events that may occur on a regular basis. Riverine floods occur on river systems whose tributaries may drain large geographic areas and encompass many independent river basins. Floods on large river systems may continue for several days. Many areas of Michigan are subject to riverine flooding. Flash flooding differs from riverine flooding in extent and duration. Flash floods are brief, heavy flows on small streams or in normally dry creeks. Flash floods are normally the result of locally-intense thunderstorms resulting in significant rainfall. Flash floods are typically characterized by high-velocity water, often carrying large amounts of debris. Urban flooding involves the overflow of storm sewer systems and is usually caused by inadequate drainage following heavy rainfall or rapid snowmelt.

Most riverine flooding occurs in early spring and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Ice jams also cause flooding in winter and early spring. Severe thunderstorms may cause flooding during the summer or fall, although these are normally localized and have more impact on watercourses with smaller drainage areas. Oftentimes, flooding may not necessarily be directly attributable to a river, stream, or lake overflowing its banks. Rather, it may simply be the combination of excessive rainfall and/or snowmelt, saturated ground, and inadequate drainage. With no place to go, the water will find the lowest elevations, including areas that are often not in a floodplain. This type of flooding is becoming increasingly prevalent in Michigan, as development outstrips the ability of the drainage infrastructure to properly carry and disburse the water flow. Flooding also occurs due to combined storm and sanitary sewers that cannot handle the tremendous flow of water that often accompanies storm events. Typically, the result is wastewater backing up into basements, which damages mechanical systems and can create serious public health and safety concerns.

The flooding of land adjoining the normal course of a stream or river is a natural occurrence. However, development around natural water courses has increased serious flooding potential. Rainfall that would naturally soak into the ground or take several days to reach a river or stream, now quickly runs off streets, parking lots, rooftops, and through man-made channels and pipes. Development that encroaches on the floodplain impedes the carrying capacity of the water drainage basin and exacerbates flooding. Damage could be more easily avoided if floodplain areas were left in their natural state.

Shoreline Flooding/Erosion

Flooding and erosion along Michigan's 3,200 mile-long Great Lakes shoreline are typically caused by high Great Lakes water levels, storm surges, or high winds.

Shoreline flooding and erosion are natural processes that occur at normal and even low Great Lakes water levels. During periods of high water, however, flooding and erosion are more frequent and serious, causing damage to homes, businesses, roads, water distribution and wastewater treatment facilities, and other structures in coastal communities. Water levels along the Lake Huron shoreline are at an all-time high. Windstorms and differences in barometric pressure can temporarily tilt the surface of a lake up at one end as much as eight feet. This phenomenon is called a storm surge and can drive lake water inland over large areas

Previous Events (Source: National Centers for Environmental Information, 2020)

Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
	2/21/1997	Flood		0	0		
COUNTYWIDE	2/21/1997	Flash Flood		0	0	\$50,000	
	8/20/1997	Flood		0	0	\$50,000	
	5/12/2000	Flood		0	0	\$20,000	
PIGEON	5/12/2000	Flash Flood		0	0	\$35,000	
	2/9/2001	Flood		0	0	\$4,000	
	3/5/2004	Flood		0	0		
COUNTYWIDE	3/5/2004	Flash Flood		0	0		
ELKTON	5/31/2010	Flash Flood		0	0		
	10/16/2019	Lakeshore Flood		0	0		
	10/31/2019	Lakeshore Flood		0	0		
SEBEWAING ARPT	11/1/2019	Flood		0	0	\$5,000	
	1/11/2020	Lakeshore Flood		0	0	\$100,000	
	7/19/2020	Lakeshore Flood		0	0		
SEBEWAING ARPT	8/16/2020	Flash Flood		0	0		
SEBEWAING ARPT	8/16/2020	Flood		0	0		

Huron County Perspective

Flooding by rivers is an issue for Huron County. Flood-prone areas in Huron County are located on FEMA Flood Insurance Rate Maps (FIRM), see Map 18. Flooding may also occur in low-lying areas due to quick rainfall events that inundate storm water sewers. These events generally coincide with slow-moving storms that produce an enormous amount of rain in a short period of time. Most of the time, flooding can be considered a temporary hazard, lasting from hours to days. The duration of the flooded area is dependent on the speed of the storm. Not every community in Huron County lies within a floodplain; however, a community may experience flooding problems by events that overwhelm storm water drainage capacities. Flooding can also occur due to ice jams on rivers.

Huron County applied for access to the information on repetitive loss in November 2020 and is waiting for approvals. When granted access to it, the information will be incorporated into the plan with the goal of combining ideas and projects to reduce any repetitive losses that may be discovered in the data from the flood insurance program. We will encourage and inform property owners in a repetitive loss situation of the options available to reduce or eliminate losses from floods.

THUNDERSTORM HAZARDS (INCLUDING HAIL, LIGHTNING, AND TORNADOES)

Four types of hazards that may be encountered during a thunderstorm: thunderstorm winds, lightning strikes, hail, and tornadoes. Most storms are often characterized by one or more of these elements; therefore, all storm types are classified under Thunderstorm Hazards.

Hail

A condition where atmospheric water particles from thunderstorms form into rounded or irregular lumps of ice that fall to the earth.

Most Vulnerable Jurisdictions: All

Hail is a product of the strong thunderstorms that frequently move across the State. As one of these thunderstorms passes over, hail usually falls near the center of the storm, along with the heaviest rain. Sometimes, however, strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, causing an unexpected hazard at places that otherwise might not appear threatened. Hailstones range in size from a pea to a golf ball. Hailstones larger than baseballs are possible in the most severe thunderstorms. Hail is formed when strong updrafts in thunderstorms provide a medium for the growth and accumulation of ice crystals. A hailstone continues to grow until updrafts can no longer hold its weight aloft. Hailstones then descend to the ground, battering crops, denting autos, and injuring wildlife and people. Hail causes \$1 billion in damage nationwide each year. Large hail is a characteristic of severe thunderstorms, and it can be associated with the occurrence of a tornado.

Hail events in Huron County are extremely likely. Thunderstorms are a good indicator of hail severity: minor hailstorms (one-half inch diameter or less) generally coincide with garden-variety thunderstorms, and moderate to severe hailstorms (three-quarter inch to baseball-sized) occur during thunderstorm and tornado warnings.

Previous Events (Source: National Center for Environmental Information, 2020)

Location	Date	Event Type	Magnitude (Inches)	Deaths	Injuries	Property Damage	Crop Damage
	6/12/1969	Hail	1.5	0	0		
	5/6/1986	Hail	1.5	0	0		
	5/6/1986	Hail	1.5	0	0		
	5/28/1991	Hail	0.75	0	0		
	7/3/1991	Hail	0.75	0	0		
	5/2/1992	Hail	0.88	0	0		
	5/2/1992	Hail	0.75	0	0		
	5/2/1992	Hail	0.75	0	0		
	8/10/1992	Hail	0.75	0	0		
	8/10/1992	Hail	1.75	0	0		
PIGEON	9/9/1993	Hail	1	0	0		
BAD AXE	9/9/1993	Hail	0.75	0	0		
KINDE	5/19/1996	Hail	1	0	0		
KINDE	7/8/1996	Hail	0.75	0	0		
BAD AXE	8/7/1996	Hail	0.75	0	0		
PARISVILLE	9/11/1996	Hail	1.75	0	0		
SEBEWAING	5/6/1998	Hail	0.88	0	0		
SEBEWAING	5/19/1998	Hail	1.25	0	0		
BAY PORT	5/19/1998	Hail	0.75	0	0		
HARBOR BEACH	5/19/1998	Hail	1.5	0	0		
RUTH	5/31/1998	Hail	0.75	0	0		
CASEVILLE	9/26/1998	Hail	0.75	0	0		
PORT HOPE	5/17/1999	Hail	1.75	0	0		
PORT AUSTIN	5/17/1999	Hail	0.75	0	0		
SEBEWAING	6/10/1999	Hail	1	0	0		
SEBEWAING	5/12/2000	Hail	2.75	0	0		
OWENDALE	7/14/2000	Hail	0.75	0	0		
BAD AXE	8/2/2000	Hail	0.75	0	0		
BAD AXE	8/2/2000	Hail	0.75	0	0	\$5,000	
HARBOR BEACH	8/8/2000	Hail	0.75	0	0		
PORT AUSTIN	8/30/2001	Hail	0.75	0	0		
BAD AXE	8/21/2003	Hail	1.75	0	0		
HARBOR BEACH	8/21/2003	Hail	0.75	0	0		
OWENDALE	11/12/2003	Hail	0.75	0	0		
SEBEWAING	4/18/2004	Hail	0.88	0	0		
ELKTON	4/18/2004	Hail	1.75	0	0		
PIGEON	5/17/2004	Hail	0.75	0	0		
ELKTON	6/13/2004	Hail	1	0	0		

Location	Date	Event Type	Magnitude (Inches)	Deaths	Injuries	Property Damage	Crop Damage
BAD AXE	6/13/2004	Hail	0.75	0	0		
BAD AXE	6/13/2004	Hail	2	0	0		
BAD AXE	6/5/2005	Hail	1	0	0		
PORT HOPE	6/5/2005	Hail	0.75	0	0		
ULBY	6/14/2005	Hail	0.75	0	0		
VERONA	5/25/2006	Hail	0.75	0	0		
PORT HOPE	5/28/2006	Hail	0.75	0	0		
HELENA	5/30/2006	Hail	0.88	0	0		
PIGEON	5/30/2006	Hail	1	0	0		
BAD AXE	5/15/2007	Hail	2.75	0	0		
BAD AXE	5/15/2007	Hail	2.5	0	0		
BAD AXE	5/15/2007	Hail	1.5	0	0		
ELKTON	9/11/2007	Hail	0.75	0	0		
BAD AXE	4/25/2008	Hail	1	0	0		
CASEVILLE	6/8/2008	Hail	0.88	0	0		
IVANHOE	5/7/2009	Hail	0.75	0	0		
QUARRY	9/21/2010	Hail	0.75	0	0		
ELKTON	4/10/2011	Hail	1	0	0		
BAD AXE	4/10/2011	Hail	0.75	0	0		
HURON CITY	5/22/2011	Hail	1.5	0	0		
CASEVILLE	3/15/2012	Hail	0.75	0	0		
HARBOR BEACH	3/15/2012	Hail	1	0	0		
POPPLE	3/15/2012	Hail	0.75	0	0		
QUARRY	5/3/2012	Hail	1	0	0		
KINDE	5/3/2012	Hail	0.75	0	0		
WADSWORTH	9/5/2012	Hail	0.75	0	0		
ULBY	9/5/2012	Hail	1	0	0		
HARBOR BEACH	8/1/2013	Hail	1	0	0		
CASEVILLE	8/2/2015	Hail	1	0	0		
PIGEON	8/2/2015	Hail	1	0	0		
POPPLE	8/2/2015	Hail	0.88	0	0		
BAD AXE	8/2/2015	Hail	0.75	0	0		
HARBOR BEACH	8/2/2015	Hail	1	0	0		
REDMAN	5/29/2016	Hail	1	0	0	\$500	
CASEVILLE	7/23/2017	Hail	0.75	0	0		

Huron County Perspective

Based on past hailstorm occurrences for Huron County, at least one hailstorm per year is anticipated; therefore, this hazard is extremely likely. Costs include deaths and injuries, ruined crops in agricultural areas, damaged property (cars, homes, and businesses), clean-up, and infrastructure failure.

The chart above includes the hail events in Huron County since 1969. There has been at least one noteworthy hail event in Huron County every year, and most years had several hail events. According to the National Climate Data Center information, only two storms caused property damage, but depending on the size of hail, it often creates damage to cars, structures, and crops. Each of these events has the potential to affect multiple locations within the County. The effects and impacts of these events vary by the diameter of the hailstone. The largest diameter of hail in the history of Huron County was reported in 2007, where hailstones were 2.75 inches in diameter. Most of the reported hail events range from 0.75 inches to 1.5 inches in diameter. There are no known areas within the County that have an unusual risk from hail, but there are some communities that may have particular structures that are more vulnerable to hail damage than others.

Lightning

The discharge of electricity from within a thunderstorm.

Most Vulnerable Jurisdictions: All

Lightning is a random and unpredictable product of a thunderstorm's tremendous energy. The energy in the storm produces an intense electrical field similar to that of a giant battery. The positive charge is concentrated at the top inside the storm, and the negative charge is concentrated at the bottom. Lightning strikes when a thunderstorm's electrical potential (the difference between its positive and negative charges) becomes great enough to overcome the resistance of the surrounding air. Bridging that difference, lightning can jump from cloud to cloud, cloud to ground, or even from the cloud to the air surrounding the thunderstorm. Lightning strikes can generate current levels of 30,000 to 40,000 amperes, with air temperatures often superheated to higher than 50,000 degrees Fahrenheit (hotter than the surface of the sun) and speeds approaching one-third the speed of light.

In the United States, approximately 100,000 thunderstorms occur each year, and every one of those storms generates lightning. It is not uncommon for a single thunderstorm to produce hundreds or even thousands of lightning strikes, however, to the vast majority of the general public, lightning is perceived as a minor hazard. That perception remains despite the fact that lightning damages many more structures, causes more fatalities, and injures more people in the United States per year, on average, than tornados and hurricanes. Annual lightning-related property damages are conservatively estimated at several billions of dollars per year, and those losses are expected to continue to grow as the use of computers and other lightning-sensitive electronic components become ever more prevalent. Statistics compiled by the National Oceanic and Atmospheric Association (NOAA) and the National Lightning Safety Institute revealed the following about lightning fatalities, injuries, and damage in the United States:

Location of Lightning Strikes:

- 40% are at unspecified locations
- 27% occur in open fields and recreation areas (not golf courses)
- 14% occur to someone under a tree (not on a golf course)
- 8% are water-related
- 5% are golf related
- 3% are related to heavy equipment or machinery
- 2.4% are telephone-related
- 0.7% are radio, transmitter and antenna-related

Months of Most Strikes

- July (30%)
- August (22%)
- June (21%)
-

Previous Events (Source: National Center for Environmental Information, 2020)

Location	Date	Event Type	Deaths	Injuries	Property Damage	Crop Damage
BAD AXE	7/9/2000	Lightning	0	0	\$35,000	
BAD AXE	7/28/2002	Lightning	0	0	\$300,000	
HARBOR BEACH	7/17/2006	Lightning	0	0	\$200,000	
CASEVILLE	7/27/2014	Lightning	0	0	\$5,000	
CASEVILLE	7/27/2014	Lightning	0	0	\$30,000	

Huron County Perspective

Thunderstorms are very likely in any given year causing costs for response, damage to housing units, infrastructure failure, and death and major injuries. Areas in the County more at-risk than others to lightning are those residences or recreational areas near water, as well as open recreation areas with fewer places to take shelter, such as golf courses.

Huron County is not an exception when it comes to damaging lightning strikes, the event is extremely likely to occur in the County. Since 2000, the National Climate Data Center has recorded five damaging lightning strikes in the County. Each of these have occurred in July, and have caused up to \$300,000 of damage in one single event. However, it can be assumed that this is not an accurate representation of the actual lightning strikes that occur in the County each year. Thunderstorms are a common occurrence throughout the State, and the proximity to the Great Lakes is another factor that increases the likelihood of thunderstorms and lightning in the County. The property damage costs do not take into consideration the economic costs or costs to human health. Lightning strikes are an unpredictable but a very real threat to the County.

Thunderstorm Wind/Severe Wind

According to the National Weather Service, winds 58 miles per hour or greater are classified as a windstorm.

Most Vulnerable Jurisdictions: All

Windstorms are a fairly common occurrence in many areas in Michigan. Along the Great Lakes shoreline, strong winds occur with regularity. Severe winds spawned by thunderstorms or other storm events have had devastating effects on Michigan in terms of loss of life, injuries, crop damage, and property damage. Severe wind events are characterized by wind velocities of 58 miles per hour or greater, with gusts sometimes exceeding hurricane velocity winds (74 mph). Sometimes damage from these wind storms may require temporary sheltering of individuals without power for extended periods of time.

Property damage from straight-line winds, called derechos, can be just as extreme as that of a tornado, since the damage from straight-line winds is more widespread and usually affects a larger area. In addition to property damage, there is a risk for infrastructure damage from downed power lines due to falling limbs and trees. Large-scale power failures with hundreds of thousands of customers affected are common during straight-line wind events. Windstorms occur in all areas of Michigan, although more often along the lakeshore and in central and southern Lower Michigan.

[Previous Events](#) (Source: National Center for Environmental Information, 2020)

Location	Date	Event Type	Magnitude (Wind Speed)	Deaths	Injuries	Property Damage	Crop Damage
COUNTYWIDE	7/13/1995	Thunderstorm Wind	68	1	0	\$300,000	
	3/25/1996	High Wind	50	0	0		
	10/30/1996	High Wind	60	0	0		
	2/27/1997	High Wind	55	0	0		
	4/6/1997	High Wind	70	0	0	\$50,000	
SEBEWAING	7/14/1997	Thunderstorm Wind	52	0	0		
SEBEWAING	5/31/1998	Thunderstorm Wind	52	0	0	\$2,000	
PIGEON	5/31/1998	Thunderstorm Wind	55	0	0	\$20,000	
CASEVILLE	5/31/1998	Thunderstorm Wind	60	1	0	\$35,000	
BAD AXE	5/31/1998	Thunderstorm Wind	52	0	0	\$5,000	
HARBOR BEACH	5/31/1998	Thunderstorm Wind	55	0	0	\$5,000	
BAD AXE	8/8/1998	Thunderstorm Wind	52	0	0	\$18,000	
HARBOR BEACH	8/10/1998	Thunderstorm Wind	54	0	0	\$6,000	
	11/10/1998	High Wind	52	0	0	\$10,000	
BAD AXE	5/6/1999	Thunderstorm Wind	52	0	0	\$6,000	
BAD AXE	7/28/1999	Thunderstorm Wind	52	0	0	\$10,000	
CASEVILLE	5/8/2000	Thunderstorm Wind	52	0	0	\$2,000	
SEBEWAING	5/9/2000	Thunderstorm Wind	52	0	0	\$2,000	
CASEVILLE	8/8/2000	Thunderstorm Wind	50	0	0	\$4,000	
PORT AUSTIN	8/9/2000	Thunderstorm Wind	52	0	0	\$15,000	
BAD AXE	4/23/2001	Thunderstorm Wind	50	0	0	\$ 2,500	
PORT AUSTIN	8/8/2001	Thunderstorm Wind	60	0	0		
	3/9/2002	High Wind	61	0	0	\$60,000	

Location	Date	Event Type	Magnitude (Wind Speed)	Deaths	Injuries	Property Damage	Crop Damage
BAD AXE	7/28/2002	Thunderstorm Wind	50	0	0		
SEBEWAING	7/29/2002	Thunderstorm Wind	50	0	0		
PIGEON	7/29/2002	Thunderstorm Wind	50	0	0		
BAD AXE	8/13/2002	Thunderstorm Wind	52	0	0		
PORT AUSTIN	9/10/2002	Thunderstorm Wind	52	0	0	\$50,000	
BAY PORT	9/10/2002	Thunderstorm Wind	55	0	0	\$20,000	
OWENDALE	9/10/2002	Thunderstorm Wind	50	0	0	\$30,000	
SEBEWAING	7/6/2003	Thunderstorm Wind	56	0	0		
HARBOR BEACH	8/21/2003	Thunderstorm Wind	54	0	0		
	11/12/2003	High Wind	51	0	0	\$700,000	
SEBEWAING	4/18/2004	Thunderstorm Wind	56	0	0		
ELKTON	4/18/2004	Thunderstorm Wind	61	0	0		
PORT HOPE	4/18/2004	Thunderstorm Wind	56	0	0		
	4/19/2004	High Wind	63	0	0		
SEBEWAING	5/17/2004	Thunderstorm Wind	52	0	0		
SEBEWAING	5/17/2004	Thunderstorm Wind	52	0	0		
SEBEWAING	5/22/2004	Thunderstorm Wind	60	0	0		
PIGEON	6/13/2004	Thunderstorm Wind	52	0	0		
ELKTON	6/13/2004	Thunderstorm Wind	50	0	0		
SEBEWAING	7/13/2004	Thunderstorm Wind	52	0	0		
PORT AUSTIN	7/13/2004	Thunderstorm Wind	52	0	0		
KINDE	7/13/2004	Thunderstorm Wind	52	0	0		
BAD AXE	7/13/2004	Thunderstorm Wind	52	0	0		
BAD AXE	8/2/2004	Thunderstorm Wind	62	0	0		
	10/30/2004	High Wind	54	0	0	\$200,000	
ELKTON	6/5/2005	Thunderstorm Wind	52	0	0		
BAD AXE	6/5/2005	Thunderstorm Wind	56	0	0		
OWENDALE	6/5/2005	Thunderstorm Wind	56	0	0		
PORT AUSTIN	6/5/2005	Thunderstorm Wind	60	0	0		
ELKTON	6/5/2005	Thunderstorm Wind	52	0	0		
ULBY	6/5/2005	Thunderstorm Wind	61	0	0	\$10,000	
SEBEWAING	6/9/2005	Thunderstorm Wind	54	0	0		
ULBY	6/14/2005	Thunderstorm Wind	54	0	0		
BAD AXE	6/14/2005	Thunderstorm Wind	53	0	0		
SEBEWAING	7/18/2005	Thunderstorm Wind	54	0	0		
SEBEWAING	7/24/2005	Thunderstorm Wind	53	0	0		
	11/6/2005	High Wind	52	0	0		
	11/16/2005	High Wind	52	0	0	\$15,000	

Location	Date	Event Type	Magnitude (Wind Speed)	Deaths	Injuries	Property Damage	Crop Damage
	3/13/2006	High Wind	52	0	0		
HELENA	5/30/2006	Thunderstorm Wind	52	0	0		
PIGEON	5/30/2006	Thunderstorm Wind	50	0	0	\$200	
PORT AUSTIN	7/17/2006	Thunderstorm Wind	57	0	0		
BAD AXE	7/17/2006	Thunderstorm Wind	55	0	0		
CASEVILLE	7/17/2006	Thunderstorm Wind	55	0	0	\$25,000	
BAD AXE	7/17/2006	Thunderstorm Wind	58	0	0		
HARBOR BEACH	7/17/2006	Thunderstorm Wind	85	0	0	\$75,000	
PORT HOPE	7/17/2006	Thunderstorm Wind	85	0	0		
BAD AXE	10/4/2006	Thunderstorm Wind	52	0	0		
BAD AXE	5/15/2007	Thunderstorm Wind	56	0	0		
BAD AXE	6/18/2007	Thunderstorm Wind	50	0	0		
BAD AXE	6/18/2007	Thunderstorm Wind	52	0	0	\$6,000	
KINDE	6/18/2007	Thunderstorm Wind	54	0	0	\$30,000	
PIGEON	7/10/2007	Thunderstorm Wind	56	0	0	\$8,000	
	1/30/2008	High Wind	59	0	0		
BAD AXE	6/6/2008	Thunderstorm Wind	53	0	0		
BAD AXE	6/8/2008	Thunderstorm Wind	56	0	0	\$500,000	
PORT AUSTIN	6/8/2008	Thunderstorm Wind	56	0	0	\$50,000	
BAD AXE	8/23/2008	Thunderstorm Wind	52	0	0		
	12/28/2008	High Wind	56	0	0		
PIGEON	7/22/2009	Thunderstorm Wind	52	0	0	\$1,000	
ELKTON	7/15/2010	Thunderstorm Wind	50	0	0		
BAD AXE	9/21/2010	Thunderstorm Wind	50	0	0		
	10/27/2010	High Wind	52	0	0	\$5,000	
PORT AUSTIN	5/31/2011	Thunderstorm Wind	54	0	0		
SEBEWAING	6/9/2011	Thunderstorm Wind	74	0	0	\$50,000	
BAY PORT	6/9/2011	Thunderstorm Wind	56	0	0	\$5,000	
APLIN BEACH	6/9/2011	Thunderstorm Wind	54	0	0		
BAD AXE	6/21/2011	Thunderstorm Wind	55	0	0	\$5,000	
SEBEWAING	6/22/2011	Thunderstorm Wind	50	0	0		
BAY PORT	7/2/2011	Thunderstorm Wind	54	0	0		
QUARRY	7/2/2011	Thunderstorm Wind	50	0	0		
PIGEON	7/2/2011	Thunderstorm Wind	54	0	0		
OWENDALE	7/2/2011	Thunderstorm Wind	54	0	0		
PINNEBOG	7/2/2011	Thunderstorm Wind	52	0	0		
BAD AXE	7/2/2011	Thunderstorm Wind	54	0	0		
ULBY	7/2/2011	Thunderstorm Wind	54	0	0		
HELENA	7/2/2011	Thunderstorm Wind	65	0	0	\$20,000	

Location	Date	Event Type	Magnitude (Wind Speed)	Deaths	Injuries	Property Damage	Crop Damage
	10/19/2011	High Wind	52	0	0	\$ 5,000	
PAWLOSKI	7/25/2012	Thunderstorm Wind	52	0	0		
WADSWORTH	9/5/2012	Thunderstorm Wind	50	0	0		
ULBY	9/5/2012	Thunderstorm Wind	52	0	0		
	10/29/2012	High Wind	52	0	0	\$10,000	
	1/19/2013	High Wind	53	0	0	\$1,000,000	
PORT AUSTIN AFS	5/20/2013	Thunderstorm Wind	50	0	0	\$500	
GRIND STONE CITY	5/20/2013	Thunderstorm Wind	50	0	0	\$500	
BAY PORT	5/30/2013	Thunderstorm Wind	52	0	0		
BAD AXE	6/27/2013	Thunderstorm Wind	50	0	0		
BAD AXE	6/27/2013	Thunderstorm Wind	52	0	0		
POPPLE	7/19/2013	Thunderstorm Wind	52	0	0		
HARBOR BEACH	7/19/2013	Thunderstorm Wind	52	0	0		
	11/17/2013	High Wind	50	0	0	\$1,000,000	
ULBY	5/13/2014	Thunderstorm Wind	52	0	0	\$5,000	
BAD AXE	6/2/2014	Thunderstorm Wind	52	0	0		
REDMAN	6/2/2014	Thunderstorm Wind	61	0	0	\$50,000	
PIGEON	9/5/2014	Thunderstorm Wind	50	0	0		
BAD AXE	9/5/2014	Thunderstorm Wind	52	0	0		
BAD AXE	9/5/2014	Thunderstorm Wind	53	0	0		
POPPLE	9/5/2014	Thunderstorm Wind	54	0	0		
PORT CRESCENT	8/2/2015	Thunderstorm Wind	52	0	0	\$1,000	
PORT CRESCENT	8/2/2015	Thunderstorm Wind	52	0	0		
PINNEBOG	8/2/2015	Thunderstorm Wind	52	0	0	\$1,000	
PORT AUSTIN AFS	8/2/2015	Thunderstorm Wind	61	0	0	\$10,000	
KINDE	8/2/2015	Thunderstorm Wind	61	0	0	\$10,000	
HARBOR BEACH	8/2/2015	Thunderstorm Wind	52	0	0	\$1,000	
CASEVILLE	8/2/2015	Thunderstorm Wind	56	0	0		
KILMANAGH	8/2/2015	Thunderstorm Wind	56	0	0		
PIGEON	8/2/2015	Thunderstorm Wind	52	0	0		
BAD AXE	8/2/2015	Thunderstorm Wind	52	0	0		
ULBY	8/2/2015	Thunderstorm Wind	56	0	0		
IVANHOE	8/2/2015	Thunderstorm Wind	56	0	0		
BAD AXE	11/6/2015	Thunderstorm Wind	74	0	0	\$5,000	
HARBOR BEACH	11/6/2015	Thunderstorm Wind	61	0	0		
SEBEWAING	7/8/2016	Thunderstorm Wind	56	0	0	\$5,000	
PIGEON	7/8/2016	Thunderstorm Wind	50	0	0		

Location	Date	Event Type	Magnitude (Wind Speed)	Deaths	Injuries	Property Damage	Crop Damage
BAD AXE	11/18/2016	Thunderstorm Wind	51	0	0		
	3/8/2017	High Wind	56	0	0	\$7,000,000	
	4/6/2017	High Wind	52	0	0		
CASEVILLE	7/23/2017	Thunderstorm Wind	54	0	0		
CASEVILLE	7/23/2017	Thunderstorm Wind	52	0	0	\$3,000	
PORT CRESCENT	10/7/2017	Thunderstorm Wind	52	0	0		
HARBOR BEACH	10/7/2017	Thunderstorm Wind	52	0	0		
	5/4/2018	High Wind	61	0	0	\$850,000	
BAY PORT	5/27/2018	Thunderstorm Wind	54	0	0	\$1,000	
CASEVILLE	8/28/2018	Thunderstorm Wind	52	0	0		
POPPLE	8/28/2018	Thunderstorm Wind	50	0	0		
	2/24/2019	High Wind	52	0	0	\$500	
RAPSON	9/21/2019	Thunderstorm Wind	52	0	0		
SEBEWAING	06/10/2020	Thunderstorm Wind	55	0	0		
SEBEWAING	06/10/2020	Thunderstorm Wind	52	0	0		
BERNE	06/10/2020	Thunderstorm Wind	52	0	0		
ELKTON	06/10/2020	Thunderstorm Wind	52	0	0		
PINNEBOG	06/10/2020	Thunderstorm Wind	52	0	0	\$300,000	
HURON CITY	06/10/2020	Thunderstorm Wind	52	0	0		
CASEVILLE	08/16/2020	Thunderstorm Wind	55	0	0		
GOTTS CORNERS	10/23/2020	Thunderstorm Wind	61	0	0	\$25,000	
PINNEBOG	10/23/2020	Thunderstorm Wind	56	0	0		
HURON CITY	10/23/2020	Thunderstorm Wind	54	0	0		
VERONA	07/20/2021	Thunderstorm Wind	50	0	0		
SEBEWAING	08/10/2021	Thunderstorm Wind	60	0	0		
CASEVILLE	08/28/2021	Thunderstorm Wind	52	0	0		
PORT AUSTIN	08/28/2021	Thunderstorm Wind	50	0	0		
(P58)PORT HOPE	08/28/2021	Thunderstorm Wind	50	0	0		
CASEVILLE	08/28/2021	Thunderstorm Wind	54	0	0		
CASEVILLE	08/29/2021	Thunderstorm Wind	54	0	0		
CASEVILLE	09/07/2021	Thunderstorm Wind	50	0	0		
RESCUE	09/07/2021	Thunderstorm Wind	55	0	0		
HARBOR BEACH	09/14/2021	Thunderstorm Wind	50	0	0		

Huron County Perspective

The National Climate Data Center (NCDC) defines a wind event as anything above 58 mph. The chart above includes all wind events in the NCDC database, even if they do not exceed 58 mph. There are several occurrences where strong winds were less than 58 mph, but still caused damage and therefore it is important to consider these events as well when cataloging previous occurrences. Since 1995, on average, there are six wind events each year and the data indicates over \$12 million in damages. Although the damage from these storms seems severe, it is not representative of the actual amount of damage due to strong winds and thunderstorms that occur each year. The likelihood of a windstorm occurrence in Huron County each year is extremely likely.

Tornado

A violently rotating column of air extending downward to the ground from a cumulonimbus cloud.

Most Vulnerable Jurisdictions: All

Tornadoes in Michigan are most frequent in the spring and early summer when warm, moist air from the Gulf of Mexico collides with cold air from the Polar Regions to generate severe thunderstorms. These thunderstorms often produce violently rotating columns of wind that are called tornadoes. Michigan lies at the northeastern edge of the nation's primary tornado belt, which extends from Texas and Oklahoma through Missouri, Illinois, Indiana, and Ohio. Most of a tornado's destructive force is exerted by the powerful winds that knock down walls and lift roofs from buildings in the storm's path. The violently rotating winds then carry debris aloft that can be blown through the air, becoming dangerous missiles.

A tornado may have winds up to 300 miles per hour and an interior air pressure that is 10-20% below that of the surrounding atmosphere. The typical length of a tornado path is approximately 16 miles, but tracks much longer than that – even up to 200 miles – have been reported. Tornado path widths are generally less than one-quarter mile wide. Typically, tornadoes last only a few minutes on the ground, but those few minutes can result in immense damage and devastation. Historically, tornadoes have resulted in tremendous loss of life, with the mean national annual death toll being 111 persons. Property damage from tornadoes is in the hundreds of millions of dollars every year. Michigan averages approximately 18 tornadoes per year, most occurring in the southern Lower Peninsula.

TORNADO INTENSITY

Tornado intensity is measured on the Fujita Scale (EF-scale), which examines the damage caused by a tornado on homes, commercial buildings, and other man-made structures.

Table 28 Tornado Magnitude

EF Scale	Intensity Descriptor	Wind Speed (mph)	Type/ Intensity of Damage
EF0	Gale Tornado	65 - 85	Light damage. Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
EF1	Weak Tornado	86- 110	Moderate damage. The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF2	Strong Tornado	111 - 135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	Severe Tornado	136 - 165	Severe damage. Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.
EF4	Devastating Tornado	166 - 200	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
EF5	Incredible Tornado	Over 200	Incredible damage. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile-sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged; incredible phenomena will occur.

The Fujita Scale rates the intensity of a tornado based on damage caused, not by its size. It is important to remember that the size of a tornado is not necessarily an indication of its intensity. Large tornadoes can be weak, and small tornados can be extremely strong. It is very difficult to judge the intensity and power of a tornado while it is occurring. Generally, that can only be done after the tornado has passed using the Fujita Scale as the measuring tool.

Previous Occurrences (Source: National Centers for Environmental Information, 2020)

Location	Date	Type	Magnitude (F-Scale/EF Scale)	Deaths	Injuries	Property Damage	Crop Damage
	6/8/1953	Tornado		0	0		
	7/4/1974	Tornado	F-2	0	0	\$25,000	
	6/15/1975	Tornado	F-1	0	0	\$2,500	
	6/15/1975	Tornado	F-0	0	0	\$2,500	
	7/2/1975	Tornado	F-0	0	0	\$250	
	6/12/1984	Tornado	F-3	0	0	\$2,500,000	
	5/28/1991	Tornado	F-1	0	0	\$2,500	
	6/17/1992	Tornado	F-0	0	0	\$25,000	
WHITE ROCK	5/12/2000	Tornado	F-1	0	0	\$60,000	
HARBOR BEACH	8/19/2001	Tornado	F-0	0	1	\$5,000	

Location	Date	Type	Magnitude (F-Scale/EF Sclae)	Deaths	Injuries	Property Damage	Crop Damage
HARBOR BEACH	6/13/2004	Tornado	F-1	0	0	\$25,000	
PORT HOPE	10/19/2007	Tornado	EF-1	0	0	\$250,000	
HURON CITY	7/18/2010	Tornado	EF-0	0	0	\$75,000	
KILMANAGH	8/2/2015	Tornado	EF-1	0	0	\$50,000	
BAD AXE	11/6/2015	Tornado	EF-0	0	0	\$15,000	
PORT AUSTIN	06/26/2021	Tornado	EF2	0	0	\$5,000,000	
PORT AUSTIN	7/24/2021	Tornado	EF1	0	0	\$500,000	

Huron County Perspective

On average, tornadoes cause the most damage of any storm in relation to their duration. Property damage from tornadoes is in the hundreds of millions of dollars each year. Since 1953, there have been a total of 15 tornado events in Huron County. This data includes each separate tornado touchdown, even if they were originated from the same storm. The most damaging tornado in the County occurred in 1984 and caused \$2.5 million of damage. These events frequently occur in Huron County, generally during the spring months. Areas in the County that are more at-risk to tornadoes than others include: manufactured housing communities without emergency shelters, manufactured housing units not properly secured to a foundation, outdoor recreation facilities, and populations not covered by a warning siren. Map 12, in chapter three, illustrates the tornado sirens located throughout the County.

STRUCTURAL FIRES

Any instance of uncontrolled burning which results in structural damage to residential, commercial, industrial, institutional, or other properties in developed areas.

Most Vulnerable Jurisdictions: All

Structural fires impact all areas of the County. Rural homes are susceptible during the winter due to fires associated with wood stoves or other modes of heating and in the summer months due to wildfires. Urban areas are equally at risk as it can be difficult to limit the spread of a fire to surrounding buildings. Large population centers, like apartment buildings, senior housing or special-care facilities, schools, and other buildings that house large numbers of people tend to be regularly inspected, built with masonry, and have emergency evacuation procedures, reducing the potential for injury and death.

In terms of average annual loss of life and property, structural fires - often referred to as the "universal hazard" because they occur in virtually every community - are by far the biggest hazard facing most communities in Michigan and across the country. Each year in the U.S., fires result in approximately 5,000 deaths and 25,000 injuries requiring medical treatment. According to some sources, structural fires cause more loss of life and property damage than all types of natural disasters combined. Direct property losses due to fire exceed \$9 billion per year – and much of that figure is the result of structural fires. Particularly devastating are large urban conflagrations, in which multiple structures are damaged or destroyed. Not surprisingly, Michigan's structural fire experience mirrors the national figures. The

State Fire Marshal estimates that a structural fire occurs in Michigan approximately every 33 minutes. Of accidental fires, 46.3% occur through neglect or carelessness with items such as candles, cigarettes, pipes, cigars, matches, lighters, and fireworks-especially when used by children. Another main cause is from improper maintenance or use of items such as clothes dryers, holiday decorations (Christmas trees, decorations, extension cords/plugs), and cooking equipment and ingredients. Most of these causes could probably be prevented through awareness and education of their dangers and proper means of use.

Ironically, while the United States has made great strides in lessening deaths and injuries caused by other types of disasters, the problem of structure fires is worse in this country than in many other industrialized nations (even those with a more densely developed population pattern). The United States Centers for Disease Control and Prevention (CDC) figures indicate that fire-associated mortality rates in the United States are approximately 2-3 times greater than those in many other developed countries. According to the Federal Emergency Management Agency's National Fire Data Center, residential fires represent 78% of all structural fires and cause 80% of all fire fatalities. Approximately 83% of those fatalities occur in single-family homes and duplexes. Perhaps the most tragic statistic of all is that over 40% of residential fires and 60% of residential fatalities occur in homes with no smoke alarms.

Previous Events

The following chart contains more generalized data for recent fires in Huron County. This information is from the Michigan Department of Licensing and Regulatory Affairs (LARA). This is the information currently available on the National Fire Incident Reporting System.

Table 29 Fire Occurrences

2019 Fire Incidents (LARA)	
Fire Department	Incidents
Sebewaing Township Fire Department	49
Fairhaven Fire Department	1
Bad Axe Area Fire Department	107
Caseville Township Fire Department	79
Oliver Township Fire Department	57
Harbor Beach Fire Department	133
Kinde Area Fire Department	31
Port Austin Fire Department	84
Port Hope Fire Department	0
Sherman Township Fire Department	17
Bingham Township Fire Department	49
Winsor Township Fire Department	51
Sigel Township Fire Department	14
Total	672

Huron County Perspective

Unfortunately, the historical events of structural fires do not have the same detailed database as the natural hazards from the Climate Data Center. Even though individual events are not available, the table above is generalized data on structural fires for Huron County. Additionally, FEMA has data that compares fire incidents in Huron County as compared to incidents in Michigan. The data categorizes the type of property fires and the causes of residential fires.

Table 30 Fire Type

General Property Use Type (FEMA)		
	Huron County	Michigan
Residential Fires	23.8%	39.1%
Non-Residential Fires	11.0%	9.0%
Vehicle Fires	16.3%	17.2%
Outside Fires	36.5%	29.5%
Other Fires	12.3%	5.3%

Table 31 Cause of Residential Fires

Causes of Residential Fires		
	Huron County	Michigan
Intentional	2.5%	6.5%
Playing with Heat Source	1.3%	0.5%
Smoking	1.9%	1.4%
Heating	22.6%	8.7%
Cooking	5.7%	24.6%
Electrical Malfunction	12.6%	5.0%
Appliances	3.1%	2.7%
Open Flame	4.4%	5.0%
Other Heat	4.4%	2.5%
Other Equipment	0.6%	0.6%
Natural	1.9%	1.2%
Exposure	0.6%	2.9%
Equipment Misoperation, Failure	1.3%	1.6%
Other Unintentional, Careless	15.1%	6.6%
Cause Under Investigation	0.0%	0.9%
Unknown	22.0%	29.4%

Generally, Huron County has less residential fires and vehicle fires than the State, but more non-residential fires, outside fires, and other fires. In comparing the cause of residential fires, most causes in Huron County are similar to that of the State. However, in Huron County there are significantly more fires started by heating, electrical malfunction, and other unintentional/careless. Conversely, the State

has significantly more residential fires caused by intentional, cooking, and exposure as compared to Huron County.

The two most common types of fires in the County are outside fires (36.5%) and residential fires (23.8%). Therefore, residential structural fires are a frequent occurrence in the County and fires of an emergency management level which occur at larger structures, critical facilities, commercial storefronts, and special populations such as senior centers, schools, medical, and detention facilities occur at a lower frequency (11%). The three fire departments with the most incidents in 2019 were Harbor Beach (133), Bad Axe (107), and Port Austin (84). Structural Fires are extremely likely in Huron County.

WINTER WEATHER

Four types of hazards: ice, sleet, snowstorms, and blizzards. Most winter weather events are often characterized by one or more of these elements, therefore, all storm types are classified under Winter Weather.

Ice and Sleet Storms

A storm that generates sufficient quantities of ice or sleet that result in hazardous conditions and/or property damage.

Most Vulnerable Jurisdictions: All

Sleet storms differ from ice storms in that sleet is similar to hail (only smaller) and can be easily identified as frozen rain drops (ice pellets) that bounce when hitting the ground or other objects. Sleet does not stick to trees and wires, but sleet in sufficient depth does cause hazardous driving conditions. Ice storms are the result of cold rain that freezes on contact with a surface, coating the ground, trees, buildings, overhead wires, etc., with ice, sometimes causing extensive damage. When electric lines are downed, inconveniences are felt in households, and economic loss and disruption of essential services is often experienced in affected communities. Oftentimes, ice storms are accompanied by snowfall, in which the ice is camouflaged, creating treacherous transportation conditions. Both storms occur when the temperature is close to 32°F, but are more severe when the temperature is in the 20s. Michigan has had numerous damaging ice storms over the past few decades.

Snowstorms and Blizzards

A period of rapid accumulation of snow often accompanied by high winds, cold temperatures, and low visibility.

Most Vulnerable Jurisdictions: All

Snowstorms are defined as rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility. Blizzards are the most dramatic and perilous of all snowstorms, characterized by low temperatures and strong winds bearing enormous amounts of snow. Most of the snow accompanying a blizzard is in the form of fine, powdery particles of snow that are wind-blown in such great quantities that, at times, visibility is reduced to only a few feet. Impacts due to snow storms or blizzards are far-reaching: traffic accident deaths and injuries; structural fires due to snow melt

seeping into electrical meter boxes; roofs collapsing under the weight of snow; school closings; business closings; flight/travel cancellations; loss of electricity; impassable streets causing many stranded people needing shelter, and high snow clearing and removal costs.

As a result of being surrounded by the Great Lakes, Michigan experiences large differences in snowfall in relatively short distances. The annual mean accumulation ranges from 30 to 200 inches of snow. The highest accumulations are 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. Because of the "lake effect" on weather patterns, snowstorms tend to be more severe if prevailing winds bring them in from over one of the Great Lakes.

Most of the severe winter weather events that occur in Michigan have their origin as Canadian and Arctic cold fronts that move across the State from the west or northwest. Michigan is susceptible to moderate snowfall and extreme cold, averaging 90-180 days per year below freezing in the Lower Peninsula, and over 180 days below freezing in most of the Upper Peninsula. Ice and sleet storms are also a very real threat that Huron County must deal with annually.

Previous Events (Source: National Centers for Environmental Information, 2020)

The National Climate Data Center recorded 31 winter storm events between 1997 and 2019. The incidents are listed in the chart, below.

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
	3/13/1997	Ice Storm	0	0		
	1/12/1999	Winter Weather	0	0		
	12/12/2000	Blizzard	0	0		
	2/7/2001	Ice Storm	0	0		
	1/31/2002	Winter Storm	0	0		
	2/26/2002	Winter Storm	0	0		
	4/3/2003	Ice Storm	0	0	\$25,000	
	1/26/2004	Winter Storm	0	0		
	12/19/2004	Winter Storm	0	0		
	12/23/2004	Blizzard	0	0		
	1/22/2005	Blizzard	0	0		
	2/14/2005	Ice Storm	0	0		
	4/23/2005	Blizzard	0	0		
	2/5/2006	Winter Storm	0	0		
	3/2/2006	Winter Storm	0	0		
	1/24/2007	Lake-Effect Snow	0	0		
	1/28/2007	Lake-Effect Snow	0	0		
	3/1/2007	Winter Storm	0	0	\$1,500,000	
	12/1/2007	Winter Storm	0	0		
	12/5/2007	Lake-Effect Snow	0	0		

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
	12/11/2007	Winter Weather	0	0		
	12/16/2007	Blizzard	0	0		
	2/6/2008	Winter Storm	0	0		
	12/9/2008	Winter Storm	0	0		
	12/19/2008	Winter Storm	0	0		
	12/12/2010	Blizzard	0	0		
	2/2/2011	Blizzard	0	0		
	2/24/2012	Winter Storm	0	0		
	4/27/2012	Frost/Freeze	0	0		\$1,300,000
	4/14/2018	Winter Storm	0	0	\$1,000,000	
	1/28/2019	Winter Storm	0	0		

Huron County Perspective

Severe winter weather poses a severe threat to Huron County. Based on past winter storm occurrences, events are extremely likely. Over the past 22 years as indicated by the NCDC data, there has been at least one storm event per year, and several years where there were several events. This hazard poses a threat due to potential loss of life, property and natural resources, the potential size of the population impacted, impact on resources to respond, and the frequency and likelihood of occurrence. Costs associated with an event include fatalities and injuries, infrastructure failure (particularly with ice storms), response, and damage to housing units.

There are no areas of the County that are more at-risk to a severe winter storm; however, specific areas and populations are more vulnerable to the hazard than others. Areas of greatest concern in Huron County with regard to severe winter weather hazards are rural areas, as these areas are usually the last to have plowed streets. Some residents may not be prepared to survive during prolonged periods of cold weather and/or power outages due to ice storms. A community that knows where such persons live, and the type of assistance they may need (e.g., medication, snow plowing), is better able to provide assistance during a severe winter storm. Additionally, communities of concern include the special needs population (elderly, physically or mentally impaired) living in rural areas. All critical facilities are at the same level of risk from Severe Winter Weather incidents.

TRANSPORTATION ACCIDENTS

A crash or accident involving an air, land or water-based commercial passenger carrier resulting in death or serious injury.

Most Vulnerable Jurisdictions: All

Transportation accidents are defined as an accident involving an air, land, or water based commercial passenger carrier resulting in death or serious injury. Vulnerable areas would include communities with, or near, an airport offering commercial passenger service, communities with railroad tracks providing commercial rail passenger services, communities with commercial intercity passenger bus or local transit bus service, communities with school bus service, and communities with commercial marine passenger ferry service. A serious event involving any of the above-mentioned modes of passenger transportation could result in a mass casualty incident, requiring immediate life-saving response.

In addition, a marine transportation accident would require a water rescue operation, possibly under dangerous conditions on the Great Lakes. In terms of commercial passenger transportation service, Michigan has approximately: 19 airports that offer commercial air passenger service; 130 certified intercity passenger bus carriers providing service to 220 communities; 72 local bus transit systems serving 85 million passengers; 19 marine passenger ferry services; and three intercity rail passenger routes operating on 568 miles of track, along three corridors, serving 22 communities.

When responding to any of these types of air transportation accidents, emergency personnel may be confronted with several problems, such as: suppressing fires; rescuing and providing emergency first aid for survivors; establishing mortuary facilities for victims; detecting the presence of explosive or radioactive materials; and providing crash site security, crowd and traffic control, and protection of evidence.

Huron County Perspective

This document is primarily interested in events that can cause emergency or disaster level impacts and take advance action to prevent or alleviate the effects of such occurrences. Therefore, most small-scale transportation accidents are more appropriately addressed through ongoing transportation plans. This document intends to draw attention to larger-scale events that have the potential to tax or even overwhelm local emergency response capabilities. For example, a bus accident in a rural section of a Township may involve numerous casualties and may require the assistance of resources from nearby jurisdictions. Compared to the crash of a large commercial aircraft, which would be a situation of great concern with the potential for catastrophic loss of life and massive property damage.

Huron County has two airports and two air fields located throughout the County. The Huron County Memorial Airport is a County-owned public airport located one mile south of Bad Axe. The airport has two asphalt runways with an average of 121 aircraft operations per week. There are 18 aircraft based at

the field, 17 single-engine airplanes, and one jet airplane. The second airport is the Sebewaing Airport which has one paved asphalt runway and one turf runway. There are 38 aircraft operations per week and five single-engine airplanes based at the airport. The two airfields in the County are Farver Field and Schenkel Field. In addition to the airports, the County is also home to the Thumb Area Transit. This is an on-call public transit system that serves Huron County. According to the Thumb Area Transit website, in 2016 the service provided 386,676 rides.

Huron County's concern, with regard to land and air transportation hazards, is stretching resources and capability of local emergency responders if multiple accidents involving significant injuries and death occur at the same time. This could mean overwhelming the local EMS and hospitals. The County has not had any significant events that have overwhelmed its emergency responders, but it is a possibility. The chance of this hazard occurring in Huron County is a frequent concern.

EXTREME TEMPERATURE

Prolonged periods of very high or very low temperatures, often accompanied by exacerbating conditions such as high humidity and lack of rain or heavy snowfall and high winds.

Most Vulnerable Jurisdictions: All

The County is susceptible to both extreme heat and extreme cold. It is not uncommon to have a 40-degree swing in temperature within a 24-hour period. Prolonged periods of extreme temperatures, whether extreme summer heat or extreme winter cold, can create severe and often life-threatening situations for Michigan's citizens. Although they are radically different in terms of initiating conditions, the two hazards share a commonality in that they both primarily affect the most vulnerable segments of the population – the elderly, children, impoverished individuals, and people in poor health. The longer the duration of an event leads to produce more severe effects. These two extreme occurrences are measured by recording the temperature, humidity, and wind speed to determine the extent of the extreme temperature's impact. The Heat Index (HI) and the Wind Chill Temperature Index (WCT) are measuring standards.

Extreme Summer Heat

Extreme summer weather is characterized by a combination of very high temperatures and exceptionally humid conditions. When persisting over a long period of time, this phenomenon is commonly called a heat wave. The major threats of extreme summer heat are heatstroke and heat exhaustion. Other less serious risks associated with extreme summer heat are often exercise-related and include heat and heat cramps. The combined effects of high temperatures and high humidity are more intense in urban centers. Heatstroke and heat exhaustion are a greater problem in cities than in suburban or rural areas.

Nationwide, approximately 200 deaths a year are directly attributable to extreme heat. Extreme summer heat is also hazardous to livestock and agricultural crops and can cause water shortages,

exacerbate fire hazards, and prompt excessive demands for energy. Roads, bridges, railroad tracks, and other infrastructure are susceptible to damage from extreme heat. Air conditioning is probably the most effective measure for mitigating the effects of extreme summer heat. Unfortunately, many of those most vulnerable to this hazard do not live or work in air-conditioned environments, especially in major urban centers where the vulnerability is highest.

Previous Events (Source: National Centers for Environmental Information, 2020)

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
	2/11/1999	Heat	0	0		
	7/4/1999	Heat	0	0		
	3/8/2000	Excessive Heat	0	0		
	8/6/2001	Heat	0	0		
	5/29/2006	Heat	0	1		
	7/29/2006	Heat	0	0		
	8/1/2006	Heat	0	0		
	7/17/2011	Excessive Heat	0	0		
	7/1/2012	Heat	0	0		
	7/14/2013	Heat	0	0		
	6/30/2018	Heat	0	0		
	7/1/2018	Heat	0	0		

Extreme Winter Cold

Like heat waves, periods of prolonged, unusually cold weather can result in a significant number of temperature-related deaths. Each year in the United States, approximately 700 people die because of severe cold temperature-related causes. It should be noted that a significant number of cold-related deaths are not the direct result of “freezing” conditions. Rather, many deaths are the result of illnesses and diseases that are negatively impacted by severe cold weather, such as stroke, heart disease, and pneumonia. It could convincingly be argued that were it not for the extreme cold temperatures, death in many cases would not have occurred from the illness or disease alone. Periods of extreme cold are risky for those in both rural and in urban areas. Frostbite and hypothermia are common in rural areas where people are trapped outdoors and do not adjust properly to the temperatures. Even indoors, hypothermia is a concern for individuals living in inadequately heated apartments or rooms. Loss of life can occur with either of these situations. Damage to buildings and pipelines can also occur in bitter cold conditions, resulting in expensive repairs and potential days of business and school shutdowns.

Hypothermia and frostbite are probably the two conditions most closely associated with cold temperature-related injury and death. Hypothermia usually occurs in one of two sets of circumstances.

One situation involves hypothermia associated with prolonged exposure to cold while participating in outdoor sports. The second situation involves a particularly vulnerable person who is subjected to only a moderate, indoor cold stress. A common example would be an elderly person living in an inadequately heated home. The special vulnerability of elderly persons to hypothermia has become readily apparent. Over half of the approximately 700 persons who die each year due to cold exposure are 60 years of age or older, even though this age group only represents about 20% of the country's population.

Previous Events (Source: National Centers for Environmental Information, 2020)

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
	2/1/1996	Cold/Wind Chill	0	0		
	1/17/1997	Cold/Wind Chill	0	0		
	12/21/2000	Extreme Cold/Wind Chill	0	0		
	1/10/2003	Cold/Wind Chill	0	0		
	2/3/2007	Cold/Wind Chill	0	10	\$25,000	
	1/14/2009	Extreme Cold/Wind Chill	0	0		
	1/6/2014	Cold/Wind Chill	0	0		
	1/28/2014	Cold/Wind Chill	0	0		
	2/14/2015	Extreme Cold/Wind Chill	0	0		
	2/19/2015	Extreme Cold/Wind Chill	0	0		
	2/23/2015	Extreme Cold/Wind Chill	0	0		
	1/1/2018	Cold/Wind Chill	0	0		
	1/29/2019	Cold/Wind Chill	0	0		

Huron County Perspective

In the County, excessive heat and excessive cold occur frequently. Extreme cold has a slightly longer and more frequent history in Huron County than extreme heat. Further, every winter season includes isolated conditions that may temporarily exhibit similarly dangerous effects but are not listed in the chart above. Extreme cold also affected far more people and caused more property damage than extreme heat. Property damage from cold could be freezing pipe damage and overlaps between freezing events and snow/ice accumulations that may cause other forms of damage. Periods of extreme heat may create greater energy demands for widespread air-conditioning. This may cause the power supply system to become temporarily overwhelmed, resulting in a power failure in a time of great need. This would be a case where hazard mitigation planning would need to overlap with the considerations of utility providers, to encourage the maintenance of people's health and comfort through adequate system capacities and functioning.

All communities in the County are vulnerable to both extreme cold and extreme heat. Specific at-risk populations with regard to extreme temperatures include: the elderly, young children, and impoverished people. This hazard received a fairly high ranking due to the population impacted, frequency of occurrence, and ability to respond to the event.

HAZARDOUS MATERIAL TRANSPORTATION INCIDENTS

An uncontrolled release of hazardous materials during transport, capable of posing a risk to health, safety, property or the environment.

Most Vulnerable Jurisdictions: All

As a result of the extensive use of chemicals in our society, all modes of transportation – highway, rail, air, marine, and pipeline – are carrying thousands of hazardous materials shipments on a daily basis. A transportation accident involving any hazardous material shipments could cause a local emergency affecting many people.

The U.S. Department of Transportation regulates the transportation and shipping of over 18,000 different materials. Areas most at risk are within a 1-5 mile radius of a major transportation route along which hazardous material shipments move. Michigan has had numerous hazardous material transportation incidents. The majority only affect the immediate vicinity of an accident site or a small portion of the surrounding community. Those types of incidents, while problematic for the affected community, are fairly commonplace. They are effectively dealt with by local and state emergency responders and hazardous material response teams. Larger incidents, however, pose a completely different set of problems and concerns for the affected community. Large-scale, or serious hazardous material transportation incidents, that involve a widespread release of harmful material (or have the potential for such a release) can adversely impact the life, safety, and/or health and well-being of those in the immediate vicinity of the accident site, as well as those who come in contact with the spill or airborne plume. In addition, damage to property and the environment can be severe. Almost all hazardous material transportation incidents are the result of an accident or other human error. Rarely are they caused simply by mechanical failure of the carrying vessel.

Heating fuel and motor fuel account for approximately 98% of all the hazardous materials that are being transported on today's roadways. The remaining 2% includes all other hazardous materials. An example is Anhydrous Ammonia, which is sprayed on farm fields and is also used for air conditioning and refrigeration purposes. If there were to be an accident during transit, this would be an extremely dangerous hazardous material that could affect a large region.

Huron County Perspective

Huron County has had numerous small-scale hazardous material transportation incidents that required a response by local fire departments and hazardous material teams, and many required the implementation of evacuation and other protective actions. Huron County remains vulnerable to the threat of a serious hazardous material transportation incident at any point in time. The greatest risk for hazardous material transportation incidents arises when proper safety procedures are not observed. Therefore enforcing those safety measures is paramount to ensure the safety of hazardous materials transportation. Hazardous material transportation incidents occur periodically in Huron County.

PUBLIC HEALTH EMERGENCIES

A widespread and/or severe epidemic, incident of contamination, or other situation that presents a danger to or otherwise negatively impacts the general health and well-being of the public.

Most Vulnerable Jurisdictions: All

Public health emergencies can take many forms: disease epidemics; large-scale incidents of food or water contamination; extended periods without adequate water and sewer services; harmful exposure to chemical, radiological or biological agents; or large-scale infestations of disease-carrying insects or rodents. Public health emergencies can occur as primary events by themselves, or they may be secondary events in the form of another disaster or emergency, such as a flood, tornado, or hazardous material incident. The common characteristic of most public health emergencies is that they adversely impact, or have the potential to adversely impact, a large number of people. Public health emergencies can be statewide, regional, or localized in scope and magnitude.

Perhaps the greatest emerging public health hazard would be the intentional release of a radiological, chemical, or biological agent to adversely impact a large number of people. Such a release would most likely be an act of terrorism aimed at the government, a specific organization, or segment of the population. Fortunately, to date, Michigan has not yet experienced such a release aimed at mass destruction. However, if and when it does occur, the public health implications – under the right set of circumstances – could be staggering.

Huron County Perspective

Like the rest of the United States and the world, Huron County has had severe outbreaks of diseases like influenza, and it has been many years since the County has had to deal with diseases like polio in the 1950s. However, Huron County is susceptible to health emergencies such as the Severe Acute Respiratory Syndrome (SARS) outbreak in Canada, the West Nile Virus, and meningitis outbreaks that occur sporadically. In recent years, diseases such as Pertussis (whooping cough), Measles, E Coli, H1N1, MRSA, and Norovirus have become more of a threat to the state of Michigan.

Even more recently, COVID-19 has become a global health pandemic that has affected the lives of all individuals in the County. Not only have the effects from this disease been felt through the medical community, but due to the contagion rate and lack of preventative medicine, the residents of the state have been asked to stay home to slow the spread of the disease. This has caused widespread changes to everyday life and has had completely changed the way the world is operating. Not all areas of the Country are equally affected by the virus. Huron County is very rural, and thus has not seen high transmission of the disease. According to the Huron County Health Department, as of August 2020, there have been less than 100 cases in the County and less than five deaths as of August 2020.

Costs associated with public health emergencies include deaths, hospitalizations, doctors' visits, mass immunization programs, lost wages, and lost productivity. Public health emergencies can also occur as primary or secondary events related to natural or human-related hazards. Because the effect of public health emergencies are so widespread, it is difficult to determine probability or cost, but considering

recent events, it is very likely the threat from public health emergencies, specifically COVID, will continue into the foreseeable future. Public Health Emergencies frequently occur in the County.

WILDFIRES

An uncontrolled fire in forested areas, grass or brush lands.

Most Vulnerable Jurisdictions: All

Forests cover approximately 49% (18.2 million acres) of Michigan's total land base. These vast forests provide Michigan with the largest state-owned forest system in the United States. In addition, Michigan has the fifth-largest timberland acreage, with 4.2 million acres of softwoods and 13.1 million acres of hardwoods. That vast forest cover is a boon for both industry and recreation. However, it also makes many areas of Michigan highly vulnerable to wildfires. Between 1981 – 2018, in Huron County, on lands under the jurisdiction of the MDNR, there were 30 wildfires, which burned 982.5 acres. This equates to an average of 0.8 fires a year, which burn 25.9 acres per year (see Michigan Hazard Analysis).

The most immediate dangers from wildfires are the destruction of homes and timber, wildlife, and injury or loss of life to persons who live in the affected area or who are using recreational facilities in the area. Long-term effects can be numerous and include scorched and barren land, soil erosion, landslides/mudflows, water sedimentation, and loss of recreational opportunities. Forests cover approximately one-half of Michigan's total land base. As a result, much of the state is vulnerable to wildfire. In addition, development in and around forests and grasslands is increasing rapidly, making public safety a primary consideration in wildfire mitigation and suppression efforts. Increased development in and around rural forested areas has increased the potential for loss of life and property from wildfires. There are simply not enough fire suppression forces available in rural areas to protect every structure from wildfire.

Huron County Perspective

According to the State fire statistics, outdoor fires are the most common type of fire in Huron County, making up 36.5% of all fire incidents. Several wildfires per year are common for Huron County, particularly during the summer months, making this hazard extremely likely. Such fires generally do not result in loss of lives, but do result in the loss of property. The potential for larger, more damaging wildfires is real and there are several areas of State-owned land that could potentially have large wildfires in the future. However, the County has strong mutual aid agreements between communities, a good record of response from the local fire departments, and a lack of deaths/injuries during wildfire occurrences which means wildfires are a risk to the County, but not as dire as other hazards examined in this Plan.

Significant Huron County Fire Events occurred in the late 1800's. The first was in October of 1871. The State's first recorded catastrophic fire occurred in the fall of 1871, after a prolonged drought over much of the Great Lakes region in the summer of 1871. The drought had left debris from logging and land clearing tinder dry, and as a result numerous fires burned throughout the state. These fires continued to smolder until, on October 8th of that year, gale and hurricane force winds fanned a series of fires across

much of the northern Lower Peninsula. Because this tremendously destructive wildfire occurred at the same time as the great wildfires that struck Peshtigo, Wisconsin (which killed 1,300 people in a single night, and also affected Menominee County in the Upper Peninsula) and the Great Chicago Fire (which destroyed much of central Chicago), the Michigan wildfire received little publicity. However, the 1871 Michigan wildfire killed 200 people and burned 1.2 million acres. When the winds finally subsided, the fire's swath stretched from Lake Michigan across to Lake Huron. The most heavily affected area, north of Saginaw Bay, had an area 40 miles square that was completely destroyed, with over 50 people killed. The worst of the fire was over by October 19, although the fire wasn't completely extinguished for over a month. The second significant event was August – September 1881. On August 31, 1881, several small fires in the Thumb came together to form a major conflagration (commonly known as the Thumb fire). A massive area of fires moved through the Thumb counties, and six days later, stopped at Lake Huron. This fire was, in many ways, more severe than the 1871 fire, since settlers had moved into the region in large numbers and logging had gotten underway. More than a million acres were burned; property loss exceeded \$2 million, and 282 were killed. Like the 1871 fire, the fire of 1881 came at the end of an extremely severe drought and was the result of hundreds of land-clearing fires being brought together into a conflagration by high winds. (see Michigan Hazard Analysis)

PIPELINE ACCIDENTS

An uncontrolled release of petroleum or natural gas, or the poisonous by-product hydrogen sulfide, from a pipeline.

Most Vulnerable Jurisdictions: Village of Sebewaing, Sebewaing Township, Brookfield Township, the Village of Owendale, Grant Township, Sheridan Township, Colfax Township, the City of Bad Axe, Verona Township, Sigel Township, Sand Beach Township and the City of Harbor Beach

As a major petroleum and natural gas consumer in the United States, vast quantities of petroleum and natural gas are transported through and stored in Michigan. Gas and oil in Michigan is imported by five interstate pipeline companies that have access to the major natural gas producing regions in North America. Michigan cycles more natural gas through its storage system than any other state. Michigan's gas and petroleum networks are highly developed and extensive, representing every sector of the two industries – from wells and production facilities, to cross-country transmission pipelines that bring the products to market, to storage facilities, and finally to local distribution systems. Even though pipelines are by far the safest form of transportation for these products, the threat of fires, explosions, ruptures, and spills still exists. Petroleum and natural gas pipelines can leak or erupt and cause property damage, environmental contamination, injuries, and even loss of life. Unfortunately, no comprehensive source of information about pipeline locations has yet been found on the internet by staff. However, a map of approximate locations of major pipelines appears in the Michigan Hazard Analysis document produced by the Michigan State Police Emergency Management Division. The clear majority of pipeline accidents that occur in Michigan are caused by third party damage to the pipeline, often due to construction or some other activity that involves trenching or digging operations.

Huron County Perspective

According to the National Pipeline Mapping System, there is one large gas transmission pipeline in Huron County. The gas pump, owned by Consumers Energy, is located at the southwest corner of Sebewaing Road and Bayport Road in Sebewaing Township. The pipeline runs through the Village of Sebewaing, Sebewaing Township, Brookfield Township, the Village of Owendale, Grant Township, Sheridan Township, Colfax Township, the City of Bad Axe, Verona Township, Sigel Township, Sand Beach Township, and the City of Harbor Beach. Map 19 shows the location in the County. Because there is a pipeline that traverses Huron County, there is a possibility of an accident. However, due to past occurrences and the low number of pipelines, the likelihood of occurrence is a possibility. For the general public, the most relevant aspect of this hazard is to be aware of the signs that may indicate a gas leak in one's own home or workplace, install appliances in your home or workplace to monitor gas levels, and to use the Miss Dig phone service whenever any sort of excavation, construction, or digging activities are being considered that may disturb the ground. The Miss Dig service can advise about whether a given location requires special treatment due to the presence of any type of underground infrastructure, including pipelines. Because the locations are unknown, obtaining knowledge before taking action is the most effective way for the public to effectively deal with this hazard. The contact information for Miss Dig is 811 or 1-800-482-7171, and more information can be found online at www.missdig.org. If there ever is an accident in the County, alert authorities who will have proper channels to contain spills.

INVASIVE SPECIES

A species that has been introduced by human action to a location where it did not previously occur naturally, becomes capable of establishing a breeding population in the new location without further intervention by humans, and becomes a pest by threatening local biodiversity and causing human health impacts, significant economic costs, and/or harmful ecological effects.

Most Vulnerable Jurisdictions: All

An invasive species is defined as a species that is: (1) non-native (alien) to the ecosystem under consideration and (2) 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). Human actions are the primary consideration here as a means of introducing invasive species (thus distinguishing the situation from natural shifts in the distribution of species). Nationally, the current environmental, economic, and health costs of invasive species were estimated as exceeding the costs of all other natural disasters combined.

Invasive species can be transported in many ways, such as on animals, vehicles, ships, commercial goods, produce, and clothing. Although non-native species are the foundation of U.S. agriculture, and also are used to prevent erosion, to provide fishing and hunting opportunities, and as ornamental plants and pets, occasionally a non-native organism flourishes too well and causes unwanted economic, ecological, or human health impacts. The terms "invasive" or "nuisance" are used to describe such

species. New environments may affect rates of reproduction, susceptibility to disease, and other features that affect a species' success. Consequently, a plant or animal that causes little damage to agriculture or natural ecosystems in one area may cause significant problems in another. Certain non-native species are very successful in their new habitats because they out-compete native plants or animals and have no natural controls (predators, diseases, etc.) in the new area. At least 200 well-known, high-impact, non-native species presently occur in the United States. They range from the European gypsy moth and emerald ash borer to crabgrass, dandelions, and German cockroaches, annually costing well over a billion dollars to control. Some even pose human health risks. Others, like the zebra mussel, threaten widespread disruption of ecosystems and the displacement or loss of native plants and animals.

Although invasive species, in most cases, primarily cause environmental damage and degradation, there are situations in which serious threats to public health, safety, and well-being can occur due to animal disease or plant/animal infestations. For example, certain diseases could wipe out large segments of an animal population, creating a potentially serious public health emergency and the need to properly (and rapidly) dispose of the dead animal carcasses.

According to the Emergency Management and Homeland Security Division of the Michigan Department of State Police, "a widespread insect infestation, such as that of the Emerald Ash Borer (early 2000s), can create serious public safety threats (especially in densely populated urban areas) due to dead and dying trees being fire-prone (because of their dry, brittle nature) or to partial/total collapse due to high winds or ice/snow accumulation. The falling trees or limbs can also bring down power lines, cause damage to public and private structures, and cause injuries or even death" (Source: Michigan Hazard Analysis, 2019).

Similarly, the European frog-bit (EFB), "a free-floating aquatic plant is listed as a high-risk invasive species by the Michigan Department of Agriculture and Rural Development due to its ability to establish quickly and potential for damage to aquatic habitats. The plant has strong, cord-like stolons beneath the water's surface that tangle together individual plants together into dense, floating mats. Impacts of the EFB include getting trapped in boat motors, clogging drains and irrigation channels. Additionally, the mats also reduce light and oxygen availability in the water which negatively impacts native plants and wildlife" (Source: Midwest Invasive Species Information Network, 2020).

Huron County Perspective

Although not necessarily perceived as being a hazard of disaster or emergency-level concern, invasive species can wreak havoc on a region, and most people won't notice until the damage is already done. There is a very wide variety of invasive species and diseases to be concerned with which is why this can be such a large problem for a region. Further, the list of threats is ever-evolving as new species are brought to an area, and their effects are discovered. The characteristics and management of these

threats are dynamic and frequently change, and there are many existing plans, programs, and resources already dedicated to addressing these threats. Huron County does not have a full assessment for these threats, but there are existing invasive species issues in the County. Invasive species are a threat that is extremely likely to occur each year. Efforts were made to identify specific geographic areas of invasive species risk within Huron County, but all known sources for this hazard did not include such a geographically detailed form of analysis. The most specific geographic detailed form of analysis can be found on the Saginaw Bay-CISMA (SB -CISMA), a project funded by the Michigan Invasive Species Program. The SB-CISMA collaborates with communities to eradicate infestations in the following counties: Arenac, Bay, Huron, Sanilac, Saginaw, and Tuscola (further information regarding this program can be found in Appendix E). However, the most that could be stated is that certain Michigan species (found on an updated watchlist at this site: Midwest Invasive Species Information Network (MISIN)) are of general concern.

The two of most concern are the Emerald Ash Borer (EAB) and *Phragmites Australis*. The Emerald Ash Borer was gradually intruding into the county sometime around 2003-2005, with great damages then occurring approximately around the year of 2012. The EAB caused Ash trees to die and placed many utility lines and roads at risk from falling branches and even entire trees. Impacts included downed utility lines, lost services, and occasional road closures in numerous locations throughout the county, especially as a result of strong wind events (Source: Michigan Hazard Analysis, 2019). Another species of concern in Huron County is *phragmites* or *Phragmites australis*. *Phragmites australis* is usually found in dense thickets growing in or near shallow water. These thickets displace native wetlands plants, alter hydrology and block sunlight to the aquatic community. These are of significant concern due to the Lake Huron shoreline. The species became prominent in Huron County in the early 2000s (Source: Midwest Invasive Species Information Network, 2020).

DROUGHT

A prolonged period with precipitation levels well below average, particularly during the planting and growing seasons in agricultural areas.

Most Vulnerable Jurisdictions: All

Drought is a normal part of the Michigan climate and of virtually all other climates around the world – including areas with high and low average rainfall. Drought differs from normal arid conditions found in low rainfall areas in that aridity is a permanent characteristic of that climate. Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. The severity of a drought depends not only on its location, duration, and geographical extent, but also on the water supply demands made by human activities and vegetation. The multifaceted nature of this hazard makes it difficult to define a drought and assess when and where one is likely to occur.

Drought differs from other natural hazards in several ways. First, it is difficult to determine the exact beginning and end of a drought since its effects may accumulate slowly and linger even after the event is generally thought of as being over. Second, the lack of a clear-cut definition of drought often makes it difficult to determine whether one exists, and if it does, its degree of severity. Third, drought impacts are often less noticeable than other natural hazards, and they are typically spread over a much larger geographic area. Fourth, due primarily to the aforementioned reasons, most communities do not have any contingency plans in place for addressing drought. This lack of pre-planning can greatly hinder a community's response capability when a drought does occur.

Droughts can cause many severe impacts on communities and regions, including: (1) water shortages for human consumption, industrial, business, and agricultural uses, power generation, recreation, and navigation; (2) a drop in the quantity and quality of agricultural crops; (3) decline of water quality in lakes, streams and other natural bodies of water; (4) malnourishment of wildlife and livestock; and (5) increase in wildfires and wildfire-related losses.

Previous Events (Source: National Centers for Environmental Information, 2020)

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
	7/1/2001	Drought	0	0		
	9/1/2002	Drought	0	0		

Huron County Perspective

It is estimated that the County, like the State, may be dealing with drought conditions about one out of every four or five years (although some drought conditions may extend across more than one year). With a more serious drought occurring once every 15 years. The potential impacts appear to be most severe for the area's agricultural industry, with the past decade's drought events causing millions of dollars of crop losses. According to the National Climate Data Center, Huron County has experienced two droughts since 2001, meaning this hazard is a possibility for the County.

Methods for mitigating drought damage involve stockpiling water in reservoirs and establishing a means of distribution for that water, including pipelines and irrigating structures. In addition, drought has been seen to increase the risks of wildfire occurrences and severity. In some cases, rural areas may rely on certain natural bodies of water for adequate supplies when fighting fires, and the effects of drought may have drastically reduced such resources. Some alternative means of water supply or supplementation should also be considered for such circumstances.

FIXED SITE HAZARDOUS MATERIAL INCIDENTS (INCLUDING OIL AND GAS WELL ACCIDENTS)

Hazardous Material Incident- An uncontrolled release of hazardous materials from a fixed site capable of posing risk to life, health, safety, property, or the environment.

Industrial Accident: A fire, explosion, or other severe accident, especially if it involves hazardous materials, at an industrial facility that results in serious property damage, injury, or loss of life.

Most Vulnerable Jurisdictions: All

Hazardous Material Incidents

A hazardous material incident is an uncontrolled release of hazardous materials from a fixed site, capable of posing a risk to health, safety, property, and the environment. Hazardous materials are present in quantities of concern in business and industry, agriculture, universities, hospitals, utilities, and other community facilities. Hazardous materials are materials or substances which, because of their chemical, physical, or biological nature, pose a potential threat to life, health, property, and the environment if they are released. Examples of hazardous materials include corrosives, explosives, flammable materials, radioactive materials, poisons, oxidizers, and dangerous gases. The government highly regulates hazardous materials to reduce risk to the general public, property, and the environment. Despite precautions taken to ensure careful handling during the manufacture, transport, storage, use, and disposal of these materials, accidental releases are bound to occur. Areas at most risk are within a one to five-mile radius of identified hazardous material sites. Many communities have detailed plans and procedures in place for responding to incidents at these sites. However, releases can still cause severe harm to people, property, and the environment if proper mitigative action is not taken in a timely manner.

Industrial Accidents

Industrial accidents differ from hazardous material incidents in the scope and magnitude of offsite impacts. Whereas hazardous material incidents typically involve an uncontrolled release of material into the surrounding community and environment that may require evacuations or in-place sheltering of the affected population, the impacts from industrial accidents, which are often confined to the site or facility itself, create minimal physical outside impacts. Nonetheless, industrial accidents, such as fires, explosions, and excessive exposure to hazardous materials, may cause injury or loss of life to workers at the facility and significant property damage. In addition, industrial accidents can cause severe economic disruption to the facility and surrounding community and significant long-term impacts on the families of the workers injured or killed. Map 20, at the end of this section, depicts all the industrial areas in the County.

SARA Title III

In 1986, President Reagan signed into law the Superfund Amendments and Reauthorization Act (SARA). Included under Title III of SARA was the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), commonly known as SARA Title III. SARA Title III is meant to encourage and support emergency

planning efforts at the State and local levels and to provide the public and local units of government with information concerning potential chemical hazards present in their communities. Determining if a facility is subject to emergency planning requirements is straightforward. The Environmental Protection Agency (EPA) publishes a list of Extremely Hazardous Substances (EHS). For each EHS, the list identifies and describes the chemical and includes a number called a Threshold Planning Quantity (TPQ). The TPQ, expressed in pounds, is the key number. If a facility has within its boundaries an amount of an EHS equal to or in excess of its TPQ, then Section 302 of SARA Title III requires that the facility is subject to emergency planning requirements and must notify both the State Emergency Response Commission (SERC) and the Local Emergency Management Office of this fact. The facility must also identify an emergency response coordinator who works with the Local Emergency Management Office on developing and implementing the local emergency plan at the facility. This regulation applies even if the chemical is on-site for only a day. There are no exemptions for emergency planning notification.

Huron County Perspective

The County is home to various industrial businesses that have the potential to create an industrial accident. There are agricultural operations that also have the potential to cause hazardous material spills on site. The majority of the industrial sites are private facilities, and therefore, if there is a spill on-site, the general public will be somewhat unaffected. Costs include environmental clean-up, activation of emergency management and HazMat teams, response, deaths, major and minor exposures, evacuations of nearby residents, and loss of economic activity. Areas that are more prone to fixed-site incidents are those in proximity to a SARA Title III site. These sites are required to work with the local emergency management committee to put plans in place for any potential accidents or spills.

Due to the agricultural nature of Huron County, it is more likely for the County to experience agricultural fixed-site incidents. For example, there could be a manure spill on a farm that contaminates a local waterway and then flows downstream and kills the fish population in that waterway. This happens once a year in the County due to the large amount of agricultural operations. One other example was a 2,500-gallon acid spill at an industrial site in the County. The site containment worked as designed and there were no off-site damages, but these type of events are possible occurrences in the County.

Oil and Natural Gas Well Accidents

An uncontrolled release of oil or gas from wells, or its poisonous by-product, hydrogen sulfide.

Most Vulnerable Jurisdictions: All

Oil and natural gas are produced from fields scattered across 63 counties in the Lower Peninsula. From 1927 to 2009, 56,525 oil and natural gas wells have been drilled in Michigan, of which roughly half currently produce oil and gas. To date, Michigan wells have produced approximately 1.4 billion barrels of crude oil and 6 trillion cubic feet of Natural Gas.

Many of Michigan's oil and gas wells contain extremely poisonous hydrogen sulfide (H₂S) gas. Hydrogen sulfide is a naturally occurring gas mixed with natural gas or dissolved in the oil or brine and released upon exposure to atmospheric conditions. Over 1,300 wells in Michigan have been identified as having H₂S levels exceeding 300 parts per million (ppm). At concentrations of 700 ppm, as little as one breath of hydrogen sulfide can be deadly. Although hydrogen sulfide can be detected by a "rotten egg" odor in concentrations from 0.03 ppm to 150 ppm, larger concentrations paralyze a person's olfactory nerves so that odor is no longer an indicator of the hazard. Within humans, small concentrations can cause coughing, nausea, severe headaches, irritation of mucous membranes, vertigo, and loss of consciousness. Hydrogen sulfide forms explosive mixtures with air at temperatures of 500 degrees Fahrenheit or above, and is dangerously reactive with powerful oxidizing materials. Hydrogen sulfide can also cause the failure of high-strength steels and other metals. This requires that all company and government responders be familiar not only with emergency procedures for the site, but also with the kinds of materials that are safe for use in response.

Huron County Perspective

Hazard Assessment: Due to no previous incidents in Huron County, as well as the lack of significant number of oil and gas wells in the County the potential impact of this hazard on human life, property and natural resources is not considered significant.

According to the Michigan Hazard Mitigation Plan, Huron County has a total of two registered oil and gas wells. The DNR has detailed mapping information highlighting the location of well, storage sites, and other detailed information pertaining to this hazard. The County doesn't have a particularly large number of such wells, compared to many other counties throughout Michigan. Due to the location of the two wells, no critical facilities are considered to be at risk from oil or gas well incidents. Due to the lack of wells, location of existing wells, and no previous occurrences, the potential impact is low.

INFRASTRUCTURE FAILURES

A failure of critical public or private utility infrastructure resulting in a temporary loss of essential functions and/or services.

Most Vulnerable Jurisdictions: All

Public and private utility infrastructure provides essential life-supporting services such as electric power, heating and air conditioning, water, sewage disposal and treatment, storm drainage, communications, and transportation. When one or more of these independent yet inter-related systems fail due to disaster or other cause - even for a short time - it can have devastating consequences. For example, when power is lost during periods of extreme heat or cold, people can literally die in their homes. When the water or wastewater treatment systems in a community are inoperable, serious public health problems arise that must be addressed immediately to prevent outbreaks of disease. When storm

drainage systems fail due to damage or an overload of capacity, serious flooding can occur. All of these situations can lead to disastrous public health and safety consequences if immediate mitigative steps are not taken. Typically, it is the most vulnerable segments of society - the elderly, children, ill or frail individuals, etc., that are most heavily impacted by an infrastructure failure. If the failure involves more than one system, or is large enough in scope and magnitude, whole communities and even regions can be negatively impacted. Much infrastructure is handled locally and not described on websites that can be listed here, but the sections on dam failure, lightning, extreme temperatures, drought, and so on, may be helpful when considering this multifaceted issue.

Huron County Perspective

Infrastructure failures have occurred in Huron County, and are expected to occur in the future. Many cases of infrastructure failure result from utility failures and weather events. Failure of electrical power infrastructure in Michigan has mostly been the result of severe weather incidents such as winds, snow, or ice. Temporary loss of electrical power because of severe weather conditions is not uncommon, but because duration of outages vary so widely, accurate loss of power in terms of frequency can only be estimated based on the frequency of severe weather events. Because larger storms could cause more severe damage to the power infrastructure, it is important that facilities which require power for essential and life-sustaining services maintain long-lasting power back-ups.

There are no areas of the County that are more at risk for infrastructure failure than others, but some facilities house special populations such as: special care facilities, hospitals, and potentially daycare facilities, senior housing complexes and schools. At a minimum, every community government building, or an alternate building, should be equipped with emergency generators to adequately assist residents and stranded travelers in need during such emergencies. The risk of infrastructure failure in Huron County is very likely.

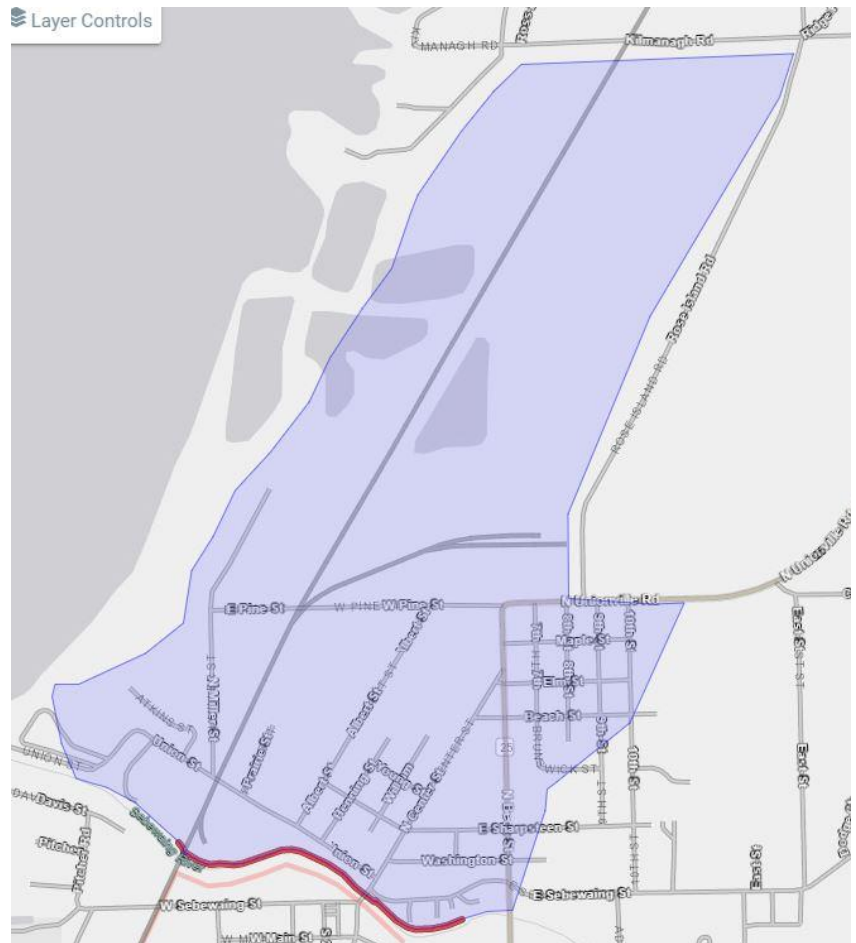
In addition to general infrastructure failures, there is also a levee system in the Village of Sebewaing which has the potential for failure and would have very significant impacts on specific areas in the Village. The levee system consists of the North Bank and South Bank.

The North Bank

The North Bank was constructed in 1948 to provide flood damage reduction to the Sebewaing, Michigan. The system is operated and maintained by the USACE, Detroit District. This project enlarged the channel and constructed levees and floodwalls to provide flood risk reduction to the residential and agricultural areas north of the river, with an estimated population of 580 people. The North Bank Levee System consists of approximately 3000 feet of earthen levees, concrete flood walls, and steel sheet pile walls, ranging from 1.5 to 4 feet in height. There are 395 buildings protected by the North Bank Levee and the area has a property value of 101 million dollars.

In 2016, the U.S. Army Corps of Engineers completed a risk assessment on the levee system and found the risk associated with overtopping or breach failure to be low. A small section of the earthen levee has heavy vegetation, which introduces root systems that create paths for water to flow through the structure. This water has the potential to carry soil as it flows through the levee, eroding the earthen embankment and leading to a collapse of the structure. Large trees near the concrete floodwalls can prevent inspection, and could also damage the floodwall if the trees overturn. If the levee system failed or overtopped, the leveed area could flood up to 3 feet deep. This is estimated to cause \$4 - \$6 Million in damages to homes, agricultural lands, and businesses. While the levee is in poor condition, the risk for life loss if it were to fail is low due to the shallow depth of water, low population, and relatively easy evacuation.

The latest inspection of the levee was conducted in 2019 and the rating was Minimally Acceptable, with primary deficiencies being unwanted vegetation growth on and around the levees and floodwalls. The North Bank levee is active in the PL 84-99 Rehabilitation Program. Appendix E includes a summary of the Levee and documentation from the 2019 inspection.



NOTE: Information regarding The North Bank was taken from the National Levee Database last updated in 2021.

The South Bank

The South Bank was in 1948 to provide flood damage reduction to the Sebawaing, Michigan. The system is operated and maintained by the USACE, Detroit District. This project enlarged the channel and constructed levees and floodwalls to provide flood risk reduction to the residential and agricultural areas south of the river, with an estimated population of 365 people. The South Bank Levee System consists of approximately 1,500 feet of earthen levee and 650 feet of federal steel sheet piling revetment and concrete retaining wall. The height of the levees range from 1.5 to 4.5 feet. At the

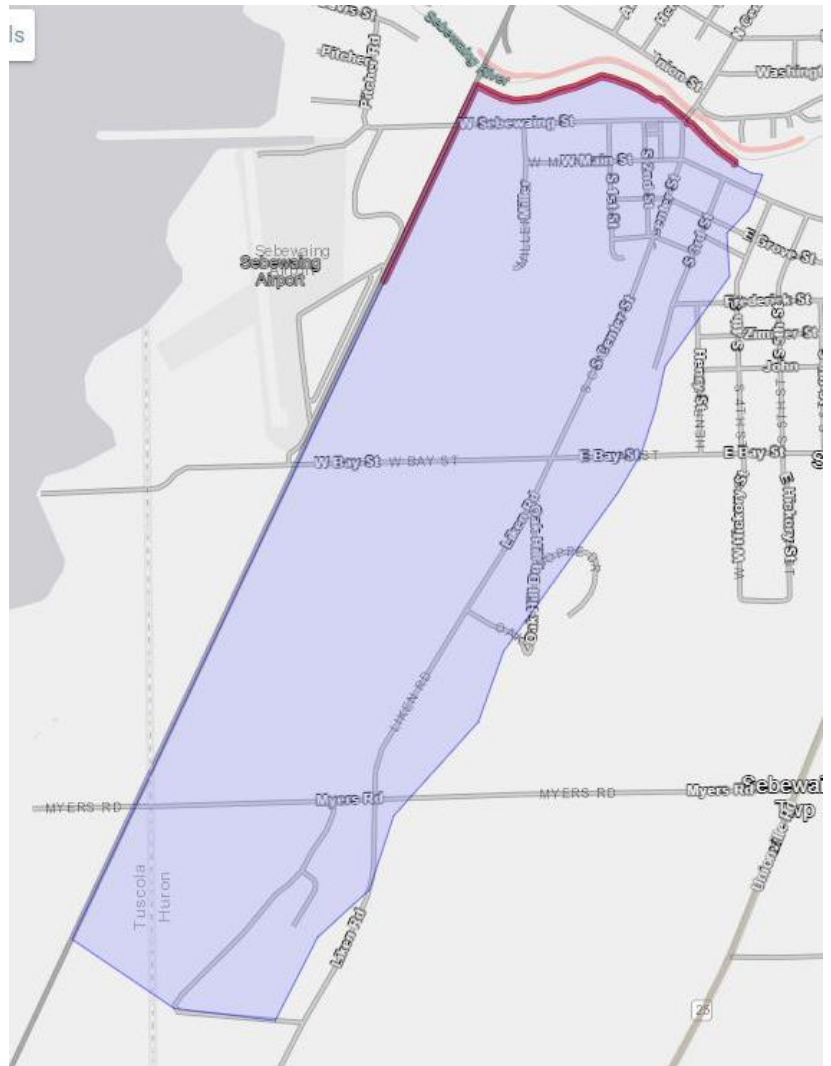
downstream end, the levee ties into a railroad embankment that serves as high ground. The railroad embankment is considered a 'non-project feature, meaning it wasn't part of the construction project, but it is required for the project to function properly. There are 241 buildings protected by the South Bank Levee and the area has a property value of 29.4 million dollars.

USACE completed a risk assessment of the Sebewaing South Bank Levee System in 2019. Overall, the risk assessment found the levee system to be low risk. Several issues with the levee system were identified. Structures that have been built into the levee increase the chance that the levee could collapse during a flood event. There are also large trees on the earthen levees, which introduces root systems that create paths for water to flow through the structure. This water has the potential to carry soil as it flows through the levee, eroding the earthen embankment and leading to a collapse of the structure. If the trees were to topple during a storm event, the levee could breach. In addition, river erosion has left steep unstable riverside slopes. Should the levee collapse during a flood, the leveed area would flood up to 4 feet deep. This is estimated to cause \$4 -\$6 Million in damages to homes, agricultural lands, and city property. While the levee is considered to be in poor condition, no life loss is anticipated due to low population and relatively easy evacuation. Therefore, the overall risk was estimated to be low. See documentation from the 2019 inspection in Appendix E.

The rating from the 2019 inspection was Minimally Acceptable. Primary deficiencies were unwanted vegetation growth on and around the levees and floodwalls.

Additionally, several buildings, retaining walls, stairs, and other structures were encroaching on the levee and located within 15 feet of the levee. The South Bank levee is active in the PL 84-99 Rehabilitation Program.

NOTE: Information regarding The South Bank was taken from the National Levee Database last updated in 2021.



SABOTAGE/TERRORISM

An intentional, unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political, social, or religious objectives.

Most Vulnerable Jurisdictions: All

Terrorism is described as activities that involve violent or life-threatening acts that are a violation of the criminal laws of the United States and appear to be intended to intimidate or coerce a civilian population, to influence the policy of a government by intimidation or coercion, or to affect the conduct of a government by mass destruction, assassination, or kidnapping. Terrorism is used to achieve political goals by inciting fear and uncertainty in a large population.

Terrorists use fear as a weapon to achieve their goals. Often terrorists are small groups that could never achieve their political goals, so they use fear techniques that affect a small population but are then covered by the media and thus are able to cause negative effects across the whole country. There are both foreign and domestic terrorists, and while sometimes they are working toward the same goals, the domestic groups often have very different political agendas.

There are numerous ways to carry out a terrorist attack and the specific effects, and how law enforcement respond often depends on the tools used. These tools could include explosives, incendiaries, airline attacks, shootings, chemical weapons, biological weapons, radiological weapons, nuclear weapons, sabotage, and cyber-attacks.

Because sabotage/terrorism objectives are so widely varied, so are the potential targets of such actions. Virtually any public facility or infrastructure, or place of public assembly, can be considered a potential target. In addition, certain types of businesses engaged in controversial activities are also potential targets, as are large computer systems operated by government agencies, banks, financial institutions, large businesses, health care facilities, and colleges/universities.

Shootings

One specific type of terrorist attack and criminal activity that is becoming more common is mass shootings. The DHS describes these individuals as active shooters, and they are individuals who are actively engaged in killing or attempting to kill people in a confined and populated area. More often than not, these shooters use firearms, and there is no pattern or method to select victims.

Firearms can be used to target a specific individual or to attack many people in a crowded place. Shootings at schools and workplaces are among the most common types of major criminal attacks. An important drawback of firearms in a mass shooting is that the attacker is not likely to get away. Attackers either fire at a large group at close range or a sniper-type attack from a distance. Countermeasures against shooting are difficult because attackers usually choose unprotected public areas. However, appropriate security measures and effective lock-down training can limit casualties in

high-risk buildings such as schools. Rapid response by well-trained law enforcement officers and emergency medical personnel is also crucial.

Cyber Attack

Cyber attacks are a new category of terrorism and criminal threats, which involve the use of computers, electronic devices, and/or the internet to attack computer systems. Examples of cyber attacks include computer viruses, denial-of-service attacks, and hacking attacks. These attacks may be used as part of extortion schemes, or to undermine public confidence, as a form of technological vandalism, or military sabotage. Amateur hackers conducted early cyber attacks; however, well-organized groups of profit-driven cyber-attackers have developed more recently. These groups are able to attack systems on a global basis. Other possible cyber-attackers include hacktivists which are criminals motivated by a political cause. These attacks could be used to infiltrate critical systems within the government, including data files, law enforcement, water treatment facilities, electrical grids, or utility lines.

The State has several initiatives in place to prepare for cyber attacks and to educate the local governments on how to best protect themselves. FEMA considers early detection and prevention the best way to avoid these attacks. Therefore, local governments should work to ensure their information is secure and have plans in place to prepare for any breaches in security, and the aftereffects of those attacks.

Huron County Perspective

Sabotage and Terrorism are difficult to rank due to the uncertainty of the type of attack, location(s), and lack of warning. The risk of a terrorist event is low. There is no record of any past events in Huron County; one assumption is that such attacks would be targeted at population centers or specific government, transportation, or industrial facilities. While this hazard is certainly of concern given the level of uncertainty, it has never occurred in Huron County. There are many training programs that emergency management personnel can participate in, and the state and federal government have many plans and programs in place in the event of an attack.

CIVIL DISTURBANCE

A public demonstration or gathering, or an uprising in a prison or other institution that results in some disruption of essential community functions, or in rioting, looting, arson, or other unlawful behavior.

Most Vulnerable Jurisdictions: All

Large-scale civil disturbances rarely occur, but when they do they are usually an offshoot or result of one or more of the following events: labor disputes where there is a high degree of animosity between the 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 or regard by a particular segment of society. Areas subject to civil disturbances may encompass large portions of a community. Types of facilities that may be subject to or adversely impacted by civil disturbances may include government buildings, military

bases, nuclear power plants, universities, businesses, and critical service facilities such as police and fire stations. Prison uprisings are normally the result of perceived injustice by inmates regarding facility rules, operating procedures, living conditions, or insurrections started by rival groups or gangs within the facility. Civil disturbances (including prison uprisings) often require the involvement of multiple community agencies in responding to and recovering from the incident.

Huron County has a diverse political and cultural population. The current climate of social justice activism is also in place within Huron County and residents have displayed their constitutional rights to publicly express diverse opinions and goals during 2020. While the local activism has been peaceful and respectful, it is proper that the authorities prepare for outlier protests and counter-protests that seek to cause damage and harm to otherwise peaceful communities and citizens.

Huron County Perspective

The threat of civil disturbances in Huron County occur periodically. There are no large population centers and the only facility where there is a potential for unrest is the Huron County Jail located in Bad Axe. If there were an issue with the jail, the chances are likely that any problems would be contained within the facility itself.

In recent news, there has been widespread civil protests and unrest across the Country in association with the Black Lives Matter group and issues regarding the police force. While large-scale riots are unlikely in Huron County, even a small-scale riot could rapidly overwhelm local resources. Plans and exercises are being formulated, practiced, and revised to accommodate the lawful rights of citizens to exercise public protests and exchanges of ideas and the potential for unlawful activity to infiltrate otherwise lawful activity. While there has been an increase in civil unrest across the Country, Huron County has not seen a significant increase; therefore, the risk remains low.

Subsidence

Depressions, cracks, and sinkholes in the ground surface, which can threaten people and property.

Most Vulnerable Jurisdictions: All

Subsidence depressions, which normally occur over many days to a few years, may damage structures with low strain tolerances, such as dams, nuclear reactors, and utility infrastructure. The sudden collapse of the ground surface to form sinkholes poses an immediate threat to life and property. Such ground movements may continue for several days, weeks, months or even years, until the walls stabilize. The population most at risk would be in areas where industrial or residential development has occurred above active or abandoned mines where underground cavities are present near the surface, as well as areas where an extensive amount of groundwater has been withdrawn.

Huron County Perspective

Huron County does not have a history of mining and there have been very few events of subsidence occurrences. Additionally, no critical facilities are considered to be at risk from subsidence. No areas in the County are more at-risk than others to subsidence. This hazard is not considered a significant threat

to Huron County. There have been no known significant subsidence events within Huron County(based upon the hazard analysis performed for this plan).

Earthquake

A sudden motion or trembling in the earth caused by an abrupt release of slowly accumulating strain which results in ground shaking, surface faulting, or ground failures.

Most Vulnerable Jurisdictions: All

Most areas of the United States are subject to earthquakes (including parts of Michigan), and they occur thousands of times per year. Most earthquake occurrences are minor tremors that result in little or no damage. However, when moderate or severe earthquakes occur, the results can be devastating in terms of loss of life, property, and essential services. One of the most dangerous characteristics of earthquakes is their ability to cause severe and sudden loss. Within one to two minutes, an earthquake can devastate an area through ground shaking, surface fault ruptures, and ground failures. Most deaths and injuries are not directly caused by the earthquake itself, but rather indirectly through the collapse of structures. Earthquakes are measured by their magnitude and intensity. Magnitude is a measure of the amount of energy released at the epicenter or origin of the event. The Richter Magnitude Scale is commonly used to determine earthquake magnitude. An earthquake of 5.0 is a moderate event, 6.0 characterizes a strong event, 7.0 is a major earthquake, and 8.0 is a catastrophic earthquake. Earthquake intensity is the measure of the damage done at a given location. In the U.S., the most commonly used intensity scale is the Modified Mercalli Intensity Scale, which describes 12 increasing levels of intensity ranging from undetectable to catastrophic.

Although earthquake risks in Michigan are generally quite low, this often means that structures or utilities (such as gas mains) may not have been built to withstand even the forces of relatively gentle seismic occurrences. Thus, although risks may be low, vulnerabilities may be moderate or high in such cases. Mitigation strategies in Michigan would mainly focus on evaluating and improving the seismic resistance of vulnerable utility systems that did not take seismic disturbances into account.

Huron County Perspective

Huron County communities should be prepared for an earthquake. The closest fault line is the New Madrid Fault, located from Cairo, Illinois, through New Madrid, Missouri, to Marked Tree, Arkansas. However, given the frequency of such an event and the distance from a major fault line, earthquakes are not considered a significant hazard for Huron County. The County has never experienced an earthquake. But if the County were to experience an earthquake, the most significant effect could be damage to natural gas and petroleum pipelines as well as water supply mains.

NUCLEAR ATTACK AND NUCLEAR POWER PLANT ACCIDENTS

Any hostile attack against the United States, using nuclear weapons, which results in destruction of military and/or civilian targets.

Most Vulnerable Jurisdictions: All

All areas of the United States are conceivably subject to the threat of nuclear attack. However, the strategic importance of military bases, population centers, and certain types of industries place these areas at greater risk than others. The nature of the nuclear attack threat against the U.S. has changed dramatically with the end of the "Cold War" and the conversion of previous adversaries to more democratic forms of government. Even so, the threat still exists for a nuclear attack against this country. Despite the dismantling of thousands of nuclear warheads aimed at U.S. targets, there are still a large number of nuclear weapons that exist in the world capable of destroying multiple locations simultaneously. In addition, controls on nuclear weapons and weapons components are sporadic at best in the former Soviet Union. The number of countries capable of developing nuclear weapons continues to grow despite the ratification of an international nuclear nonproliferation treaty. The possibility of nuclear materials being used in a terrorist attack is also becoming more plausible. It appears that the threat of nuclear attack will continue to be a hazard in this country for some time in the future. At this point, attack planning guidance prepared by the Federal government in the late 1980s still provides the best basis for a population protection strategy for Michigan. That guidance has identified 25 potential target areas in Michigan and four in Ohio and Indiana that would impact Michigan communities, classified as follows: commercial power plants, chemical facilities, counterforce military installations, other military bases, military support industries, refineries, and political targets. For each of these target areas, detailed plans have been developed for evacuating and sheltering the impacted population, protecting critical resources, and resuming vital governmental functions in the post-attack environment. While it is possible for a device to be detonated accidentally in unintended or seemingly random locations due to error, technological device limitations, or mission failure, it is still a reasonable assumption that the locations that are at the greatest risk of attack are those that are most vital to our country's operation. In addition to specific ground target areas, some high-altitude detonation sites may be selected with the intention of maximizing the disruptive effects of a nuclear weapon's electromagnetic pulse on our country's electronic infrastructure.

Huron County Perspective

While very unlikely to occur, if a nuclear attack did happen, the results could be devastating to the entire County population. Nuclear attacks are significant threats, given immediate impact as well as the long-term impact on human life and the food chain. There are no significant targets in Huron County, nor is there a large population concentration.

Nuclear Power Plant Accidents

An actual or potential release of radioactive material at a commercial nuclear power plant or other nuclear facility, in sufficient quantity to constitute a threat to the health and safety of the off-site population.

Most Vulnerable Jurisdictions: All

Such an occurrence, though not probable, could affect the short and long-term health and safety of the public living near the nuclear power plant, and cause long-term environmental contamination around the plant. As a result, the construction and operation of nuclear power plants are closely monitored and regulated by the Federal government. Communities with a nuclear power plant must develop detailed plans for responding to and recovering from such an incident, focusing on the 10-mile Emergency Planning Zone (EPZ) around the plant, and a 50-mile Secondary EPZ that exists to prevent the introduction of radioactive contamination into the food chain. Michigan has three active commercial nuclear power plants and one inactive one, in addition to four small nuclear testing/research facilities located at three state universities and within the City of Midland.

Huron County Perspective

Huron County is located outside of the 50-mile emergency planning zone for a nuclear power plant, see Map 22 for nuclear power plant locations. This hazard is not considered to be a significant threat to Huron County.

Huron County Disaster Declaration List

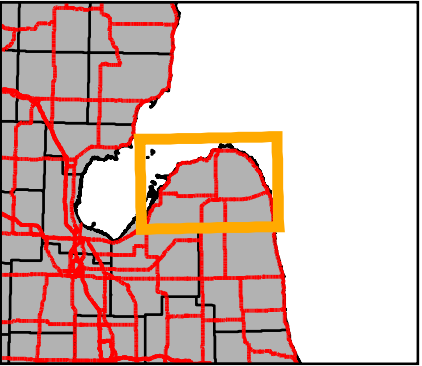
The following is a list of Governors and Presidential Disaster Declaration Days for Huron County.

Table 32 Disaster Declarations

Huron County Disaster Declarations		
Date	Event	Type
Presidential Declarations		
03/2020	Pandemic	Major Disaster
12/2000	Blizzard, Snowstorm	Emergency
09/1986	Flooding	Major Disaster
04/1973	Flooding	Major Disaster
Governor's Declarations		
09/1986	Flooding, Heavy Rain	Disaster
10/1986	Flooding, Flooding Heavy Rain	Disaster

FEMA 100 YEAR FLOOD ZONES

Huron County, Michigan

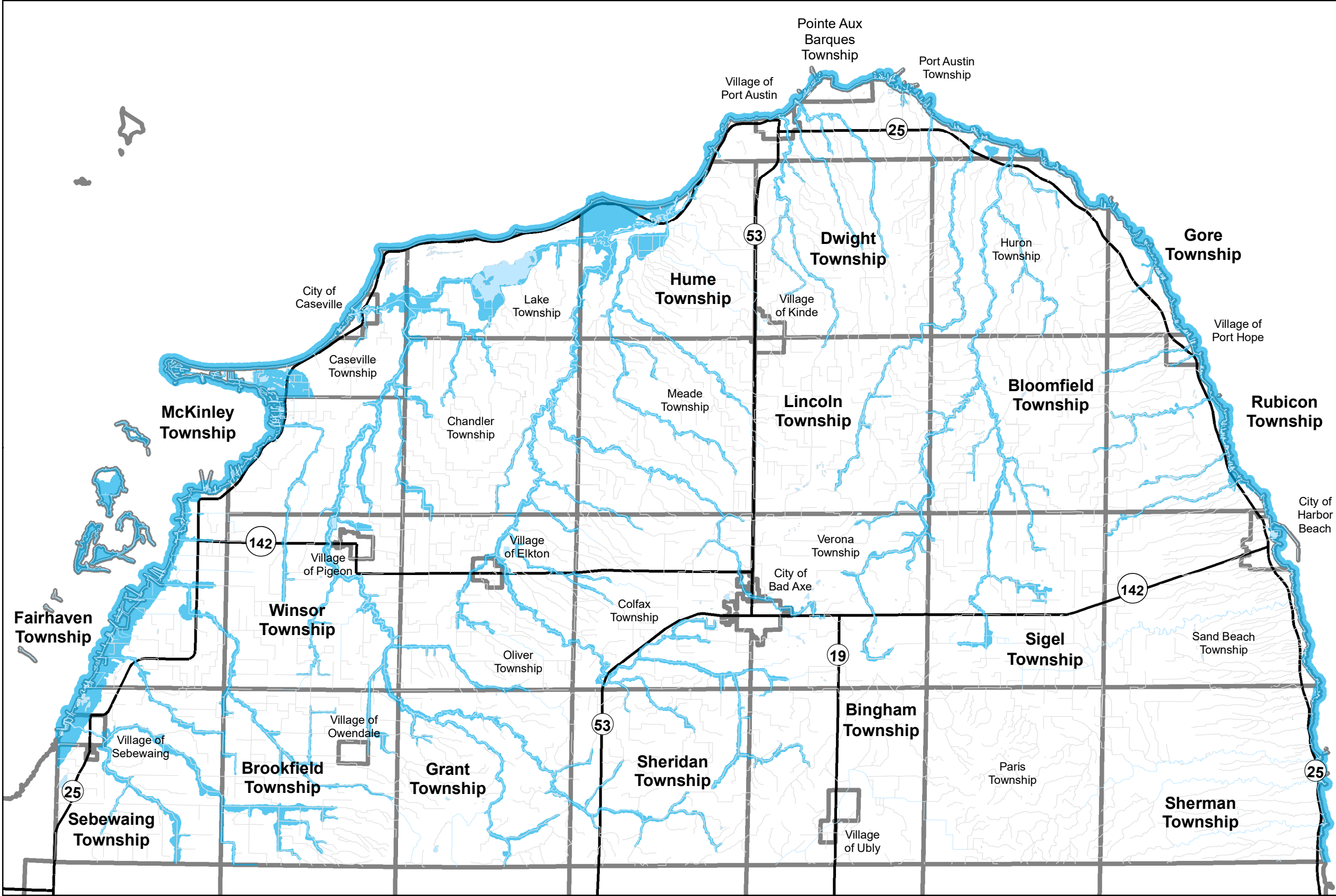


AREA MAP
NOT TO SCALE



LEGEND

- Water Features
- Drains
- 100 Year Flood Zones



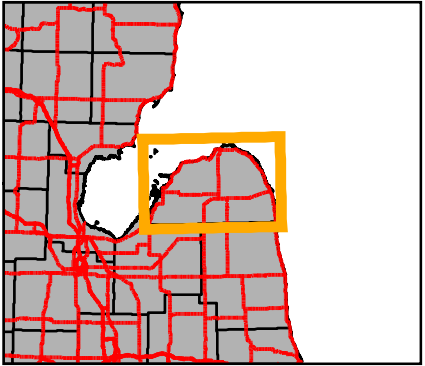
Source: Federal
Emergency Management Agency

Spicer group
SAGINAW'S OFFICE
230 S Washington Ave
Saginaw, MI 48607
Tel. 989-754-4747
www.SpicerGroup.com

Date November 2019

NATURAL GAS PIPELINE LOCATIONS

Huron County, Michigan

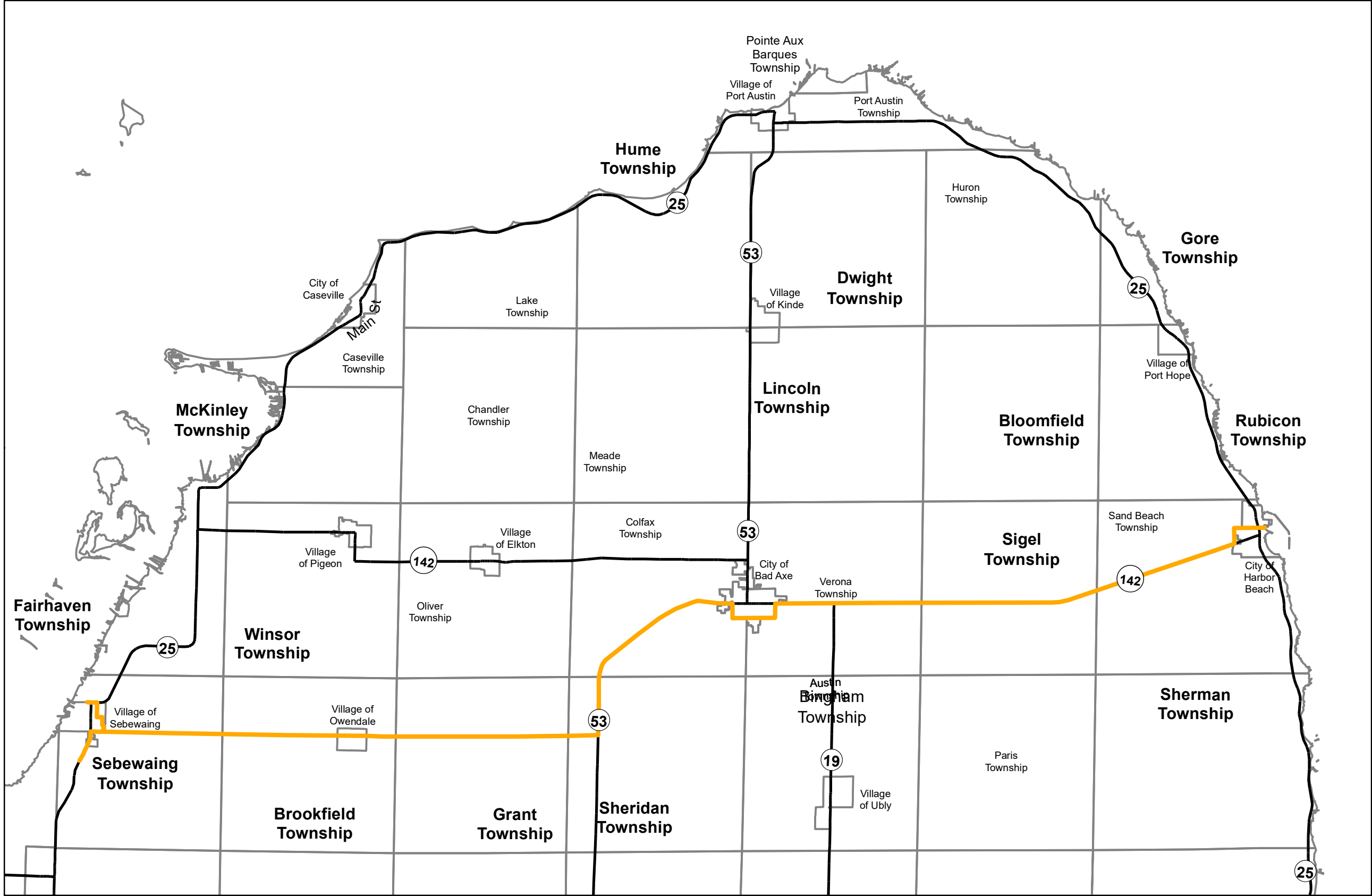


AREA MAP
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LEGEND

 Natural Gas



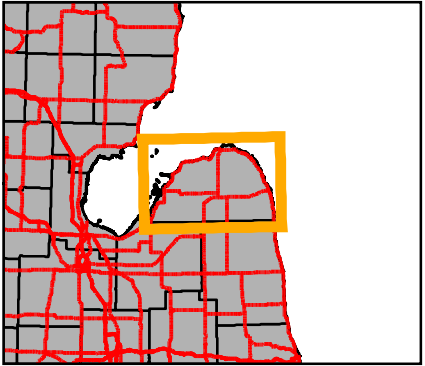
Source:
National Pipeline Mapping System

Spicer group
SAGINAW'S OFFICE
230 S Washington Ave
Saginaw, MI 48607
Tel. 989-754-4747
www.SpicerGroup.com

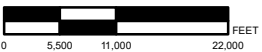
Date July 2020

SARA TITLE III SITES

Huron County, Michigan

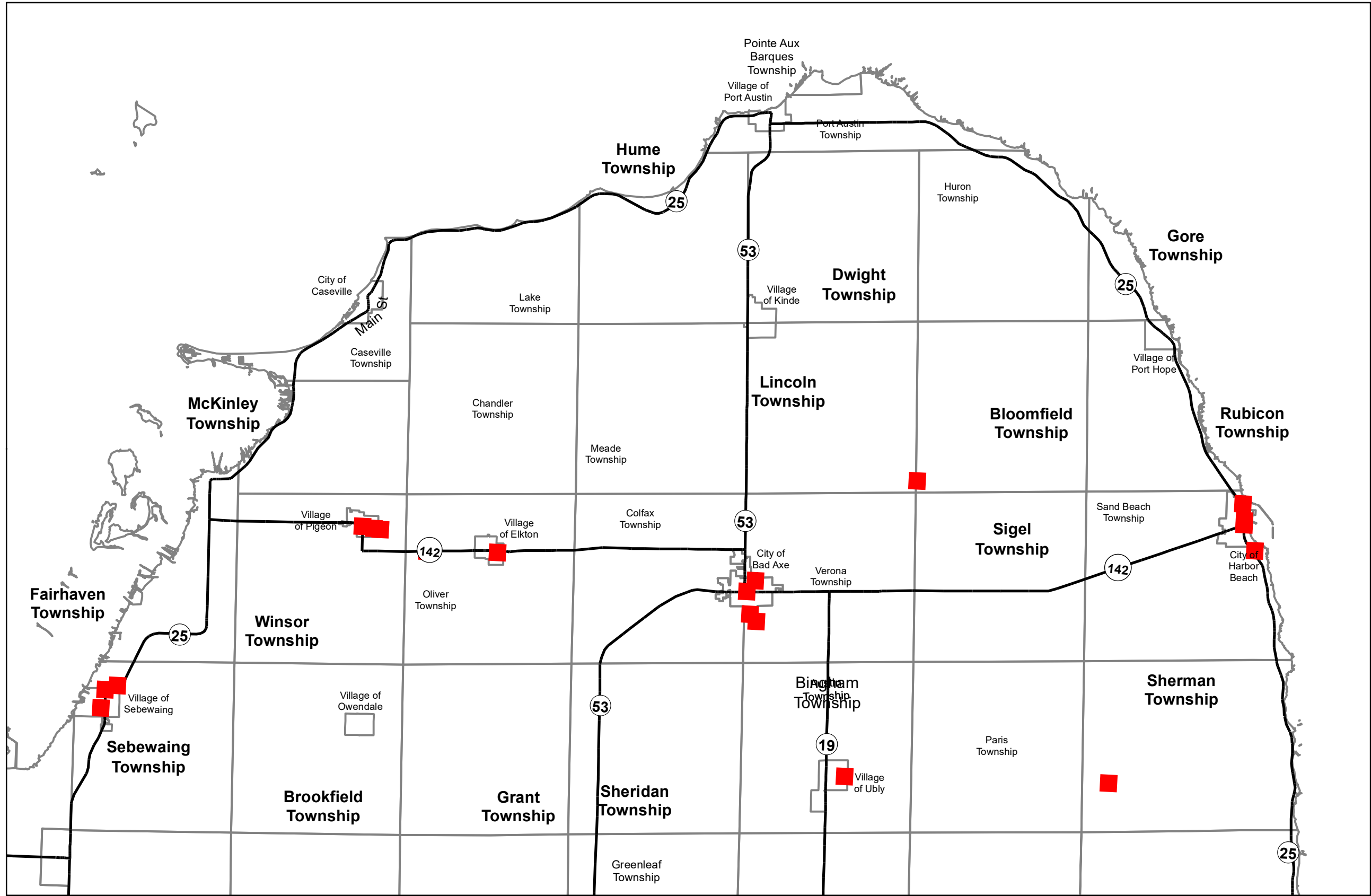


AREA MAP
NOT TO SCALE



LEGEND

 Sara Title III Sites



Source:
Michigan Geographic Data Library

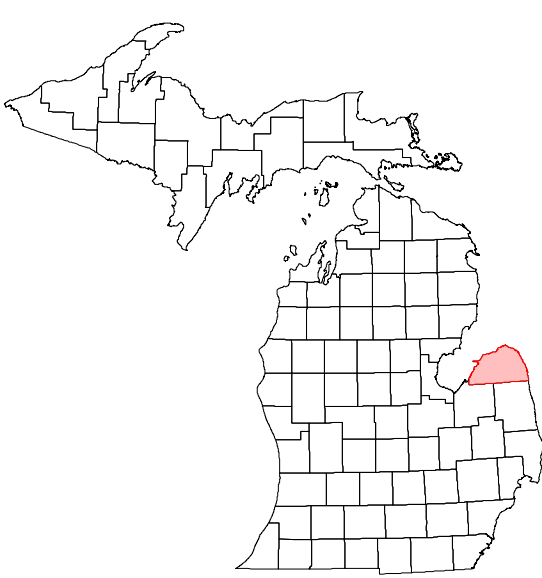
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Tel. 989-754-4747
www.SpicerGroup.com

Date July 2020

OIL AND GAS WELL LOCATIONS AND DNR OWNERSHIP

Huron County

Map Locator



LEGEND

- OIL AND GAS WELLS**
- Oil
 - Natural Gas
 - Gas Condensate
 - Gas Injection
 - Gas Storage
 - Liquefied Petroleum Gas Storage
 - Gas Production and Brine Disposal
 - Brine Disposal
 - Dry Hole
 - Water Injection
 - Other Injection
 - Observation
 - Other
 - Permitted Well Location
- SURFACE LOCATIONS**
- Surface of Directional Well
- DIRECTIONAL LINES**
- Directional
 - Horizontal (90 deg.)
- PLUGGED WELLS**
- Plugged Well Symbol
- WELL PERMIT NUMBER**
- 45123 Permit Number
- DNR OWNERSHIP**
- Surface
 - Mineral and Surface
 - Minerals
 - Mixed Ownership
 - Other Rights
 - Reserved Minerals
- ROW** DNR has a Right of Way and/or an acquired easement(s) from private landowner within the quarter-quarter section
- TRANSPORTATION**
- Two-Track and Seasonal Roads
 - Highways
 - Residential Roads
 - Railroads
 - Paved Airports
 - Unpaved Airports
 - County Roads
- UTILITY**
- Pipelines and Transmission Lines
 - Electric Transmission Lines
- POLITICAL**
- Township Boundaries
 - Great Lakes Shoreline
 - County Boundary
 - Section Lines
- HYDROLOGY**
- Lakes and Ponds
 - Rivers and Streams
 - Drains and Intermittent Streams

2 0 2 4 Miles



MAP INFORMATION
Oil and gas well information obtained from drilling records on file at the Michigan Department of Environmental Quality (MDEQ), Geological and Land Management Division. Additional information on oil and gas wells can be obtained by contacting GLMD, MDEQ.

DNR Land Ownership information is derived weekly from the MDNR's Land Ownership Database. Parcel information is compiled to the quarter-quarter section level. Multiple parcels with varying types of ownership within a quarter-quarter section result in the Mixed Ownership Category. Non-ownership rights are classified as Other Rights.

COMPLETENESS and QUALITY
In general, the data does not reflect platted parcels, Private Claims, and parcels within the City of Detroit and/or Saint Clair County Flats.

The amount of acreage owned within a quarter-quarter section is identified by acreage labels in the upper-right corner of each quarter-quarter section.

The quality and completeness of this data is unknown. It is suggested that this data be combined with a second source, such as plat maps, to further identify ownership.

The information displayed on this map is intended for general planning purposes only. Specific ownership information should be verified by contacting the MDNR.



MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Forest, Mineral and Fire Management

DATE: 07/15/2008

GREAT LAKES REGION NUCLEAR FACILITIES



LEGEND

ONLY FACILITIES SPECIFICALLY RELATED TO NUCLEAR POWER GENERATION ARE ON THIS MAP

- | | | | |
|-----------------------------------|--------------------------------|--|----------------------------------|
| Uranium Mining and Mill Tailings | Closed Nuclear Power Reactors* | Low-and/or Intermediate-Level Radioactive Waste (L&ILRW) Sites** | Deep Geological Repository (DGR) |
| Operating Nuclear Power Reactors* | Nuclear Fuel Waste | Uranium Processing & Fuel Fabrication | Incinerator |

* Number in brackets () indicates the number of reactors **These wastes are also stored at all nuclear power reactor sites

- Original production by Irene Koch, 1990-91, Nuclear Awareness Project.
- Updated by Anna Tilman (annatilman@sympatico.ca) and John Jackson (jjackson@web.ca), May 1, 2013.
- Funded by the Citizens' Clearinghouse on Waste Management and Great Lakes United.

Goals and Objectives

This section establishes the goals and objectives that will guide hazard mitigation efforts in Huron County. The goals and objectives, along with the hazard analysis and mitigation strategies, are the heart of this document and the basis of a solid community plan. The County can encourage local units of government to demonstrate commitment to hazard mitigation activities by including these goals and objectives, and mitigation strategies in other planning documents, such as local Master Plans and Capital Improvement Plans. Each jurisdiction has been provided with a sample resolution for adoption and included in that resolution is a statement that communities will work to integrate these strategies into their other planning mechanisms.

The following goals are general guidelines that explain what a community would like to accomplish. These goals are long term and reflective of the broad vision for this hazard mitigation plan. However, objectives, are specific strategies or implementation steps set in place to accomplish the identified goals. As a general rule, objectives carry out the purpose of a goal and are measurable results a community can work toward.

It is critical that an effective County wide plan reflects the cooperation and commitment of all participating local jurisdictions to ensure the maximum positive effect on all communities and the County as a whole.

These goals were developed by contributions from the Huron County LEPC. The LEPC conducted the primary review to determine what had been accomplished since the last plan, and therefore which goals were obsolete, needed updates to match current conditions in the County, and what goals needed to be added to the plan. Then LEPC determined the first draft of the new goals and objectives for the 2020 update of this plan. Next, the Huron County Planning Commission was asked to review and give comments on the updated goals and objectives from the LEPC. Their comments on the past goals were also readily welcomed. The results of this process can be found below in the Goals and Objectives section of this document.

This update of the plan incorporated those changes from the past plan and built upon them with new strategies and priorities set forth by each individual jurisdiction, which highlight the new goals the County and local jurisdictions plan to accomplish in the upcoming years. The individual priorities for each participating jurisdiction can be found in Table 33. This plan is a living document that is expected to continue to change over time, reflecting new development patterns, priorities, and progress within the participating jurisdictions. With each update, other components of the plan, including hazard rankings and mitigation strategies, will also continue to evolve.

Huron County's Hazard Mitigation Goals and Objectives

➤ **Goal 1 – Reduce Losses Due to Hazards**

- Objective *Mitigate Losses due to Severe Winter Storms*
- Objective *Mitigate Losses due to Thunderstorm Hazards*
- Objective *Mitigate Losses due to Structural Fires*
- Objective *Mitigate Losses due to Transportation Accidents*
- Objective *Mitigate Losses due to Public Health Emergencies*
- Objective *Mitigate Losses due to Extreme Temperatures*
- Objective *Mitigate Losses due to Hazardous Materials Transportation Incidents*
- Objective *Mitigate Losses due to Wildfires*
- Objective *Mitigate Losses due to Infrastructure failures*
- Objective *Mitigate Losses due to Flooding*

➤ **Goal 2 – Increase Public Education of Hazard Mitigation**

➤ **Goal 3 – Integrate Hazard Mitigation into Community Planning Process**

➤ **Goal 4 – Complete all Identified Mitigation Projects**

These goals and objectives can be met through various mitigation strategies. The purpose of a mitigation strategy is to reduce or eliminate the amount of harm that could be caused in the future by a hazard. The following list delineates the five basic hazard mitigation approaches that will be used to accomplish the goals and objectives listed above:

- A. Modify a hazard by removing or eliminating it.
- B. Segregate a hazard by keeping it away from people.
- C. Preventing or eliminating development – keep people away from the hazard through land use controls such as zoning.
- D. Altering design or construction. This approach provides engineering solutions for at-risk structures.
- E. Early warning and public education – keep the public well informed of potential hazards and ensure that early warning and communication systems are available.

For the plan to remain a relevant document, the goals and objectives should be periodically revisited and updated to reflect changing conditions in the County. The revision should include the addition of new goals and the elimination of completed objectives or goals. The LEPC will be in charge of reviewing the plan throughout its life to ensure effectiveness.

Mitigation Strategies

This section identifies proposed strategies that can be implemented to mitigate the hazards identified in this plan.

Methodology

The mitigation strategies worksheet sent to each community was compiled from the previous 2008 strategies. The communities were asked what had been accomplished in the past several years, what still needed to be done, and which strategies needed to be tweaked or eliminated for this new update. The strategies were reviewed by the LEPC, and it was determined that the past methodology and rationale for determining the strategies could be applied to this update as well. The LEPC also decided to include another priority determination level in addition to the original three of Top, High, and Medium; this update also includes a Low option.

The strategies in the worksheet are broken down into sections, each representing one of the major hazards previously identified and described in this plan. Because communities were asked to personalize their worksheet to the specific community needs, the completed document may not include all the original strategies that were sent out or may have new strategies added only to that specific jurisdiction. Additionally, some communities eliminated an entire hazard from their worksheets.

The worksheet asked the communities to identify the following categories:

1. Applicable hazards and strategies
2. Strategy priority
3. Lead agency for each strategy
4. Funding Sources
5. Status

The following are explanations for the priority rankings that can be found in the Mitigation Strategies documents:

- **High:** Mitigation actions for which the County and local needs appear to be the greatest, due to the threat and likelihood of the hazard affecting the community.
- **Medium:** Mitigation actions for which the County and local needs are present, and important, but address situations of comparatively lower threat and likelihood.
- **Low:** Mitigation actions for hazards that pose lesser threats and likelihood of affecting the community, but that may still be implemented in cases where it is relatively easy to do so.

Huron County Mitigation Strategies

Huron County has in the past and is currently working on previously identified mitigation goals. The following are examples of ongoing and future mitigation efforts.

Flooding

Ongoing Mitigation Efforts:

- a) Huron County Road Commission: Bridge Replacement Program. The Huron County Road Commission has a program in place to replace local bridges by using local road funds left over at the end of the fiscal year. Those funds are placed in a line item in the budget that builds up to use in conjunction with state and federal funds, when available, or to use as standalone funding when the funds accumulate in an amount that would locally pay for a bridge project.
- b) The Drain Commission program to clean and replace the drain system is operated by the Road Commission. Each year a portion of the culverts are replaced and ditches cleaned.
- c) Townships in Huron County collect road millage taxes to enhance, build up and improve the secondary roads. The secondary roads in Huron County are improved and built up so as not to flood over and become impassable. Very few secondary roads in the County flood over during rain, snowmelt, or storm events. The average road millage in townships is one mill.
- d) Levee Systems: The Sebewaing levee system is under the direction of the Army Corps of Engineers. Past mitigation efforts included the installation of a diversionary river channel to help move water away from public buildings and private residences. The mitigation efforts have reduced flood damage in the Village of Sebewaing dramatically. However, the Village of Sebewaing is working on mitigation efforts and informational distribution to have residents remove items from the levee itself based upon the Army Corps of Engineers study. Trees and other shrubbery have grown into the levee, and Sebewaing is educating its residents and property owners on the importance of maintaining a clean and pristine levee as that will protect them from damage from flooding.
- e) Sebewaing also has ice jam issues in the spring snowmelt season. Annually, for the most part, the river is dynamited to open up the ice flow to prevent flooding caused by ice jams.
- f) Water Rescue: In addition to mitigation efforts, there are several processes in place to assist with operations during a flood event. The Huron County Sheriff's Office has a water rescue team equipped with an airboat for both water and ice rescue. All-wheel drive vehicles are an example of an ARGO that can operate on water and land, UAV to survey and find victims stranded by rising waters, and a dive team that is cold water rescue rated. Local funds and grant funds were used to enhance this capability. The airboat is a joint effort with Tuscola County Sheriff's Office. The Airboat is shared effort by both counties. Huron County has three fire departments with water rescue boats and training. The fire departments in Caseville, Port

Austin, and Harbor Beach have water rescue equipment that can assist during flood events. This is a new capability put in place using local resources since the last Mitigation Plan was adopted.

Thunderstorms – Wind Events

Invasive Species – Dead Tree Removal – Electrical Grid: Invasive species have decimated certain types of trees across the State of Michigan, and Huron County has a large problem with dead Ash trees as a result of the Emerald Ash Borer Beetle.

In response and in an effort to keep the dead Ash trees from falling on electrical power lines several of the local communities have passed ordinances to assist in the removal of trees that threaten the public interest. Huron County will encourage all communities to pass similar ordinances and promote the safe removal of dead trees. The dead trees also are a hazard to drains and streams and can lead to flooding and ice jams.

DTE Energy also has an aggressive tree-trimming program, and Huron County will support the efforts of DTE and other utilities to mitigate the tree danger to local power supplies.

Funding for these efforts to mitigate tree issues will come from a variety of sources, including local funds, potential grant funds, use of volunteer organizations, and efforts of the utility companies.

Structural Fire Hazards

Structural fires in Huron County are a large hazard. This is especially a hazard in the downtowns of communities as many of the buildings are over 50 years old and have construction methods that do not have modern fire suppression systems in place. In 2017, Huron County Fire Departments upgraded their existing mutual aid agreements to have automatic mutual aid for structural fires. This improvement provides enough equipment and firefighters to effectively attack and contain fires that may occur that would otherwise spread to other structures. All fire departments are engaged in public safety education and fire prevention programs. This includes fire prevention education in coordination with Huron County schools.

Hazardous Material Response

Similar to structural fires, the fire departments have adopted mutual aid agreements to mitigate any hazardous material incident. Using local funding, training and response to hazardous materials incidents are being enhanced. Grant funds provide additional equipment and have allowed the Harbor Beach Fire Department to field a Hazard Material Response Team.

Additionally, there is a Hazardous Material Regional Response Team (RRT) that was funded with Homeland Security Grant funds. The RRT Hazmat Team is operated under the control and authority of the City of Midland Fire Department and is available 24/7 to respond on scene or be called for information on hazardous materials incidents.

Emergency Notification Systems

Huron County notifies citizens of issues using several systems. The primary notification is the local Police and Fire Departments by emergency paging which includes remotely active tornado sirens.

Local news media is another notification system. A phone blast system is in place to notify first responders, schools, hospitals, care facilities, State Parks and Campgrounds, County Parks, and Campgrounds of impending incidents. Any incident type can be broadcast using this method but has been primarily used to notify of severe weather events.

Phone applications or “Apps” are used by many citizens to receive alerts. Every school in Huron County uses an App for notification with different Apps having various capabilities. There is no single App being used that would reach every citizen. When future technology makes many of these Apps and phones completely connected to IPAWS systems notifications will become simpler.

Community Mitigation Strategies

- Communities with harbors continue to expand and improve break walls and drains.
- The City of Caseville is working to improve the break wall system: Expand to cover windblown rising water levels.
- The Village of Sebewaing continues to improve the levee system by removing trees and other items that threaten the integrity of the levee.
- The City of Harbor Beach is raising the levels of docks and marina infrastructure to remove those items from the rising lake levels and avoiding seasonal repetitive damage.
- Shoreline townships are promoting flood insurance and using community meetings to inform on laws, permits, and techniques to slow shoreline erosion.
- Municipalities that are self-zoned promote not building in flood zones.
- All townships, villages, and cities are working to improve drain systems and roads to avoid seasonal damage from known flood zones.
- Communities are seeking grants and funding to clean up former manufacturing sites to reclaim the land for future use and development. For example, the Village of Sebewaing is working to reclaim and clean up an old factory site near the Sebewaing River in downtown.

Table 33 – Hazard Mitigation Strategies

Communities	Mitigation Strategies																	
	Bridge Replacement Program	Clean and Replace County Drains	Improved Secondary Roads	Levee System	Clear Ice Jams	Water Rescue	Dead Tree Removal	Local Tree Removal Ordinances	Tree Trimming	Fire Prevention Measures	Hazard Material Response Team Training and Equipment Improvement	Tornado Sirens	Emergency Response Apps	Improve/Expand Breakwalls and Drains	Raise Dock Levels and Marina Infrastructure	Promote Flood Insurance Programs	No Construction in Flood Zones	Clean Up Contaminated Site
Huron County	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bad Axe							X	X	X	X		X	X				X	X
Caseville						X	X	X	X	X		X	X	X	X	X	X	
Harbor Beach						X	X	X	X	X		X	X	X	X	X	X	
Sebewaing				X	X	X	X	X	X	X		X	X	X	X	X	X	X

Status of Past Mitigation Strategies

The 2008 Hazard Mitigation Plan included 12 mitigation strategies that various jurisdictions committed to working on. Many of these strategies are also included in this update of the plan because they are ongoing tasks to continually improve conditions in the County. Of all the strategies from the 2008 plan, the only two that were diligently pursued were road improvements from the Road Commission and bridge/culvert improvements from the Drain Commission. The remaining were not pursued due to lack of funding. Because the previous plan's mitigation strategies were not widely implemented, the participating jurisdictions did not readily adopt them into updated master plans. However, the Huron County Master Plan was updated concurrently with this plan, and the County-wide master plan addresses some of the strategies in this document. In the future, the County plans to work with the other local jurisdictions while they are updating their master plans and make a recommendation to incorporate the findings of this plan into their documents.

The following is a summary of the status of the previous mitigation strategies from the 2008 Plan. The strategies are listed as they were described in the previous plan with a summary of the 2022 update below each description.

Project Improved Road Design

Responsible Department: County Road Commission

Schedule Review accident rates for all County roads within first year. Identify potential hazards and solutions within second year. Completion of projects will be accomplished within one year of receiving funding.

Potential Sources of Assistance

Hazard Mitigation Grant Program. Local sources, foundations, Michigan Department of Transportation.

2022 Update: *Huron County Road Commission in conjunction with the Township Governments (who are responsible for local road systems) continue to reconstruct roads so as to elevate the road surfaces upon flood levels. Roads have also been improved by replacing the drain tubes that pass water away from the land surrounding the roads and homes within the County. The project is supported and continues with local tax funds.*

Project Improved railway intersections

Responsible Department County Road Commission

Schedule Examine all road/railway intersections on County roads within first year. Identify potential hazards and solutions within second year. Completion of projects will be accomplished within one year of receiving funding.

Potential Sources of Financial Assistance

Hazard Mitigation Grant Program. Railroads, local sources, Michigan Department of Transportation.

2022 Update: *C&O Railroad has used budget dollars, supplemented by Department of Transportation grants, to improve railroad crossings on highways in Huron County. This is an ongoing project as determined by MDOT and C&O Railroad. It has added safety to the general public by reducing the risk of train derailment.*

Project Buried power lines

Responsible Department Huron County Road Commission, Huron County, individual local units of government.

Schedule Review locations of past problems and areas that are most vulnerable within first year. Identify potential hazards and solutions within second year. Completion of projects will be accomplished within one year of receiving funding.

Potential Sources of Financial Assistance

Hazard Mitigation Grant Program. Utility companies, Local sources, foundations.

2022 Update: *This project was not moved to a priority level and only a few service lines for power delivery were made underground. This project is not a priority in the 2022 planning process and is not included in the 2022 Huron County Hazard Mitigation Plan. Removal of dead trees has replaced this process for 2022.*

Project Code creation/ enforcement/incorporate HM into planning and zoning

Responsible Department: Huron County, Planning commissions of individual units of government.

Schedule Review master land use plans and zoning ordinances within one year. Update to include information relevant to hazard mitigation by the end of year two.

Potential Sources of Financial Assistance

Hazard Mitigation Grant Program. Local sources, State grants.

2022 Update: *The Huron County Master Plan was updated in 2021. The Master Plan has sections that are dedicated to the additional updates of ordinances to mitigate future items that relate to industry decommissioning and proper cleanup of industrial sites as well as protection of the environment and thus humans living within that environment.*

Project: Heating and Cooling Centers

Responsible Department: Huron County Emergency Management, Huron County, Individual local units of government, local school districts.

Schedule: Identify existing facilities with generators and high priority facilities without generators within first year. Identify funding sources for high priority locations. Completion of individual projects will be accomplished within one year of receiving funding.

Potential Sources of Financial Assistance

Hazard Mitigation Grant Program. Local sources, foundations, nonprofit organizations.

2022 Update: *Heating and cooling centers were delegated to the local units of government and removed from the Hazard Mitigation Plan and placed in the Emergency Operation Guide Plan with Emergency Management. The City of Caseville did establish a heating and cooling center using their Fire Department. The County of Huron established a heating and cooling center at the Huron County Senior Center in Bad Axe. However, the recent COVID pandemic created obstacles for using the centers that require further planning to comply with CDC rules.*

Project Expand public warning system

Responsible Department: Huron County Emergency Management

Schedule Identify potential sites for warning sirens to increase siren coverage area.

Potential Sources of Financial Assistance

Hazard Mitigation Grant Program. Local sources, foundations, nonprofit organizations.

2022 Update: *Huron County expanded the use of public warning systems by establishing a phone blast system, in addition to warning sirens, for communication with schools, hospitals, parks, first responders and communities. Huron County Central Dispatch has spent additional funds on upgrades to the 911 system to allow for text to 911, and other ESINET connected technology used in reporting emergencies.*

Project Generators at public facilities

Responsible Department Huron County Emergency Management, Huron County, Individual local units of government, local school districts.

Schedule Identify existing facilities with generators and high priority facilities without generators within first year. Identify funding sources for high priority locations. Completion of individual projects will be accomplished within one year of receiving funding.

Potential Sources of Financial Assistance

Hazard Mitigation Grant Program. Local sources, nonprofit organizations, school districts.

2022 Update: *Generators: Caseville Fire Department, Kinde Fire Department, WLEW Radio Tower (Grassmere and Filion Rd) which rents space to 911 for public safety radio. Harbor Beach School also used Homeland Security Grant Program funds to update the generator and transfer switch at the school.*

Project: Infrastructure maintenance and replacement

Responsible Department: Huron County, Individual local units of government.

Schedule: All local units of government should institute a regular maintenance schedule for critical infrastructure within first year. Completion of projects will be accomplished within one year of receiving funding.

Potential Sources of Financial Assistance:

Hazard Mitigation Grant Program. Local sources.

2022 Update: *All schools have generators. All hospitals have generators. Critical infrastructure such as cellular towers are 90% connected to generators. This process continues as Huron County is using American Rescue Plan Act (ARPA) funds to further connect County Government facilities to generators.*

Project Public education

Responsible Department: Huron County Emergency Management Office

Schedule Ongoing. Initiate Hazard Mitigation education program for interested local units of government within first year. Work with local media outlets to make sure that the public remains informed about ongoing hazard mitigation efforts.

Potential Sources of Financial Assistance

Local sources, foundations, nonprofit organizations, corporate giving programs.

2022 Update: *This item has become redundant to other items within the planning process and is no longer included in the Hazard Mitigation Plan as a separate item. Public Information and Warning in the Emergency Operations Guide for the County and educational programs provided by the Sheriff's Office, Economic Development Office and agriculture industry support groups are now the lead for this type of program.*

Project National Flood Insurance Program

Responsible Department Huron County Emergency Management, Hazard Mitigation, Individual units of government, Huron County.

Schedule Huron County Emergency Management should make all local units of government aware of the benefits of participating in the NFIP program within first year. Local units of government should adopt adequate floodplain management regulations for its flood-prone areas within the second year in order to participate in the NFIP.

Potential Sources of Financial Assistance

Local sources, foundations, nonprofit organizations.

2022 Update: *Huron County Emergency Management has provided information to all local governments about NFIP and continues to encourage participation in the NFIP. Constantly changing requirements and costs of the NFIP insurance continue to be barriers to entities joining NFIP. The efforts to encourage support and membership in NFIP continue.*

Project: Integrate Hazard Mitigation into capital improvement process

Responsible Department: Huron County, individual units of government

Schedule: Identify Hazard Mitigation infrastructure projects within the first year. Include projects in the next year's capital improvement budget. Completion of projects will be accomplished within one year of receiving funding.

Potential Sources of Financial Assistance:

Hazard Mitigation Grant Program. Local sources, foundations, nonprofit organizations, corporate giving programs.

2022 Update: *This section of the 2008 plan did not result in any meaningful change and is no longer part of the plan.*

In 2018 the Hazard Mitigation Plan process was incorporated into the oversight of the Huron County Planning Commission. By doing so the Huron County Master Plan and the Huron County Hazard Mitigation Plan became more harmonious and consistent with each other by encouraging mitigation efforts in zoning, ordinance development and community planning for both industry and residential areas.

Analysis and Funding

When considering the mitigation strategies to include in this update, the issue of the relative ease of implementation is an important one, and it is necessary to describe some of the more clear-cut means by which the priorities of these strategies were determined. These strategies were considered according to evaluation criteria as follows:

- A general assessment of the political acceptability of each mitigation strategy
- The technical feasibility of the proposed actions
- The availability of appropriate staff or agencies to take the lead in implementing selected strategies
- Compatibility with this plan's goals
- The absence of serious objections from the planning feedback process

In addition, for those projects where implementation is contingent upon the outlay of funds for initiation or completion, consideration should be given to the availability of federal grant sources for hazard mitigation (including the Hazard Mitigation Grant Program, the Pre-Disaster Mitigation Program, and possibly the Repetitive Flood Claims program). After formal submission and acceptance of a project application, these federal grant programs can provide the majority of funding needed to implement mitigation actions that pass federal criteria. The list of mitigation actions in this plan does not mean that any funding has been committed by either federal, state, or local agencies. Rather, projects listed here are important enough to eventually have formal applications for funding from sources outside the governmental agencies of the County and its sub jurisdictions.

More specific details on many of these projects will be included in the project application. Thus, it may be that some mitigation actions, due to their contingency upon local opportunities, partnerships, and shared goals and incentives between agencies, etc., may be implemented (or submitted for federal funding) in an order that differs somewhat from the priority that it has been assigned. That is because the priority of an action may be inversely related to the complexity, difficulty, or amount of resources involved in its implementation.

The prioritization of these mitigation strategies is a further extension of the hazard ranking process, but with additional discussion and feedback opportunities provided to ensure that these specific strategies were appropriate for the communities and agencies they involve.

The implementing agencies are described below. These listings identify the lead agencies only. They are not intended to limit or preclude the participation of other agencies or organizations in any way

- **County EM:** County of Huron – Huron County Board of Commissioners and Huron County Emergency Services Office/Emergency Management
- **Local Units:** Local Units of government, including
- **Local ER:** Local emergency responders such as police, fire, and medical.
- **Local DPW:** Local Departments of Public Works
- **State:** State agencies such as MDOT and EGLE
- **Federal:** Federal agencies such as FEMA
- **Utilities:** Private utility companies such as gas, electric, and telephone
- **Private:** Private businesses or other non-public entities

The following list is an explanation of potential funding sources: This list should not be considered as all-inclusive when considering outside funding options.

- **HMGP: Hazard Mitigation Grant Program** – A pool of funds made available to states in which federally-declared disasters have occurred, with the amount of available funding based on a percentage of documented damages from the latest declared disaster incident. Following the submission and formal acceptance of project applications, 75% of the project’s budget would be covered by federal funds, with the remaining 25% covered by non-federal funds (such as those from private property owners who may be benefiting directly from the project, other local

stakeholders or agencies, private non-profits, corporate giving programs, community foundations, or local budgets) or through the contribution of “in-kind” services or “soft matches” in which the value of eligible contributed services are counted toward the value of the non-federal match. HMGP funds are only available following a federally-declared disaster in Michigan, but such funds can usually then be used by qualifying communities throughout the state. (Communities must have a FEMA-approved and locally adopted hazard mitigation plan in place to qualify for this funding.)

- **PDMP: Pre-Disaster Mitigation Program** -Very similar to HMGP, except that the PDMP offers annual funding on a nationally competitive basis. NOTE: The PDMP is no longer actively being funded for new hazard mitigation projects. See information about the new BRIC program, below.
- **BRIC: Building Resilient Infrastructure and Communities** -- A new grant program, with nationally competitive projects receiving grants each year, and able to support larger and longer-term hazard mitigation activities than the previous PDMP program had.
- **HMA: Hazard Mitigation Assistance** -- Refers to all of these other grants, as an "umbrella program." A project that is listed for HMA funding may involve either FMA, HMGP, or BRIC, depending upon grant administration requirements and selection activities.
- **RFC: Repetitive Flood Claims Program** – A funding source that is only used in mitigation projects that reduce flood losses to specific qualifying structures designated by FEMA as “repetitive loss properties” on the basis of past damages reported under the National Flood Insurance Program (NFIP) and that, therefore, is pertinent only to those communities that participate in the NFIP and have qualifying structures within them. Huron County has the following communities that are currently recognized as active NFIP participants. The City of Bad Axe, Village of Owendale, and Township of Pointe Aux Barques are listed as non-participants in the NFIP, according to the FEMA Community Status Book (referenced in early 2022). Often, such non-participants are communities that had been officially mapped by the NFIP, but had not followed through with accepting those maps and remaining as NFIP participants. These three non-participating communities should consider whether they can resolve any such issues and thus become full participants in the NFIP, thus allowing flood insurance coverage within their jurisdictions (Non-participants are sometimes referred to as "sanctioned" communities, under the NFIP.).

- | | |
|--------------------------------|---------------------------------|
| • Bingham Township (260833) | • Fairhaven Township (260628) |
| • Bloomfield Township (260834) | • Gore Township (260785) |
| • Brookfield Township (260835) | • Grant Township (260837) |
| • City of Caseville (260677) | • City of Harbor Beach (260570) |
| • Caseville Township (260257) | • Hume Township (260792) |
| • Chandler Township (260616) | • Huron Township (260415) |
| • Colfax Township (260836) | • Lake Township (260254) |
| • Dwight Township (260640) | • Lincoln Township (260611) |
| • Village of Elkton (260569) | • McKinley Township (260322) |
| | • Meade Township (260661) |

- Oliver Township (261312)
 - Village of Pigeon (260571)
 - Village of Port Austin (260618)
 - Village of Port Hope (260774)
 - Rubicon Township (260789)
 - Sand Beach Township (260787)
 - Sebewaing Township (260860)
 - Village of Sebewaing (260572)
 - Sheridan Township (260838)
 - Sherman Township (260788)
 - Sigel Township (260676)
 - Verona Township (260706)
 - Winsor Township (260839)
- **Local:** Various non-federal sources (such as those listed within the HMGP description above) plus, under certain conditions, funds from the Community Development Block Grant (CDBG) program that may be usable as non-federal funds.

Mitigation Strategies – Implementation

Strategy 1: Bridge Replacement Program

- **Location:** County-wide
- **Lead Agency:** Huron County Road Commission
- **Potential Funding Sources:** Road Funds, MDOT
- **Participating Agencies:** Huron County – all jurisdictions (via road commission)
- **Status:** Ongoing
- **Priority:** Medium
- **Cost-Effectiveness:** Good return for large investment as improvements are long-term.
- **Implementation Method:** Capital Improvement Plan, Road Commission 5-year plan. At the end of the year, the Road Commission places excess funds in a budget that they save for bridge replacement.

Strategy 2: Clean and Replace County Drains

- **Location:** County-wide
- **Lead Agency:** Huron County Drain Commission
- **Potential Funding Sources:** Operating Budget
- **Participating Agencies:** Huron County – all jurisdictions (via drain commission)
- **Status:** Ongoing
- **Priority:** High
- **Cost-Effectiveness:** Excellent - Low-cost investment that reduces flooding and damage.
- **Implementation Method:** The Road Commission implements this work on behalf of the Drain Commission. Each year the Road Commission clears and maintains drainage pathways and replaces culverts.

Strategy 3: Improve Secondary Roads

- **Location:** County-wide
- **Lead Agency:** Huron County Road Commission, Local DPW departments
- **Potential Funding Sources:** Road Funds, MDOT, Local funds – millage
- **Participating Agencies:** Huron County – all jurisdictions (via road commission)
- **Status:** Ongoing
- **Priority:** Low
- **Cost-Effectiveness:** Excellent
- **Implementation Method:** Capital Improvement Plan, Road Commission 5-year plan. Local jurisdictions work with Road Commission to maintain and improve secondary roads in the County.

Strategy 4: Levee System

- **Location:** Village of Sebewaing
- **Lead Agency:** Village of Sebewaing Department of Public Works (with the Army Corps of Engineers)
- **Potential Funding Sources:** Federal, FEMA HMA Operating Budget
- **Participating Agencies:** Huron County, Village of Sebewaing
- **Status:** Ongoing
- **Priority:** Medium
- **Cost-Effectiveness:** Excellent - High initial investment reduces cycles of flood damage over long periods which makes initial high investment cause long-term savings.
- **Implementation Method:** The Army Corps of Engineers and the Village are working together to maintain a clear drainage system to prevent flooding.

Strategy 5: Clear Ice Jams

- **Location:** Village of Sebewaing
- **Lead Agency:** Village of Sebewaing Department of Public Works
- **Potential Funding Sources:** Operating Budgets
- **Participating Agencies:** Huron County, Village of Sebewaing
- **Status:** Ongoing (as needed)
- **Priority:** Low
- **Cost-Effectiveness:** Low
- **Implementation Method:** When ice jams threaten the integrity of the levee system and will cause flooding, the Village uses dynamite to blow up the jams.

Strategy 6: Water Rescue

- **Location:** Waterfront Communities
- **Lead Agency:** Huron County Sheriff Department
- **Potential Funding Sources:** Operating Budgets
- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach
- **Status:** Ongoing (as needed)
- **Priority:** High
- **Cost-Effectiveness:** Low - High training and equipment costs for sporadic use that, when needed, is life-saving.
- **Implementation Method:** Joint effort between three local fire departments, the Sheriff's office, and Tuscola County to assist with flooding events, storm events, and cold-water events.

Strategy 7: Dead Tree Removal

- **Location:** County-wide
- **Lead Agency:** DTE and Thumb Electric Cooperative
- **Potential Funding Sources:** Operating Budgets
- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach, Bad Axe
- **Status:** Ongoing
- **Priority:** High
- **Cost-Effectiveness:** Excellent - Removal of trees lowers the costs for repairs for utility companies and reduces damage from power outages.
- **Implementation Method:** Coordination with current utility company removal programs and local public works to identify and remove trees that are located near power lines.

Strategy 8: Local Tree Removal Ordinances

- **Location:** County-wide
- **Lead Agency:** Huron County Emergency Management and Huron County, Sebewaing, Caseville, Harbor Beach, Bad Axe
- **Potential Funding Sources:** Operating Budgets
- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach, Bad Axe
- **Status:** Try to encourage local efforts in the next four years.
- **Priority:** High
- **Cost-Effectiveness:** Good - Removal of trees lowers the costs for repairs for utility companies and reduces damage from power outages.
- **Implementation Method:** Huron County will encourage all communities to pass similar ordinances and promote the safe removal of dead trees. The dead trees also are a hazard to drains and streams and can lead to flooding and ice jams.

Strategy 9: Tree Trimming

- **Location:** County-wide
- **Lead Agency:** DTE and Thumb Electric Cooperative (each covers a different portion of the county).
- **Potential Funding Sources:** Operating Budgets
- **Participating Agencies:** Huron County, Sebawaing, Caseville, Harbor Beach, Bad Axe
- **Status:** Ongoing
- **Priority:** Low
- **Cost-Effectiveness:** Good - Removal of trees lowers the costs for repairs for utility companies and reduces damage from power outages.
- **Implementation Method:** DTE Energy also has an aggressive tree trimming program, and Huron County will support the efforts of DTE and other utilities to mitigate the tree danger to local power supplies.

Strategy 10: Fire Prevention Measures

- **Location:** County-wide
- **Lead Agency:** Huron County Emergency Management, local fire departments
- **Potential Funding Sources:** Operating budgets
- **Participating Agencies:** Huron County, Sebawaing, Caseville, Harbor Beach, Bad Axe
- **Status:** December of 2023
- **Priority:** Low
- **Cost-Effectiveness:** High - The low priority of this is only because it is a continual, ongoing process with every Fire Department and School working each year to teach this.
- **Implementation Method:** In 2017, Huron County Fire Departments upgraded their existing mutual aid agreements to have automatic mutual aid for structural fires. This improvement provides enough equipment and firefighters to effectively attack and contain fires that may occur that would otherwise spread to other structures. All fire departments are engaged in public safety education and fire prevention programs. This includes fire prevention education in coordination with Huron County schools.

Strategy 11: Hazard material Response Team Training and Equipment Improvements

- **Location:** County-wide
- **Lead Agency:** Huron County Emergency Management, local fire departments,
- **Potential Funding Sources:** Operating budgets
- **Participating Agencies:** Huron County, Sebawaing, Caseville, Harbor Beach, Bad Axe
- **Status:** End of Year 2025
- **Priority:** Low
- **Cost-Effectiveness:** Low - High equipment and training costs for something that is important when needed but only needed once in a while (The Fire Department has this response.)

- **Implementation Method:** Similar to structural fires, the Fire Departments have adopted mutual aid agreements to mitigate any hazardous material incident. Using local funding, the training and response to hazardous materials incidents are being enhanced. Grant funds provide additional equipment and have allowed the Harbor Beach Fire Department to field a Hazard Material Response Team.

Strategy 12: Tornado Sirens

- **Location:** County-wide
- **Lead Agency:** Huron County Emergency management, local fire departments, Sheriff's department
- **Potential Funding Sources:** Operating Budgets, HMGP
- **Participating Agencies:** Huron County, Sebawaing, Caseville, Harbor Beach, Bad Axe
- **Status:** At least one siren will be installed by the end of 2022. Additional sirens require FEMA funds (annual application opportunities will be available).
- **Priority:** Medium
- **Cost-Effectiveness:** Low - Sirens are still a good thing to have but in a rural community they only cover small areas. Modern weather applications for phones are augmenting the alerting systems.
- **Implementation Method:** The primary notification is the local police and fire departments by emergency paging which includes remotely activated tornado sirens.

Strategy 13: Emergency Response Apps

- **Location:** County-wide
- **Lead Agency:** Huron County Emergency Management
- **Potential Funding Sources:** Operating Budget
- **Participating Agencies:** Huron County, Sebawaing, Caseville, Harbor Beach, Bad Axe
- **Status:** End of 2024
- **Priority:** High
- **Cost-Effectiveness:** Medium - While apps are excellent and quite helpful, some can be expensive to use and maintain.
- **Implementation Method:** A phone blast system is in place to notify first responders, schools, hospitals, care facilities, State Parks and Campgrounds, County Parks, and Campgrounds of impending incidents. Any incident type can be broadcast using this method but has been primarily used to notify of severe weather events. Additionally, the County would like to implement a County-wide notification system for residents.

Strategy 14: Improve/Expand Breakwalls

- **Location:** Waterfront communities
- **Lead Agency:** Local communities listed below (with support from Huron County Emergency Management, Army Corps of Engineers, EGLE).
- **Potential Funding Sources:** HMA

- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach
- **Status:** Requires FEMA funds (annual application opportunities will be considered).
- **Priority:** Low
- **Cost-Effectiveness:** Low
- **Implementation Method:** Communities with break wall/harbors will use local funds in conjunction with grants to make any improvements.

Strategy 15: Raise Dock Levels and Marina Infrastructure

- **Location:** Waterfront communities
- **Lead Agency:** Local communities listed below (with support from Huron County Emergency Management, Army Corps of Engineers, EGLE).
- **Potential Funding Sources:** HMA
- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach
- **Status:** End of 2026
- **Priority:** Low.
- **Cost-Effectiveness:** Low.
- **Implementation Method:** Communities with break wall/harbors will use local funds in conjunction with grants to make any improvements. This is an economic issue with the tourist industry, and protection of the environment from any petroleum product dispensing and electric issues located on the docks.

Strategy 16: Promote Flood Insurance Programs

- **Location:** County-wide
- **Lead Agency:** Local communities listed below (with support from EGLE)
- **Potential Funding Sources:** Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, Repetitive Flood Claims Program, local donations.
- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach
- **Status:** End of 2025
- **Priority:** High
- **Cost-Effectiveness:** High - The cost-effectiveness of the promotion of insurance is good; the actual cost of the insurance is very high with low return.
- **Implementation Method:** Work with local communities to educate officials on the flood insurance programs and work with local homeowners to protect and ensure their properties.

Strategy 17: No Construction in Flood Zones

- **Location:** County-wide
- **Lead Agency:** Local communities listed below (with support from Huron County Emergency Management)
- **Potential Funding Sources:** Operating Budgets, consider under master plans, zoning, and other regulations
- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach, Bad Axe

- **Status:** End of 2024
- **Priority:** Medium
- **Cost-Effectiveness:** Good - Continued zoning ordinance adjustments are not expensive when done properly.
- **Implementation Method:** Educate local officials on the importance of protecting the floodplain and adopting ordinances that prohibit or severely limit development in the floodplain.

Strategy 18: Clean Up Contaminated Site

- **Location:** County-wide
- **Lead Agency:** Local communities listed below (with support from EGLE and Huron County Emergency Management)
- **Potential Funding Sources:** State/Federal funding for cleanup, private investment
- **Participating Agencies:** Huron County, Sebewaing, Caseville, Harbor Beach, Bad Axe
- **Status:** Ongoing
- **Priority:** Low
- **Cost-Effectiveness:** Low - Site cleanup is expensive and normally not effective in mitigating the entire issue found. Proper planning and ordinances to keep things clean to start with are key to this strategy.
- **Implementation Method:** Identify and work with local communities and EGLE to identify, study, and plan for the cleanup of key sites in the County.

NOTE: Lead agencies may vary with the opportunities (political, technical, funding) that are available. Therefore, as a successful mitigation grant is obtained, a lead agency would focus upon that community. Multiple agencies are listed to show potential future agencies, as each activity moves forward with uncertain grant funds and technical/political requirements that are still being evaluated.

Conclusion

Plan Monitoring

Following County and local jurisdiction adoption, the Huron County Board of Commissioners delegated to Huron County Emergency Services/Emergency Management the responsibility for monitoring and updating the plan. Implementation of specific portions of the plan will be further delegated to the agency most responsible for that section. For instance, the Huron County Road Commission will be responsible for implementing the road and bridge replacement program. The Huron County Drain Commission will be responsible for implementing the continued maintenance of the drainage system. The Huron County Emergency Management will be responsible for implementing the public education portion of the plan that relates to promoting flood insurance. The Huron County Office of the Sheriff will be responsible for developing and implementing a plan for any civil disturbances within the County and see that proper training and equipment are in place to respond to such events. DTE and Thumb Energy Cooperative will be responsible for maintaining the right of way of power and utility lines by clearing away trees killed by invasive species to prevent long-term power outages. Huron County Emergency Management will be responsible for giving local units of government information on the importance of hazard mitigation and where resources can be found to assist those units of government.

Participating local units of government will be encouraged to collaborate with the County and other local units of government to participate in hazard mitigation planning activities. In so doing, they will become eligible for hazard mitigation grant funds, pending federal approval of the plan and their local adoption documentation. The County will work with the participating communities to incorporate this Hazard Mitigation Planning Document into their other local planning documents. Strategies for each community are as follows:

- **City of Bad Axe:** As of January 2022, the City of Bad Axe is taking public input on the update of the City's Master Plan. The County Emergency Management Department will work with the City to ensure the strategies outlined in this plan are implemented in the updated Bad Axe Master Plan.
- **City of Caseville:** The City's Master plan is not available on the website, therefore by the end of 2022, the County Emergency Management Department will work with the City to verify their schedule on the upcoming master plan update. The strategies outlined in this plan will be implemented in the updated Master Plan.
- **City of Harbor Beach:** The City's Master plan is not available on the website, therefore by the end of 2022, the County Emergency Management Department will work with the City to verify their schedule on the upcoming master plan update. The strategies outlined in this plan will be implemented in the updated Master Plan.

- **Village of Sebewaing:** The Village’s Master plan was last updated in 2018. In Michigan, a Master Plan must be updated every five years. The Village is due for an update next year and the County Emergency Management Department will work with the Village to ensure the strategies outlined in this plan are implemented in the updated Master Plan.
- **Huron County:** The Huron County Master Plan was updated concurrently with this Hazard Mitigation Plan and many of the strategies and goals outlined in both documents are a reflection of that process. Items in the Master Plan that were considered were the location of significant natural features (water, wetlands, floodplain) in relation to infrastructure and development practices, local and regional land development patterns and how those would be effected by fire, emergency rescue, and infrastructure, and goals and objectives that address recent land use changes, natural resources protection, and infrastructure expansion.

The local units of government that did not participate in the current planning process will continue to be invited to do so and will be encouraged to join in plan adoption and hazard mitigation efforts in the future. Such additional participation will be reflected in future updates or revisions to this hazard mitigation plan.

Any comments from the public or local agencies on the plan or hazard mitigation actions will be considered by the LEPC and will be added to the updated plan accordingly. In particular, as involved agencies, county departments/officials, and local units of government wish to include new priorities and projects, the plan can be updated to reflect new information and changes.

In order to maintain County and local eligibility for federal hazard mitigation project funding opportunities, the entire plan must be reviewed and, where necessary, formally updated and re-adopted before the passage of five years. In between these periods, the LEPC will conduct an annual review of the plan to determine what has been accomplished, what communities are working on, and determine any additional information which may need to be added to the plan.

Future Evaluation and Update Process

The formal update process of the plan will begin with an evaluation by the LEPC to determine what sections of the plan are outdated and will need to be updated, what has been accomplished since the last update, and what communities the plan should include. Additional efforts will be made to encourage new participants among the local units of government that have yet to participate in the formal update and adoption process of the hazard mitigation plan. These parties will be the review and evaluation team for the plan review and update process. Unless an earlier timeframe is set by County authorities or situational needs, the planned start of the update process shall occur by early 2026 to allow approximately a year for the content of the plan to be formally reviewed, discussed, and suggested changes to be evaluated and implemented with the production and distribution of a revised draft plan.

In addition, local jurisdictions should designate an entity, such as a Planning Commission, to review the Hazard Mitigation Plan annually and provide their legislative body a status report to communicate with the County. To promote public access to the document, local jurisdictions should host the plan on their websites, and should be open to comment on the draft. When the time for review of the draft occurs, the participating jurisdictions should have comments to include in the update from their progress and public input.

Once the plan's content has been evaluated for accuracy, timeliness, feasibility, and relevance, any amendments to the plan will be made by the staff designated for the update process. Huron County Emergency Services/Emergency Management shall be the lead agency in designating appropriate tasks to those involved in the review and evaluation team. The revised draft plan will then be distributed in a manner that allows widespread evaluation of its contents. Evaluation criteria will include a consideration of the political acceptability of mitigation strategies, the technical feasibility of the proposed actions, the appropriate staff or agencies to take the lead in implementing selected strategies, and whether some new priority may need to be assigned, based upon the new information that may have been created about hazard risks and vulnerabilities. In addition, for any projects that are contingent upon the outlay of funds for their initiation or completion, consideration will be given to the availability of federal grant sources for hazard mitigation (including the Hazard Mitigation Grant Program, the Pre-Disaster Mitigation Program, and possibly the Repetitive Flood Claims program).

The update process will be very similar to the development process for this current edition of the Huron County Hazard Mitigation Plan.

Criteria for plan review and content evaluation shall include a consideration of:

1. The accuracy of factual information in the plan,
2. The addition of relevant detail about any important hazard-related incidents, risks, or vulnerabilities that became known since the adoption of the plan in 2021,
3. The amendment of mitigation strategies to reflect the completion of mitigation actions, which shall then be removed from the strategy list or amended to reflect the progress that had occurred since the 2021 plan adoption,
4. Any new information provided from reliable sources about new risks or vulnerabilities,
5. Changes in the fiscal, technical, or political feasibility of mitigation options, and

In the current plan, action items will have their implementation progress monitored by the Huron County Emergency Services/Emergency Management. Any pertinent observations or suggestions for improving mitigation accomplishments within the process of evaluating and updating this plan over the five-year period following its adoption. In particular, any mitigation strategies that rely upon the receipt of federal hazard mitigation funds will generally be organized with the active coordination of that office since it is the normal agency to be notified about and to respond to grant availability through the submission of hazard mitigation project applications.

An important aspect of hazard mitigation planning is to encourage hazard mitigation concepts and awareness into other types of planning. Emergency response plans, site plans, and the activities of Local Emergency Planning Committees are part of this effort. Still, a broader awareness and incorporation of hazard awareness and mitigation concepts would ideally involve other agencies and their respective planning efforts. Examples of coordination could include land use planning, zoning, subdivision, and other developments, economic development, environmental and recreational planning, water/drainage/infrastructure, and transportation planning.

There are many potential areas that overlap between hazard mitigation planning and the activities listed above. For example, capital facilities should ideally be located outside of known floodplain areas and other hazard-prone locations. Transportation planning activities can include a consideration of such hazards as hazardous material spills, potential evacuation routing, and emergency response and access needs. Many other kinds of considerations are possible, and therefore it is recommended that hazard mitigation concepts be considered during the updating and revision of Master Plans within Huron County. For this reason, some of the participating local jurisdictions have agreed to keep hazard mitigation concepts in mind when undertaking revisions to important planning documents and related activities or projects. This can be efficiently accomplished through the joint efforts of both the Huron County Emergency Management staff and the Huron County Planning, Building & Zoning Office. Copies of this plan shall be provided by these agencies to the appropriate County offices and departments and the appropriate departments of the participating local government units. In many cases, pooled resources and shared goals may result in success for multiple projects that, in isolation, might be difficult or impossible to accomplish.

Appendix A

Summary Demographic Data

Huron County: Comparative community data with the State of Michigan, and the United States

	Huron County				Michigan				United States			
	#	2010 %	#	2000 %	#	2010 %	#	2000 %	#	2010 %	#	2000 %
POPULATION	33,118	-	36,079	NA	9,883,640	-	9,938,444	NA	308,745,538	-	281,421,906	NA
% Change in Population, 2000 - 2010		-8.2%				-0.6%				9.7%		
Population age 5 years and younger	1,629	4.9%	1,989	5.5%	596,286	6.0%	672,005	6.8%	20,201,362	6.5%	19,175,798	6.8%
5 to 19	5,876	17.7%	7,548	20.9%	2,052,599	20.8%	2,212,060	22.2%	63,066,194	20.4%	61,297,467	21.8%
20 to 24	1,452	4.4%	1,549	4.3%	669,072	6.8%	643,839	6.5%	21,585,999	7.0%	18,964,001	6.7%
25 to 44	6,760	20.4%	9,051	25.1%	2,442,123	24.7%	2,960,544	29.8%	82,134,554	26.6%	85,040,251	30.2%
45 to 64	10,203	30.8%	8,936	24.8%	2,762,030	27.9%	2,230,978	22.5%	81,489,445	26.4%	61,952,636	22.0%
65+	7,198	21.7%	7,006	19.4%	1,361,530	13.8%	1,219,018	12.3%	40,267,984	13.0%	34,991,753	12.4%
Population age 19 and younger	7,505	22.7%	9,537	26.4%	2,648,885	26.8%	2,884,065	29.0%	83,267,556	23.9%	80,473,265	28.6%
Median Age	46.8	NA	41.2	NA	38.9	NA	35.5	NA	37.2	NA	35.3	NA
Average Household Size	2.27	NA	2.56	NA	2.49	NA	2.56	NA	2.58	NA	2.59	NA
Black & Hispanic Population	779	2.4%	660	1.8%	1,818,590	18.4%	1,736,619	17.50%	87,992,478	28.5%	69,964,008	24.90%
Foreign Born Population*	494	1.5%	408	1.1%	602,902	6.1%	523,589	5.3%	40,445,665	13.1%	31,107,889	11.1%
Total Housing Units	21,199	100.0%	20,430	100.0%	4,532,233	NA	4,234,279	100.0%	131,704,730	100.0%	115,904,641	100.0%
Occupied	14,348	67.7%	14,597	71.4%	3,872,508	85.4%	3,785,661	89.4%	116,716,292	88.6%	105,480,101	91.0%
Vacant	6,851	32.3%	5,833	28.6%	659,725	14.6%	448,618	10.6%	14,988,438	11.4%	10,424,540	9.0%
Owner-occupied	11,736	81.8%	12,174	83.4%	2,793,342	72.1%	2,793,124	73.8%	75,986,074	65.1%	69,815,753	66.2%
Renter occupied	2,612	18.2%	2,423	16.6%	1,079,166	27.9%	992,537	26.2%	40,730,218	34.9%	35,664,348	33.8%
Median Housing Value (\$)*	92,100	NA	104,900	NA	119,200	NA	115,600	NA	174,600	NA	119,600	NA
Median Housing Value (\$) (Adjusted for 2010 US Dollars)*	92,100	NA	132,834	NA	119,200	NA	146,384	NA	174,600	NA	151,449	NA
AGE OF HOUSING STRUCTURE*												
2010+	33	0.2%	NA	NA	8,628	0.2%	NA	NA	629,215	0.5%	NA	NA
2000-2009	1,680	8.6%	NA	NA	469,010	10.4%	NA	NA	19,725,338	14.9%	NA	NA
1990-1999	2,357	12.1%	1,322	6.9%	578,134	12.8%	623,855	14.7%	18,292,225	13.8%	19,701,058	17.0%
1980-1989	2,511	12.5%	2,488	12.9%	451,317	10.0%	446,197	10.5%	18,335,738	13.9%	18,326,847	15.8%
1970-1979	3,139	12.9%	3,368	17.5%	699,194	15.4%	722,799	17.1%	21,008,541	15.9%	21,438,863	18.5%
1960-1969	2,155	11.0%	2,244	11.6%	552,768	12.2%	602,670	14.2%	14,629,209	11.1%	15,911,903	13.7%
1940-1959	4,823	16.3%	4,833	25.1%	1,076,515	23.7%	1,123,299	26.5%	21,631,125	16.4%	23,145,917	20.0%
1939 or earlier	4,464	22.9%	5,013	26.0%	692,476	15.3%	715,459	16.9%	17,862,892	13.5%	17,380,053	15.0%
% Housing units built prior to 1980	14,581	68.9%	15,458	80.2%	3,020,953	66.7%	3,164,227	74.7%	75,131,767	56.9%	77,876,736	67.2%
EDUCATIONAL ATTAINMENT: 25 years and older*												
Bachelor's or higher	3,356	14.1%	2,718	10.9%	1,693,007	25.7%	1,396,259	21.8%	59,163,882	28.7%	44,462,605	24.4%
Some college or associate's	6,902	29.0%	6,102	24.5%	2,148,211	32.6%	1,944,688	30.3%	59,995,776	29.1%	49,864,428	27.3%
High School	10,543	44.3%	10,712	42.9%	2,023,803	30.7%	2,010,861	31.3%	58,410,105	28.3%	52,168,981	28.6%
No High School diploma	2,975	12.5%	5,422	21.7%	728,468	11.1%	1,064,133	16.6%	29,027,440	14.1%	35,715,625	19.6%
Median Household Income (\$)*	41,290	NA	35,315	NA	47,175	NA	44,667	NA	51,771	NA	41,994	NA
Median Household Income (\$), adjusted for 2010 US Dollars	41,290	NA	44,719	NA	47,175	NA	56,562	NA	51,771	NA	53,177	NA
Per Capita Income (\$)	22,793	NA	17,851	NA	24,997	NA	22,168	NA	27,385	NA	21,587	NA
Individuals below Poverty Level (%)*	5,133	15.5%	3,645	10.1%	1,709,870	17.3%	1,043,537	10.5%	48,473,049	15.7%	34,896,316	12.4%
OCCUPATION BY INDUSTRY*												
Agriculture, forestry, fishing and hunting, and mining	1,252	9.1%	1,231	7.9%	56,283	1.3%	49,496	1.1%	2,734,898	1.9%	2,426,053	1.9%
Construction	841	6.1%	913	5.9%	200,762	4.8%	278,079	6.0%	8,696,628	6.2%	8,801,507	6.8%
Manufacturing	2,847	20.7%	4,372	28.1%	709,434	16.9%	1,045,651	22.5%	14,704,656	10.4%	18,286,005	14.1%
Wholesale trade	271	2.0%	321	2.1%	106,093	2.5%	151,656	3.3%	3,881,120	2.8%	4,666,757	3.6%
Retail trade	1,466	10.7%	1,679	10.8%	490,519	11.7%	550,918	11.9%	16,397,044	11.6%	15,221,716	11.7%
Transportation and warehousing, and utilities	656	4.8%	615	3.9%	173,997	4.1%	191,799	4.1%	6,963,156	4.9%	6,740,102	5.2%
Information	185	1.3%	319	2.0%	66,429	1.6%	98,887	2.1%	2,987,507	2.1%	3,996,564	3.1%
Finance, insurance, real estate, and rental and leasing	528	3.8%	605	3.9%	230,838	5.5%	246,633	5.3%	9,327,638	6.6%	8,934,972	6.9%
Professional, scientific, management, administrative, and waste management	698	5.1%	516	3.3%	384,243	9.1%	371,119	8.0%	15,145,362	10.7%	12,061,865	9.3%
Educational, health and social services	2,874	20.9%	2,922	18.8%	1,023,952	24.3%	921,395	19.9%	32,720,462	23.2%	25,843,029	19.9%
Arts, entertainment, recreation, accommodation and food services	912	6.6%	852	5.5%	401,348	9.5%	351,229	7.6%	13,250,172	9.4%	10,210,295	7.9%
Other services (except public administration)	590	4.3%	697	4.5%	205,061	4.9%	212,868	4.6%	7,026,743	5.0%	6,320,632	4.9%
Public administration	609	4.4%	537	3.4%	159,982	3.8%	167,731	3.6%	7,084,474	5.0%	6,212,015	4.8%
Mean commute time (minutes)*	20.4	NA	20.6	NA	24	NA	24.1	NA	25.5	NA	25.5	NA
TRANSPORTATION BEHAVIOR*												
Drove alone	10,945	81.3%	12,001	78.2%	3,407,959	82.8%	3,776,535	83.2%	106,069,531	76.4%	97,102,050	75.7%
Carpooled	1,273	9.5%	1,625	10.6%	365,996	8.9%	440,606	9.7%	13,483,552	9.7%	15,634,051	12.2%
Public Transport	62	0.5%	96	0.6%	55,332	1.3%	60,537	1.3%	6,933,318	5.0%	6,067,703	4.7%
Walked	492	3.7%	667	4.3%	89,678	2.2%	101,506	2.2%	3,883,300	2.8%	3,758,982	2.9%
Other	144	1.4%	130	0.8%	49,190	1.2%	33,423	0.7%	2,433,344	1.8%	1,532,219	1.2%
Worked at home	554	4.1%	836	5.4%	146,297	3.6%	127,765	2.8%	6,022,081	4.3%	4,184,223	3.3%

* These data are from the U.S. Census Bureau, 2010 -2014 American Community Survey 5-Year Estimates.

Appendix B

Summary State Equalized Value Data

SEV by Tax Class by Jurisdiction in Huron County, 2000 and 2015

Area	Agriculture			Real Property			Commercial			Industrial			Total Real Property			Total Personal Property			Total Real and Personal		
	2010 (\$)	2015 (\$)	% Change	2010 (\$)	2015 (\$)	% Change	2010 (\$)	2015 (\$)	% Change	2010 (\$)	2015 (\$)	% Change	2010 (\$)	2015 (\$)	% Change	2010 (\$)	2015 (\$)	% Change	2010 (\$)	2015 (\$)	% Change
City																					
Bad Axe	-	96,900	-	40,037,300	34,560,000	-13.7%	39,811,100	35,988,900	-9.6%	2,866,900	2,194,400	-23.5%	82,715,300	72,840,200	-11.9%	10,519,300	8,698,900	-17.3%	93,234,600	81,539,100	-12.5%
Harbor Beach	115,100	240,900	109.3%	28,980,500	25,762,400	-11.1%	4,977,600	3,946,300	-20.7%	18,467,000	12,375,000	-33.0%	52,540,200	42,324,600	-19.4%	18,716,600	23,110,200	23.5%	71,256,800	65,434,800	-8.2%
Caseville	-	-	-	-	34,741,600	-	-	10,075,100	-	-	31,600	-	-	-	44,848,300	-	1,341,300	-	-	46,189,600	-
Township																					
Bingham	36,513,600	58,001,400	58.8%	28,537,300	32,551,875	14.1%	3,946,300	4,505,000	14.2%	2,059,900	2,047,500	-0.6%	71,057,100	97,105,775	36.7%	5,836,200	7,752,100	32.8%	76,893,300	104,857,875	36.4%
Bloomfield	41,226,000	76,878,800	86.5%	4,980,600	4,793,600	-3.8%	269,000	803,000	198.5%	-	-	-	46,475,600	82,475,400	77.5%	753,200	24,395,900	3139.0%	47,228,800	106,871,300	126.3%
Brookfield	43,229,900	89,535,700	107.1%	9,075,300	7,702,900	-15.1%	529,600	768,900	45.2%	391,800	155,400	-60.3%	53,226,600	98,162,900	84.4%	1,219,200	53,642,100	4299.8%	54,445,800	151,805,000	178.8%
Caseville	7,039,900	14,093,700	100.2%	262,475,589	190,549,300	-27.4%	13,355,700	4,450,800	-66.7%	351,000	172,900	-50.7%	283,222,189	209,266,700	-26.1%	4,207,300	3,315,800	-21.2%	287,429,489	212,582,500	-26.0%
Chandler	43,659,500	82,488,200	88.9%	6,582,800	6,647,700	1.0%	69,000	94,500	37.0%	-	176,400	-	50,311,300	89,406,800	77.7%	516,400	124,954,300	24097.2%	50,827,700	214,361,100	321.7%
Colfax	45,475,300	76,613,000	68.5%	34,986,800	31,482,400	-10.0%	11,573,000	11,298,500	-2.4%	9,900	440,000	4344.4%	92,045,000	119,833,900	30.2%	5,128,700	22,153,400	331.9%	97,173,700	141,987,300	46.1%
Dwight	40,191,400	72,882,200	81.3%	11,772,400	10,757,000	-8.6%	1,576,700	1,455,800	-7.7%	-	-	-	53,540,500	85,095,000	58.9%	923,800	920,900	-0.3%	54,464,300	86,015,900	57.9%
Fair Haven	16,023,100	29,948,000	86.9%	34,240,900	25,193,700	-26.4%	1,855,900	1,764,400	-4.9%	175,700	240,700	37.0%	52,295,600	57,146,800	9.3%	1,144,300	5,386,300	370.7%	53,439,900	62,533,100	17.0%
Gore	4,593,600	7,497,000	63.2%	11,124,700	9,222,700	-17.1%	-	-	-	3,200	4,500	40.6%	15,721,500	16,724,200	6.4%	223,000	328,000	47.1%	15,944,500	17,052,200	6.9%
Grant	30,886,600	53,554,600	73.4%	17,239,800	15,029,200	-12.8%	245,400	305,500	24.5%	-	-	-	48,371,800	68,889,300	42.4%	1,148,200	8,069,700	602.8%	49,520,000	76,959,000	55.4%
Hume	30,629,500	51,988,300	69.7%	63,337,900	53,396,100	-15.7%	2,784,800	2,127,200	-23.6%	11,500	9,700	-15.7%	96,763,700	107,521,300	11.1%	1,152,300	1,508,300	30.9%	97,916,000	109,029,600	11.4%
Huron	34,089,100	56,505,200	65.8%	20,123,900	18,671,700	-7.2%	699,700	296,200	-57.7%	-	-	-	54,912,700	75,473,100	37.4%	714,600	899,000	25.8%	55,627,300	76,372,100	37.3%
Lake	13,117,800	25,671,900	95.7%	106,565,900	98,154,000	-7.9%	707,000	795,700	12.5%	-	-	-	120,390,700	124,621,600	3.5%	1,159,100	1,581,300	36.4%	121,549,800	126,202,900	3.8%
Lincoln	37,559,300	67,298,200	79.2%	13,302,000	13,680,900	2.8%	2,541,200	2,742,400	7.9%	21,900	30,100	37.4%	53,424,400	83,751,600	56.8%	2,061,500	2,083,900	1.1%	55,485,900	85,835,500	54.7%
McKinley	21,878,200	42,536,800	94.4%	12,894,600	11,744,100	-8.9%	878,900	794,700	-9.6%	537,900	1,198,300	122.8%	36,189,600	56,273,900	55.5%	897,300	26,928,300	2901.0%	37,086,900	83,202,200	124.3%
Meade	36,811,600	65,804,600	78.8%	14,680,100	13,507,400	-8.0%	770,000	629,300	-18.3%	417,900	398,300	-4.7%	52,679,600	80,339,600	52.5%	664,700	719,600	8.3%	53,344,300	81,059,200	52.0%
Oliver	41,310,200	89,544,700	116.8%	18,971,950	16,352,900	-13.8%	3,021,500	2,976,400	-1.5%	5,210,800	3,997,700	-23.3%	68,514,450	112,871,700	64.7%	9,321,600	60,826,400	552.5%	77,836,050	173,698,100	123.2%
Paris	43,634,900	83,413,100	91.2%	6,281,000	7,144,600	13.7%	227,100	228,900	0.8%	-	-	-	50,143,000	90,786,600	81.1%	566,900	4,203,900	641.6%	50,709,900	94,990,500	87.3%
Pointe Aux Barques	-	-	-	27,875,000	25,794,900	-7.5%	450,400	142,100	-68.5%	-	-	-	28,325,400	25,937,000	-8.4%	189,200	135,200	-28.5%	28,514,600	26,072,200	-8.6%
Port Austin	11,215,500	21,039,500	87.6%	106,867,000	103,275,900	-3.4%	9,501,900	8,243,100	-13.2%	301,500	246,800	-18.1%	127,885,900	132,805,300	3.8%	2,551,500	2,707,700	6.1%	130,437,400	135,513,000	3.9%
Rubicon	20,512,000	36,696,600	78.9%	32,852,200	26,233,580	-20.1%	1,649,100	1,015,800	-38.4%	-	-	-	55,013,300	63,945,980	16.2%	1,046,700	19,488,200	1761.9%	56,060,000	83,434,180	48.8%
Sand Beach	45,074,400	87,288,900	93.7%	43,884,600	37,817,400	-13.8%	1,499,200	1,445,100	-3.6%	251,800	315,400	25.3%	90,710,000	126,866,800	39.9%	1,813,400	2,164,200	19.3%	92,523,400	129,031,000	39.5%
Sebewaing	39,401,200	78,010,670	98.0%	36,482,600	36,466,205	0.0%	6,842,800	6,699,916	-2.1%	3,428,800	2,551,000	-25.6%	86,155,400	123,727,791	43.6%	7,991,800	38,391,750	380.4%	94,147,200	162,119,541	72.2%
Sheridan	41,740,600	70,241,200	68.3%	8,278,200	7,347,200	-11.2%	934,400	820,800	-12.2%	-	-	-	50,953,200	78,409,200	53.9%	960,700	6,191,000	544.4%	51,913,900	84,600,200	63.0%
Sherman	51,284,400	103,556,100	101.9%	32,671,200	30,728,500	-5.9%	456,700	483,300	5.8%	823,400	863,100	4.8%	85,235,700	135,631,000	59.1%	2,112,300	2,326,800	10.2%	87,348,000	137,957,800	57.9%
Sigel	41,425,300	81,635,100	97.1%	5,767,400	5,896,800	2.2%	149,400	137,400	-8.0%	196,600	1,321,600	572.2%	47,538,700	88,990,900	87.2%	1,103,600	67,703,400	6034.8%	48,642,300	156,694,300	222.1%
Verona	26,234,700	41,841,300	59.5%	31,427,000	31,093,650	-1.1%	6,217,000	5,986,100	-3.7%	1,350,900	1,029,100	-23.8%	65,229,600	79,950,150	22.6%	12,416,700	22,845,700	84.0%	77,646,300	102,795,850	32.4%
Winsor	43,588,100	98,305,500	125.5%	32,521,800	26,820,500	-17.5%	5,504,300	5,773,200	4.9%	5,635,700	8,650,400	53.5%	87,249,900	139,549,600	59.9%	12,488,100	74,623,900	497.6%	99,738,000	214,173,500	114.7%
County Total	888,460,800	1,663,208,070	87.2%	1,104,618,339	993,120,710	-10.1%	123,044,700	116,794,316	-5.1%	42,514,100	38,449,900	-9.6%	2,158,837,939	2,811,572,996	30.2%	109,548,200	619,397,450	465.4%	2,268,386,139	3,430,970,446	51.3%

Appendix C

Adoption Documentation

PRESS RELEASE

For Immediate Release

September 22, 2016

Contact: Alan Bean, AICP – Project Planner

Phone: (989) 921-5522

E-mail: alanb@spicergroup.com

Huron County Offers Online Input Survey

Bad Axe—Huron County wants to hear input from citizens as part of the update to the Master Plan. The County has launched a survey that is accessible from www.huroncountysurvey.com. The survey is brief and should take no more than 10 minutes to complete. We want to hear from those who live, work, and go to school in Huron County, and other interested parties that want to make a difference in the County. The Planning Commission believes input from Huron County citizens will be a critical factor to the success of this planning effort.

The County started its Master Plan update earlier this year and it is expected it will be completed in 2017. The plan evaluates land use, demographics, community data, public opinion, and proposes goals and an action plan. The Master Plan is being developed pursuant to the Michigan Planning Enabling Act.

The Master Plan is an official document that describes the future vision of the County, acting like a blueprint to help guide future growth. A Master Plan analyzes baseline information about the County such as population changes, housing, natural features, and identifies important trends to help plan for the future. Said another way, a Master Plan is a policy document that guides County leaders on making decisions about land use, infrastructure, and related economic development matters.

Print versions of the input survey are available at:

Bad Axe Area District Library

200 S. Hanselman St.

Bad Axe, MI 48413-1443

Port Austin Township Library

114 Railroad Street

Port Austin, MI 48467

Harbor Beach Area District Library

105 N. Huron Avenue

Harbor Beach, MI 48441-1167

Sebewaing Township Library

41 N. Center St.

Sebewaing, MI 48759

Pigeon District Library

7236 Nitz St

Pigeon, MI 48755-0357

Sleeper Public Library

2236 E Main St.

Udly, MI 48475-9566

Hard copies of the survey are also available at the Huron County Planning, Building, and Zoning Department at the Huron County Building located at 250 E Huron Avenue, Room # 102 in Bad Axe.

If you have questions about the County's planning efforts, please contact Jeff Smith, Director, Huron County Building & Zoning at (989) 269-9269, or Alan Bean with Spicer Group at (989) 921-5522 (alanb@spicergroup.com).

Huron County has been working with a Michigan-based planning firm, Spicer Group, whose home office is in Saginaw, to assist Huron County with the update process. Spicer Group is a full-service consulting firm founded in 1944 that offers planning, zoning, engineering, landscape architecture, and recreational services to municipal clients.

END